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INDEX TO VOL. LXII.

[For Index to Illustrations see page VI.]

ABATEMENT of nuisance, owners' liability for, 719
Aberdeen water supply, pollution of, 622
Abbeys: Pershore, 203; Tewkesbury, 58; Westminster, 51, 498
Aberdour and Inverkeithing water supplies, 590
Academy, royal: 682; architecture at, 592, 627, 885; drawings, 50, 168; lectures, 82; old masters at, 56; pictures at, 591, 626, 658; reflections at, 691; sculpture at, 691
Academies, royal: Cambrian, 191, 818; Scottish, 234 291, 489
Accidents, compensation for, 488
Accrington, improvements at, 194
Ackerman, E., Cardiff, in re, 5-9
Action of heat from open firegrates, stoves, and hot-water pipes, 87, 122, 165, 225, 232
Adams: M. J., 4; S. H., 4
Admiralty offices, the new, 826
Advertisers' trade rights, 154
Advertising hoardings and the building act, 194
Air-pump ventilator, Boyle's latest, 257
Alleged scamped corporation contracts, 554, 785
Alloa bd. school competition, 388, 454, 519
Altar piece, by Crivelli, 633
Amalgamated socy. carpenters and joiners, 525
Ambiguity, legal, as to new streets, 118
Amendment, building act: is it desirable, 299; L.C.C. suggestions for, 3, 55; R.I.B.A. do., 3; Socy. Architects do., 860
American bridge building, 694
Amusement, places of, safety of, 523
Ancient: lights in new buildings, 390; Rome, the remains of, 586
Antiquities, architectural, of Isle of Wight, 369
Apennines, Celtic art in the, 858
Appeals: against compensation awards, 293; from arbitrators, 325
Appliances, hydraulic and sanitary, 88
Application of metals to architectural design, 757
Aquarium for New York, 886
Arbitration: and certificate clauses, 118; and extras, 293, 358; as to Reigate-hill, 423; at Carlisle, 687; between Kirk and Randall, 850; main roads (Bournemouth) 81 (Levenshulme) 228; redress by, 793
Arbitrators: appeals from, 325; lien by award, 118
Archæological survey of India, 827
Archæology, Greek, handbook of, 334
Archer v. Hobbs (architect's claim) 521
Architect: action by an (Young v. Armstrong) 850; and building committee, 325; and his dust-bin, 719; and surveyor, practice of an, 430; relation of to workman, 758; sent to prison, 391; the arty-crafty, 52; unfounded charge against, 455
Architects: action for breach of contract, 326; and builder's pocket-book, 235; and building committees, 491; and stained glass artists, 297; and surveyors, Sheffield society of, 117, 237, 388, 716; and the modern world, 425; and the public, 625; chiffonier (club designs) 395; claims for fees, 521; fees for partially executed work, 554; instructions to, 558; institute, Royal British, 126, 161, 190, 230, 364, 492, 686, 693, 718, 757 (fellowship) 793, 823 (new competition suggestions) 855 (prize drawings) 121 (suggested building acts amendment) 3; pricebook, Spon's, 529; registration (bill) 358, 424, 786, 818 (in Columbia district) 489 (no need for, eh ?) 520 (wanted) 324, 356; society of, 112, 149, 162, 191, 226, 231, 299, 362, 430, 527, 659, 860 (proposed students' branch) 588; societies (Cardiff) 388 (Manchester) 128; studio, pastels in the, 527; sweating, at Brighton, 5; tenders from, 522
Architectural: antiquities of Isle of Wight, 369; association, 123, 223, 237, 300, 363, 432, 493, 694, 758, 763 (R.A. v. R.I.B.A.) 552 (excursion, coming) 716 (excursions, past, domestic work seen on) 257, 265 (Jackson, T. G., and the) 632 (soirée) 684 (trav. student's notes) 761; associations (Birmingham) 191, 587 (Edinburgh) 289, 356, 518, 529, 550, 599, 716, 763, 814 (Glasgow) 550, 814 (Northern) 191, 716 (York) 128, 550; design, application of metals to, 757; factions, 657; fashion, changes in, 229; form, elements of, 302; pot-boilers, 789; problem, 557; rendering in pen and ink, 663; societies (Exeter) 883 (Leeds and Yorkshire) 128, 356, 487, 632 (Liverpool) 117, 883; teaching, 197
Architecture: an art, science, profession or, 192; at Royal Academy, 592, 627, 885; at Royal Scottish Academy, 291; Byzantine, 426; contrariety in, 821; fashions in, 223; flank, 591; historic house, 334; in Ireland, Early Christian, 362; literature and, 493; mysticism and myth, 529; of Southern Italy, 202; of the Renaissance, 52; practical difficulties in, 229; professional and artistic, 2; Saracenic, 163; thirteenth and fourteenth centuries, 756, 815; what is, 117; window glass in, 393
Ardrossan dock, 525
Area, floor, and cubical space, 329
Are any amendments desirable in metropolitan building acts, 299
Argos, temples at, 367
Armourers' and braziers' exhibition, 661, 697
Art: and craft of cabinet making, 190; and nature, relation of, 392; galleries (British, proposed) 565 (Glasgow) 519, 531, 550, 561, 565, 599, 633, 829 (South London) 754; in the Apennines, Celtic, 858; knowledge and its counterfeit, 456; of brass repoussé, 225; of internal illumination by electricity, 693; of planning, 161; of the Low Countries, 563; science, profession or ——, of architecture, 192; workers' portraits, 4
Artesian well in the City, 194
Artisans' dwellings: concrete for, 226, 260; Halifax, 389, 422, 467; patented plans, 731, 784, 816, 849
Artistic and professional architecture, 2; planning, 557
Artists: British, royal socy., 460; house and studio, 160; stained glass, 297
Arts: home, exhibition, 754, 849; society of, 157: Royal Scottish do., 235
Arty-crafty architect, the, 52
Ash: and oak, dry, 453; -next-Sandwich sewerage, 521
Assault on a surveyor, 194
Assign, licenses to, 884
Assize courts, Birmingham, 50
Associations: architectural, 123, 223, 237, 300, 363, 432, 493, 684, 694, 758, 761, 763 (and R.A. v. R.I.B.A.) 552 (excursion, coming) 716 (excursions, past, domestic work seen on) 257, 265 (Jackson, T. G., and the) 632 (Birmingham) 191, 587 (Edinburgh) 289, 356, 518, 529, 550, 599, 716, 763, 814 (Glasgow) 550, 814 (Northern) 191, 716 (York) 128, 550; clerks of works, 291; master builders (Bath) 359 (Coventry) 763 (Leicester) 191 (National) 237 (Nottingham) 191; master wrights (Glasgow) 587; municipal engineers', 359, 653, 818, 832; sanitary inspectors, 82
Aston technical schools, 355
Asylum, royal, Cheadle, 399
Asylums, lunatic: and hospitals, 224; Blackburn, 356, 718; Cork, 117; Coxlodge, Newcastle, 292, 550; Hawkhead, N.B, 620; Sunderland, 303, 356; Wandsworth, 356
At bay, capital, 529
Attractions and riches of land, 794
Australian plumbers and registration, 784
Authorised plans, deviations from, 455
Awards, compensation, appeals against, 293

BACK-TO-BACK houses: Bradford, 289; doctor's defence of, 119; Shipley local board and, 194
Bailly, A. N., of Paris, the late, 82
Balance of building account, claim for, 521
Balconies and the building act, 589
Balmer, P., in re, 156
Bankrupt builders, charges against, 785
Banks: Adlington, 153; Bradford, 763; Glasgow, 551; Leeds, 237; Southport, 697; Wimbledon-common, 369
Barlow, R., in re, 455
Barnard castle, Bowes' museum, 835
Barnet's, Jas., work in New South Wales, 721
Barnoldswick waterworks, 720
Barracks, salvation army, Ipswich, 883
Barradale, Isaac Leicester, the late, 368
Basis of compensation, the, 226
Bathhouses and baths, 112
Bath: master builders' assocn., 395; water supply, 521
Baths: and bathhouses, 112; and washhouses, public, 619; Brixton, 863; Cheetham, Manchester, 388, 620; Coventry, 355; Farnworth, 58, 550; hydropathic establishment and its, 153; Salford, 816; Salisbury, 5; Shrewsbury, 697; Southampton, 551; Stafford, 621; swimming, 269
Batteries, secondary, 528
Battersea, fatal fire at, 156, 194, 227, 293, 326
Beatty, Thos., Carlisle, the late, 327
Bells and towers, church, 850
Benevolent institution, builders' clerks', 302, 464, 598
Berkhamsted sewerage works, 753
Berlin, sewage farms of, 524
Bermondsey settlement, 58
Best: pavement for city traffic, 195; time to cut underwood, 195
Bexhill, sewerage of, 358
Bidlake, Geo., Leicester, the late, 632
Bills of sale acts, 655
Biography of G. Meikle Kemp, 861
Birkdale, sewage purification at, 156
Birmingham: archi. assocn., 191, 587; art collections, catalogue of, 590; hospital competition, 355, 388; new buildings in, 115; water bill, 489, 655
Bishopsgate charity library, 763
Blackburn asylum competition, 356, 718
Blackpool improvements, 826
Blackwall tunnel, 885
Blanchard, M. H., the late, 294
Board schools: Alloa, 388, 454, 519; Batley (higher grade and technical) 90; Brecon, 717; Burslem, 751; Cannock, 6; London (actions as to) 192, 326 (Hugh Myddelton, Clerkenwell) 365 (Lavender-hill) 499 (repairs to) 228; Northampton, 6; Norwich, 883; Penrith, 588; Sheffield, 153; Walsall (competition, action as to) 303, 389, 391
Bombay, Tansa Lake waterworks for, 553
Bookkeeping: 81, 192; builders', 422
Bore-holes, underpinning by, 730
Box doors, corrugated iron, 754
Boyle, R., and Son, 495
Boyle's latest air-pump ventilator, 267
Bradshaw, Ben., sen., the late, 662
Bradwell-on-Sea, 597
Brasses, monumental, 659
Brass repoussé, manual of, 225
Breach of: building by laws, 118, 554; contract, alleged, 455
Brick: and concrete work, 121; fan vaulting in, 192; for street pavements, 793
Bricklayers' socy., operative, 623
Brickmaking, bricks and, 154, 192
Bricks and brickmaking, 154, 192
Brickwork, efflorescence on, 586, 621
Bridge building, American, 694
Bridges: Bonar, N.B., 519, 783 (legal difficulties as to) 327; Glasgow new, 519; iron foot, 464; London, 825; Roslin, 783; soft steel for, 590; Tower, 857; uniform loads for, 728
Brighton: new pier, 359; sweating architects at, 5
Bristol cathedral restoration, 551, 586, 815, 882
British: architects, royal institute of, 126, 161, 190, 230, 364, 492, 686, 693, 718, 757 (fellowship) 793, 823 (new competition suggestions) 855 (Soane and prize drawings) 121 (suggested building act amendments) 3; art gallery, proposed, 565; artists, royal society of, 460; art workers and manufacturers, 4; Columbia, cathedral for, 519, 690, 731, 763, 795, 863
Brittany, sketching tour in, 424
Brixton, Raleigh house, 852
Brockwell park, 786
Bronze, castings in, 757
Brooklyn, mammoth intercepting sewer, 236
Broseley tiles, trade customs, 155
Bruce, Rev. Dr. J. Collingwood, the late, 522
Brunlees, Sir Jas., the late, 815
Bude and Stratton water supply, 557
Builder: imprisoned, 851; serious charge against, 655, 884; v. architect, 423
Builders: and mortgages, 455; bankrupt, charges against, 785; book-keeping, 422; clerks' benevolent institution, 302, 464, 593; clerk, serious charge against, 884; furnisher, libel action by, 455; master, associations (Bath) 359 (Coventry) 763 (Leicester) 191 (National) 237 (Nottingham) 191; merchants, commissions from, 358; offices and the building act, 720; pricebooks (Laxton's) 528 (Lockwood's) 235 (Spon's) 529
Building: account, balance of, 521; acts, metropolitan (advertising hoardings and) 194 (are amendments desirable) 299 (balconies and) 589 (builders' offices and) 720 (duroline and) 227, 358, 423, 785 (proposed codification and amendment of—London County Council's suggestions) 3, 55 (do. R.I.B.A. do) 3 (do. socy. architects' do.) 860; bridge, American, 694; church, Nonconformist, 86, 160; committee, architect and, 325; committees, and architects, 491; construction, notes on, 80; cost v. value in, 790; exhibition, Agricultural Hall, 420; heights and spaces, regulation of, 159; lands bill, 623; law, an oppressive, 197; law, London, consolidation bill, 860; legislation, London, 230; lines, 155, 553, 622; new, what is a, 553; NEWS designing club, 150, 192, 296, 324, 395, 453, 487, 560, 621, 751, 791; on the wrong site, 294; physical laws operative in, 84; prices, notes on, 151, 258; reforms, 425; regulations, Glasgow new, 195; stones (of Great Britain) 628, 725 (their structure and origin) 162, 200; trades (evidence at the labour commission) 354, 420, 432 (their position) 789
Buildings: and streets, new, 459; decay of, 689; excavated sites of, 760; foundations of, 525; height of (covenants as to) 294, 326 (in Chicago) 556 (in Manchester) 119 (in Oxford) 721; in artistic, 523; in progress, employers' liability for, 719; lofty (fires in) 190 (iron skeletons for) 457; municipal, 1 (see also under that head); new, ancient lights in, 390; rearrangement and conversion of, 755; warming and ventilating, with or without motive power, 198
Burlington gallery, landscapes at the, 595
Burnell, Edward H., the late, 555
Bushey, sewage disposal at, 51
Business premises: Bolton (newspaper) 303; Bristol, 685, 730; Budleigh Salterton, 654; Cheapside, 168; Ipswich, 531; Jarrow (co-operative) 551; Leeds (co-operative) 433; Market-road, N., 421; New Bond-st., 498; Plymouth, 203; Shrewsbury, 816
Bylaws, breach of, 118, 554
Byzantine architecture, 426

CABINET: drawing-room, club designs, 791; makers' customs, 118; making, art and craft of, 190
Cabinets, 599
Cables: electric light, 190; street, 127
Cairo, drainage of, 555, 558
Camberwell Vestry v. Crystal Palace Co. (new street) 719
Cambrian academy, royal, 191, 818
Cambridge, sewerage of, 236
Camera club, photographs at, 57
Camp, Shorncliffe, 487
Canal, Manchester ship, 359
Canterbury cathedral, alarmist reports as to, 327
Capital at bay, 529
Cardiff: architects' society, 388; castle (carvings) 50, 58, 154 (old tiles) 795
Carlisle: arbitration at, 687; Tullie house, 783
Carnival suspension, a, 654
Carpenters: and joiners, amalg. socy. of, 525; co. (dinner) 852 (prizes) 53; complete companion, 190; shop at Nazareth, the, 203
Carpentry and joinery, 269, 562
Carriage ways, public, on new estates, 193
Cartoon, Royal Academy, 50, 168
Casting in iron and bronze, 757
Cast iron pipes with india rubber joints, 392
Castle, Cardiff, 50, 58, 154, 795
Catalogue, Birmingham art collections, 590
Cathedrals: Bristol, 551, 586, 815, 882; Canterbury, 327; Chichester, 156, 499; Dunblane, 815; Durham (Galilee) 168; Edinburgh, 487; Erfurt, 369; Gloucester, 111, 590; Kensington (pro, tabernacle) 633; Lincoln (library) 456, 465, 751; Milan (pillars of) 492; New York, 620; Oxford, 190; Peterborough, 815; Portsmouth (R.C.) 519; Rochester, 730; St. Paul's, 153, 555, 655, 662; Salisbury, 292; Victoria, Brit. Columbia (Christchurch) 519, 690, 731, 763, 795, 863; Winchester, 621
Celtic historic art in the Apennines, 858
Cement: concrete tests, 525; hot tests for, 862; Portland, trade of the world, 463
Cemetery: chapels, Northfleet, 388; Ripon, 599
Centenary, Southport, 885
Certificate; and arbitration clauses, 118; surveyor's liability for, 81
Certificates: architects, 118; final, 261

BU v.62

Cesspools, keeping surface water out of, 192
Chaffers, Wm., the late, 584
Chain surveying, 693
Changes in architectural fashion, 229
Chapel, compensation for subsidence of, 194
Chapels: Barnard Castle (Wesln.) 863; Blaina (Wesln.) 192; Brompton (consumption hospital) 519; Eaglescliffe (Wesln.) 763; Felton, Alnwick (Wesln.) 117; Gateshead (Prim. Meth.) 849; Harrogate (Wesln.) 90; Ipswich (new Turret-green, Bapt.) 849; Northfleet (cemetery) 388; Nuneaton (Wesln.) 399; Outlane, Huddersfield (Meth. New Con.) 685; Roath, Cardiff (Holy Name) 654; Rosslyn, 271; St. Leonard's-on-Sea (Wesln.) 128
Chapters, new, in Greek history, 794
Charge, unfounded, against an architect, 455
Chatham, S.E. extension to, 322
Chesser, John, the late, 227
Chicago: engineer's congress, 327; exhibition, 327, 392; height of buildings in, 556; plumbing ordinances in, 457
Chiffonier, architect's, club designs, 395
Chimneys: domestic, stability of, 85; something about, 301, 330, 366, 397, 422, 461, 494; tall, 491; unstable, 329
Chislehurst, mosaic at, 335, 390
Christian, early, architecture in Ireland, 362
Christ's hospital, removal of, 551, 848
Church: bells and towers, 850; building, Nonconformist, 86, 160
Churches: Alderton (St. Margaret) 620; Ayr (St. Andrew, Free) 633; Berlin (Holy Cross—mural paintings) 271; Bramford (font) 565; Brinksway (St. Augustine) 697; Brixworth, 795; Carnalway, 117; Chacewater, 236; Chadmoor, 551; Chislehurst (Annunciation, mosaic in) 335, 390; Drinkstone, 168; Dublin (St. Joseph R.C.) 685; Dundicheock, 587; Earl's Barton, 795; Falstone, 730; Fewston (font) 335; Foot's Cray (belfry) 597; Freshwater, I.W., 369; Glamorganshire, restoration of, 587; Gospel Oak (Good Shepherd) 829; Haddington, 551; Herringworth, 730; Hertford (All SS.) 418; Huntington, 815; Innsbruck (Franciscan) 50; Ipswich (St. Clement) 5; Kensington (St. Cuthbert) 795; Kilpeck, 168; Kippax (font) 335; Leith (Wardie U.P.) 783; Llansilin (St. Silin) 335; Lockerley; 589; Mains (Free) 487; Newcastle-on-Tyne (St. Michael) 663; Nicholaston, 531; Northampton (Holy Sepulchre) 795 (St. Peter) 795; North Eling (St. Mary) 620; Paisley (Original Secession) 587; Paris (St. Gervais) 424; Rearsby, 191; Smethwick (St. Michael) 783; South Norwood (St. Alban) 467; Southwark (R.C.) 882; Ufford, 51; Vitre (N.D.) 50; Waddesdon, 882; Walsall (St. Paul) 487; Werrington, (St. Martin) 717; West Chislehurst (Annunciation, mosaic) 335, 390; Westcombe park (St. George) 191; Westergemeinde, Altona (pulpit) 467; West Hartlepool (St. Aidan) 499; West Smithfield (St. Bartholomew the Great) 80; Woking (Christ) 731; Wrexham, 587
Circular ramped coping, 390
Citadels, salv. army: Aberdeen, 620; Edinburgh, 551
City, the: artesian well in the, 194; electric lighting in the, 233; traffic, best pavement for, 195
Claims: architects', for fees, 521; contractors', at Ramsey, 687
Clarke's pocket book, 153
Clauses, arbitration and certificate, 118
Cleckheaton mill disaster, 488
Clerk of works' action for libel, 193
Clerks: builders', benevolent institution, 302, 464, 598; of works' association, 291
Clock: St. Paul's cathedral, 153; tower, Ledbury, 697
Closet, Presto double-action, 762
Closets, earth, 154
Clubs: BUILDING NEWS designing, 150, 192, 296, 324, 395, 453, 487, 560, 621, 751, 791; Roath (Conserv.) 717; St. Austell (Libl.) 90; Wigan (Libl.) 452
Coal-devouring cooking range, history of, 529
Coatham water supply, 194
Codification of building act, suggestions as to: L.C.C., 3, 55; R.I.B.A., 3; Socy. Architects, 860
Coinage competition, 754
Collection of town refuse, 861
Colleges: Bangor (N. Wales training) 685; Darlington (technical) 621; Leeds (Yorkshire) 651; Oxford (Magdalen) 90
Colonial furniture of New England, 684
Columbia: district, architects' registration in, 489; fellowship in architecture, 599
Colville, Jas., Edinburgh, the late, 157
Combustible material, is duroline a, 227, 358, 423, 785
Commission, labour, building trades evidence at the, 354, 420, 432
Commissions from builders' merchants, 358
Committee, building, architects and, 325
Committees, building, and architects, 491
Companion, carpenters' complete, 190
Companies, limited liability, leases to, 596
Compensation: awards, appeals against, 293; basis of, 226; for accidents, 488; for insanitary property, 193, 293; for leaseholds, 155; for subsidence (at Greenock) 322 (of chapel) 194
Competing in the dark, 559
Competitions: art galleries (Glasgow) 519, 531, 550, 561, 565, 599, 633, 829; artisans' dwellings (Halifax) 389, 422, 467; asylums (Blackburn) 356, 718 (Cox-lodge, Newcastle) 292, 550 (Sunderland) 303, 356 (Wandsworth) 256; baths (Brixton) 863 (Cheetham, Manchester) 388 (Coventry) 355 (Farnworth) 58, 550 (Shrewsbury) 697; board schools (Alloa) 388, 454, 519 (Batley, higher grade) 90 (Burslem) 751 (Cannock) 6 (Northampton) 6 (Norwich) 883 (Penrith) 583 (Walsall, litigation as to) 303, 389, 391; BUILDING NEWS club, 150, 296, 395, 453, 487, 560, 791; cathedral (Victoria, British Columbia) 519, 690, 731, 763, 795, 863; cemetery (Ripon) 599; chapels (Barnard Castle, Wesln.) 863 (Blaina, Wesln.) 192 (Eaglescliffe, Wesln.) 763 (Harrogate, Wesln.) 90 (Northfleet, cemetery) 388 (Outline, Meth. New Con.) 685; churches (Ayr, Free) 633 (Chacewater) 236 (Hertford, All SS., rebuilding) 418; clock tower (Ledbury) 697; club (Wigan, libl.) 452; coinage, 754; college (Bangor, training) 685; cottage hospital (Galashiels) 829; courthouse (Cork) 90; drainage (Cairo) 555, 588; grammar school (Horsham) 58; hospitals (Birmingham) 355, 388 (Leicester, fever) 452, 467 (West Fife, fever) 829; infirmary (Southport) 467, 763; institutes (Glasgow, deaf and dumb) 633 (Whitworth) 128; laying out open space (Paisley Cross) 588, 763; laying out park (Newport, Mon.) 633; memorial (Drummond of Hawthornden) 303; municipal buildings (Bath) 128 (Oxford) 6, 855; offices (County Council (Stafford) 829, 863 (school board, Keighley) 6; pier (Beaumaris) 355, 452; police station (Holyhead) 751 (Shrewsbury) 128, 355; public hall (Bangor) 751; public libraries (Bishopsgate charity) 763 (Poplar) 857 (Willesden-green) 751; reading rooms (Aspatria) 697; Royal Academy (cartoons) 50 (town house) 271, 303; royal institute British architects (drawings) 121; schools (Lichfield, Midland truants') 260; sewerage (Stone) 467; technical schools (Aston) 355 (Batley) 90 (Darwen) 303, 388, 389 (Heywood) 550 (Ringsend, Dublin) 751; town hall (Newcastle) 795; with the latest improvements, 83
Competition suggestions, new R.I.B.A., 885
Concentration and overcrowding, 828
Concrete: and brickwork, 121; deal floors on, 192; for artisans' dwellings, 226; 260; tests, cement, 525
Condensation, paint to prevent, 718
Conditions: constituting unhealthy houses, 564; contract, of London County Council, 756
Congress, engineers', at Chicago, 327
Conquest, A. W., Folkestone, the late, 294
Consolidation, London building law, 860
Constantine, Joseph, 4
Constructional drawings, 236, 464, 662, 718, 752, 760
Construction: building, notes on, 80; curious fireproof, 520; of the pillars of Milan Cathedral, 492
Contract: 155; alleged breach of, 455; conditions of London County Council, 756
Contractor: heating, wiles of the, 330, 422; v. sub contractor, 391
Contractors: action against, 391; claims at Ramsey, 687; liabilities, 391
Contracts: alleged scamped, at Hull, 554, 785; and tenders, 361; by correspondence, 553
Contrariety in architecture, 821
Convalescent home, Swanley, 168
Convention building, Ulster, 815
Conversion and rearrangement of buildings, 755
Converting one house into two, penalty for, 553
Coode, Sir John, the late, 359
Cooking-range, history of coal-devouring, 529
Co-operative premises: Berkhamsted, 598; Jarrow, 551; Leeds, 433; Plymouth, 203
Coping, circular ramped, 390
Correspondence, contracts by, 553
Corrugated iron box doors, 754
Cost v. value in building, 790
Cottage hospitals: Galashiels, 829; High Wycombe, 80
Cottages: labourers', club designs, 453; Lunsford, 829; Wimsboldsley, 795
Cotterell's wall papers, 157
Council, R.I.B.A., 686
Counterfeit art knowledge, 456
Courthouse, Cork, 90
Courts: assize, Birmingham, 50; high, Madras, 587
Covenant for quiet enjoyment, 719
Covenants as to heights of buildings, 294, 326
Coventry: baths competition, 355; master builders' association, 763; railway improvements, 783; sewage disposal, 786
Cowes, West, water supply, 721
Cranes, derrick, improvements in, 818
Cranleigh sewage purification, 194
Cremation society's transactions, 529
Crewkerne, sewage disposal at, 326
Cross: Chichester, 499; King's, foundations of, 5; section, reducing to triangle, 438
Crushing strength of building stones, 628, 725
Crystal palace electrical exhibition, 115
Cubical space and floor area, 329
Cull, R., and Son, in re, 326
Cupboard, sacristy, 271
Curious; fireproof construction, 520; question, a, 621
Curtains, proscenium, 88
Customs, trade: as to Broseley tiles, 155; cabinet makers', 118
Cutting underwood, best time for, 195

DAMAGES for: defective house drainage, 720; flooding, 719; overloading a party wall, 391
Damp wall, paint for, 752
Dangerous structures, 263; handbook on, 793
Dangers, public, 625
Dark, competing in the, 559
Darlington technical college, 621
Darwen technical school competition, 303 388, 389
Davis, Jackson, the late, 327
Deaf and dumb institute, Glasgow, 633
Deal floors on concrete, 192
Death of contractor, executor's position, 261
Decay of buildings, 689
Decoration and lighting of rooms, 361
Decorative furniture, 731
Defective house drainage, damages for, 720
Defence of back-to-back houses, a doctor's, 119
Denby water supply, 392
Department, science and art, report, 157
Deposits, money, by tenderers, 157, 886
Derrick cranes, improvement in, 818
Design: and equipment of technical schools, 123; architectural application of metals to, 757; errors in, 723; gallery, 821; school, progress of, 235
Designing club, BUILDING NEWS, 150, 192, 296, 395, 453, 560, 621, 751, 791
Designs: art galleries, Glasgow, 561; "B.N." club, 150, 296, 324, 395, 453, 487, 560, 791; cathedral (Victoria, Brit. Columbia) 690; free library (Poplar) 857; municipal buildings (Oxford) 855; Royal Academy (town house) 271, 303; Soane, 121
Details, iron roof, 236, 760
Developments in theatre planning, recent, 427, 432
Deviations from authorised plans, 455
Diaries, Hayward and Eckstein's, 82
Dicksee, ex parte, 850
Difficulties, practical, in architecture, 229
Disappearance of an Exeter architect, 489
Disaster at Hampstead-station, 590
Disputes, paving, 454
District surveyor's: fees, 358, 455; slip, 118
Dobson, A., Wandsworth, the late, 862
Docks: Ardrossan, 525; Preston, 652
Doctor's defence of back-to-back houses, 119
Domestic: chimneys, stability of, 85; electric lighting, 300; plumbing, 590; work seen on past A.A. excursions, 257, 265
Doors, box, corrugated iron, 754
Double-action closet, Presto, 762
Douglas, Isle of Man, improvements at, 521
Doyle, H. E., C. B., the late, 327
Drainage: house (defective, damages for) 720 (handbook on) 717 (hydro-mems) 862; liabilities, 521; of habitable buildings, 794; regulations, 357
Drains: easement of, 226; landlord's liability for, 226; owners and, 193
Drawing-room cabinet, club designs, 791
Drawings: Academy, 50; constructional, 236, 464, 662, 718, 752, 760; R.I.B.A., 121; water colour, Prescott-Hewett, 4
Drill halls: Bolton, 763; Exeter, 730
Drips, 552
Driving, pile, 390
Drying terracotta, 332
Dry oak and ash, 453
Dublin main drainage, 392
Dudley gallery exhibitions, 264, 823
Dunblane cathedral, 815
Durham cathedral galilee, 163
Duroline and the building act, 227, 358, 423, 785
Dust: bin, architect and his, 719; shoots in Peabody dwellings, 489
Dwellings, artisans': concrete for, 226, 260; dust-shoots in, 489; Halifax, 389, 422, 467; patented plans, 731, 784, 816, 849

EARL v. London Share Co., 326
Early Christian architecture in Ireland, 362
Earth closets, 154
Easton v. Nar Valley drainage commissioners, 884
Edinburgh: architectural assocn., 289, 356, 518, 529, 550, 599, 716, 763, 814; county buildings, 519; notes from, 79, 563; observatory, 551, 828
Edwards: Miss Amelia B., the late, 584; J. C., high sheriff of Denbighshire, 623
Effects of frost on building, 365
Efflorescence on brickwork, 586, 621
Egypt exploration fund, 433
Eidlitz, Marc, the late, 696
Electrical: exhibition, Crystal Palace, 115; instrument making for amateurs, 862
Electricity: internal illumination by, 693; up to date, 153
Electric light: cables, 190; fittings, 51
Electric lighting: domestic, 300; guide to, 794: in the City, 233
Electric railway schemes for London, 717, 753
Elements of architectural form, 302
Eleusis, excavations in plain of, 886
Ellis v. Walsall school board, 303, 389, 391
Employer and sub-contractor, relative liability of, 227
Employers' liability: 51, 156, 194, 326, 358, 391, 423, 455, 622, 785; as to buildings in progress, 719
Endsleigh-street, a mammoth in, 555
Engineering, mechanical, first principles of, 794
Engineers: congress at Chicago, 327; mechanical, pocket-book, 80; municipal (association) 359, 653, 818, 882 (handbook) 80
English Renaissance, houses of the, 860
Enjoyment, quiet, convenant for, 719
Equipment and design of technical schools, 123
Erfurt cathedral, 369
Errors in design, 723
Essex: new holidays in, 793; watering place, a rising, 579
Estates, new, public carriageways on, 193
Evans, Charles, sad death of, 261
Evidence, building trades, at the labour commission, 354, 420, 432
Examinations: Government, 784; surveyors' institution, 696
Examples of mosaic pavings, 225
Excavated sites of building, 760
Excavation in plain of Eleusis, 886
Exchange, Royal, Manchester, 465
Excursions, Archi. Assocn.: coming, 716; past, domestic work seen on, 257
Execution of Nonconformist church building, 160
Exeter architectural socy., 883
Exhibitions: armourers' and brasiers', 661, 697; Burlington gallery, 595; building, Agricultural Hall, 420; Camera Club, 57; Chicago, 327, 392; Dudley, 264, 823; electrical, Crystal Palace, 115; Glasgow Fine Arts Institute, 227; home arts, Albert Hall, 754, 849; horticultural, Earl's Court, 623; Institute Water Colour Painters, 393; Kimberley (S. African) 717; Manchester (Academy) 294 (Art Gallery) 489; Netherlandish Old Masters, 761; New English Art Club, 595; Royal Academy, 691 (architecture at) 592, 627 (old masters at) 56 (pictures at) 591, 626, 658 (sculpture at) 691; Royal Cambrian Academy, 191, 818; Royal Scottish Academy, 234 (architecture at) 291; Royal Societies (British Artists) 460 (Water Colour Painters) 593; St. Jude's, Commercial-st., 522; Southport, 359, 885; Varley's Japanese paintings, 595; works in wood, Carpenters' Hall, 657
Exits, theatre, width of, 754
Explanation of the London water question, 267, 333
Exploration fund, Egypt, 483
Extinguishing of fires, the, 325
Extras: arbitrations as to, 293, 358 and penalties, 81, 261

FACTIONS, architectural, 657
Factory, Leeds, cloth, 663
Faculties for stained glass, 521
False imprisonment, alleged, Hill v. Rowe, 785
Fan vaulting in brick, 192
Farms, sewage, of Berlin, 524
Fascia, 118
Fashion, architectural changes in, 229
Fashions in architecture and kindred arts, 223
Fastener, "Guardian" sash, 367
Fatal fire at Battersea, 156, 194, 227, 293, 326
Fees: architects' (claim for) 521 (for partially executed work) 554; district surveyor's, 358, 455; surveyors', for negotiating purchase, 358
Fellowship of the Institute, 793, 823
Ferguson, Thos., Glasgow, presentation to, 119
Filtering water, 824
Final certificates, 261
Fire: fatal, at Battersea, 156, 194, 227, 293, 326; fittings, plumbers and, 794; insurance, 850; repairs destroyed by, 293; statutory provisions against, 152
Firegrates, open, action of heat from, 87, 122, 165, 225, 232
Fireplaces, some modern, 335
Fireproof: construction, curious, 520; plaster, 390; roof construction, 457
Fires: in lofty buildings, 190; the extinguishing of, 325
First principles of mechanical engineering, 794
Fitings: electric light, 51; fire, plumbers and, 794
Flank architecture, 591
Fletcher v. Lewis (district surveyors' fee) 455
Flooding, damages for, 719
Floor area and cubical space, 329
Floors, deal, on concrete, 192
Fonts: Bramford, 565; Fewston and Kippax, 335; Ufford, 51
Footbridge, iron, details of, 464
Foreign sewage precipitation works, 818
Forfeiture, relief from, 687
Form, architectural, elements of, 302
Fortnum gift to Oxford, 818
Foundations of buildings, 525
Fountains: Autun, 339; Ayr, 851
Free libraries: Bermondsey, 168; Birmingham, 191; Poplar, 857; Willesden, 751
Freeman, Prof. E. A., the late, 424
Freezing in water pipes, to prevent, 119
French system of road repairs, 457, 590
Frescoes, Manchester Town Hall, 522, 687

357843

INDEX OF CONTENTS.

Frontage lines, 455, 719
Frost, its effects on building, 365
Furniture : Colonial, of New England, 684 ; decorative, 731 ; Wingfield collection, 369
Fussy officialism, 817

GALILEE, Durham cathedral, 168
Galleries : Dudley, 264, 823 ; Glasgow Art, 519, 531, 550, 561, 565, 599, 633, 829 ; Grafton, 683 ; proposed British Art, 565 ; South London Fine Art, 754
Gallery design, 821
Gantry, timber, 662, 718, 752
Gas : and gasworks, 793 ; institute, 818, 852
Gasworks : gas and, 793 ; Heywood, 322
Gate, a water, 863
Gentry, Mark, in re, 155, 391, 753
Gift to Liverpool and Manchester, 885
Give and take boundaries, 394
Gizeh museum, 852
Glasgow : archi. assocn., 550, 814 ; Art Galleries competition, 519, 531, 550, 561, 565, 599, 633, 829 ; Fine Arts Institute exhibition, 227 ; improvement trust, 195 ; master wrights' assocn., 587 ; new building regulations, 195
Glass : stained, artists and architects, 297 ; windows, in architecture, 393
Gloucester cathedral : restoration, 111 ; Osric's remains in, 590
Gold medallist, R.I.B.A. Royal, 230
Goodman, Sidney (Goodman, Hughes and Co.) 4
Goods shed, Glasgow, 816
Good, too, a house for the estate, 553
Gough v. Liverpool Corporation, 193, 293
Government examinations, 784
Grammar schools : Horsham, 58 ; Lincoln, 369
Graphic method, 654
Great Britain, building stones of, 628, 725
Greek : archæology, handbook of, 334 ; history, new chapters in, 794
Greenock, compensation for subsidence at, 322
Greenwood, Jas., in re, 194
Grooved wood paving, 457
Growth of transplanted oaks, 885
Guardian sash fastener, 367
Guide to electric lighting, 794
Guildhall, Westminster, 829
Guy, R. G., in re, 156

HABITABLE : buildings, drainage of, 794 ; rooms, minimum height of, 302, 357
Halifax artisans' dwellings competition, 389, 422, 467
Halls : Cape Town (mission) 433 ; Chicago, Exhibition (central) 327 ; Lostock, 303 ; parish, club designs, 296 ; Pleasington, 303 ; Ribur, 369 ; Stafford (County Council) 829, 863
Hammon, H. J., the late, 730
Hampshire, history of, 861
Hampstead railway station disaster, 590
Hampton Wick, sewering contract dispute, 785
Handbook : municipal engineer's, 80 ; of Greek archæology, 334 ; on house drainage, 717
Harbour, Peterhead, 322, 530
Hardwick, Philip C., the late, 227
Hartlepool, West, 128
Hart v. Monarch Land Co. (party wall) 391
Hauxley water supply, 293
Hayes, sewerage of, 81
Hayward and Eckstein's diaries, 82
Health, public, London, act, 235, 529, 793
Healthy, is my house, 861
Heat, action of, from firegrates, stoves and pipes, 87, 122, 165, 225, 232
Heating contractor, wiles of the, 330, 422
Height of buildings : convenants as to, 294, 326 ; in Chicago, 556 ; in Manchester, 119 ; in Oxford, 721 ; regulation of, 159
Height, minimum, of habitable rooms, 302, 357
Hemsworth waterworks, 422, 489
Hendon sewage, disposal, 753
Henley in Arden water supply, 655
Henry, H. C. J., in re, 785
Heraldry, 752
Heyford, history of, 861
Hill v. Rowe, alleged false imprisonment, 785
Historic : art, Celtic, in the Apennines, 858 ; house architecture, 334
History : Greek, new chapters in, 794 ; of Hampshire, 861 ; of Heywood, 861 ; of the coal-devouring cooking range, 529
Hoardings, advertising, and the building act, 194
Holborn to Strand, proposed new street, 294
Holidays in Essex, new, 793
Home arts exhibition, Albert Hall, 754, 849
Homes : convalescent (Swanley) 168 ; working boys' (Spital-square) 552 ; working girls' (Manchester) 654
Hookway, R. T., in re, 293
Hornsey sewerage works, 686
Hospitals : and asylums, 224 ; Birmingham, 355, 388 ; Brompton (consumption, chapel) 519 ; Christ's, 551, 848 ; Galashiels (cottage) 829 ; High Wycombe (cottage) 80 ; Leicester (fever) 452, 467 ; Manchester (consumption) 551 ; South London (ophthalmic) 497 ; Sydney (scandal) 721 ; West Fife (fever) 829 ; Wolverhampton (fever) 5
Hotel, Brighton (Metropole) 50
Hotel de ville, Oudenarde, 399
Hot : tests for cement, 862 ; water pipes, action of heat from, 87, 122, 165, 225, 232
House : architecture, historic, 334 ; drainage (defective, damages for) 720 (handbook on) 717 (hydro-mems) 862 ; healthy, is my, 861 ; owners, rating of, 293, 753 ; painters, Phœnix socy. of, 424
Houses : artists', 150 ; back-to-back (Bradford) 289 (doctor's defence of) 119 (Shipley) 194 ; Crooksbury, Farnham, 58 ; Eastbourne, 128 ; Farnham Royal, 58 ; Ferguslie-park, Paisley, 731 ; Forest-row, East Grinstead, 203 ; Ightham-park, 499 ; Leicester, 599 ; Norwich, 795 ; of the English Renaissance, 860 ; Osborne, I.W., 80 ; Raleigh, Brixton, 852 ; Ralston, Bromley, 90 ; Reading, 303 ; Stone's Hill, Limpsfield, 531 ; Sunningdale, 128 ; Todenham, 795 ; town, 271, 303 ; Tullie, Carlisle, 783 ; unhealthy, conditions constituting, 564 ; Walreddon manor, 419 ; Wern, Tremadoc, 697 ; wooden, 260
How they built in Shakespeare's time, 363
Hudson, William, the late, 368
Hughes : John, in re, 555 ; patented artisans' dwellings, 731
Hull Corporation v. Turner, 554, 785
Hydraulic and sanitary appliances, 88
Hydraulics, 654, 752, 784, 817, 884
Hydro-mems, house drainage, 862
Hydropathic establishment and its baths, 153

IDEA, the princess', 684
Iles, H. W., in re, 554
Illumination, internal by electricity, 693
Image of Buddha, Kama-Kura, 58
Imperial Institute, 852, 882
Impregnating logs with zinc chloride, 885
Imprisoned, a builder, 851
Improved : air pump ventilator, Boyle's latest, 267 ; derrick cranes, 818 ; T-square, 783 ; villa and cottage homes co., in re, 156
Improvement : of artisans' dwellings, patented plans for, 731, 784, 816 ; schools, do. do., 260
Improvements : competitions with the latest, 83 ; London street, 717
Inartistic buildings, 523
Indian archæological survey, 827
Indiarubber joints for cast iron pipes, 392
Infirmaries : Leeds, 432 ; school, are they public buildings ? 423 ; Southport, 467, 763
Insanitary property, compensation for, 193, 293
Inspectors, sanitary, assocn., 82
Institutes : British architects, 126, 161, 230, 364, 492, 686, 693, 713, 757 (fellowship) 793, 823 (new competition suggestions) 855 (prize drawings) 121 (suggestions for building act amendment) 3 (transactions) 190 ; gas, 818, 852 ; Glasgow (deaf and dumb) 633 ; Imperial, 852, 882 ; Manchester (girls) 496 ; Water Colour Painters, 393 ; Whitworth, 128
Institutions : builders' clerks benevolent, 302, 464, 598 ; surveyors, 126, 222, 419, 463, 586, 632, 761 (examinations) 696
Instructions to architects, 558
Instrument, surveying, tacheometer as a, 167
Insufficient thickness, walls of, 521
Insurance, fire, 850
Interiors, 295
Internal illumination by electricity, 693
In the dark, competing, 559
Inverkeithing and Aberdour water supply arbitration, 590
Ireland, Early Christian architecture in, 362
Iron : castings in, 757 ; corrugated, box doors, 754 ; footbridge details, 464 ; roof (details) 236, 760 (fireproof) 457 ; skeletons for lofty buildings, 457
Ironwork : at South Kensington, 818 ; Renaissance wrought, 492
Is : a model windmill a sky sign ? 423 ; a school infirmary a public building ? 423 ; a screen wall a structure, 155 ; duroline a "combustible material" ? 227 ; my house healthy ? 861
Isle of Wight, architectural antiquities of, 369
Italy, Southern, architecture of, 202

JACKSON, T. G., A.R.A. : 195 ; and the Archi. Assocn., 632 ; on architects' education, 52
Jerry building in Sheffield, 817
Johnson : Robert J., Newcastle, the late, 584 ; v. Hornsey local bd. (arbitration) 719
Joinery, carpentry and, 269, 562
Joints, indiarubber, for cast iron pipes, 392

KEEPING surface water out of cesspools, 192
Kemp, G. Meikle, biography of, 861
Kimberley, South African exhibition, 717
King-post roof, 390
King's : Cross, foundations of, 5 ; Norton, sewer extension, 236, 753
Kirk and Randall arbitration, 850
Knowledge, art, and its counterfeit, 456

LABOUR commission, building trades' evidence at the, 354, 420, 432
Labourers' cottages, club design for, 453
Laing, R., Dundee, in re, 51
Lancashire and East Coast Railway, 816
Land : its attractions and riches, 394 ; surveying and levelling, 596, 692, 792, 883
Landlords, tenants and drains, 193
Lands, building, bill, 623
Latest : improved air-pump ventilator, Boyle's, 267 ; improvements, competitions with the, 83
Lavatories, underground, Westminster, 421
Law, building, an oppressive, 197
Laws, physical, operative in building, 84
Laxton's builder's price-book, 528
Leaseholds, compensation for, 155
Leases to limited liability companies, 596
Lea Valley drainage, 521
Leeds architectural society, 128, 356, 487, 632
Legal : 53, 81, 118, 155, 193, 226, 261, 293, 325, 357, 390, 423, 454, 488, 521, 553, 589, 622, 655, 687, 719, 752, 785, 817, 850, 884 ; ambiguity as to new streets, 118
Legislation, London building, 230
Leicester : fever hospital competition, 452, 467 ; master builders' association, 191
Lessees' liabilities, 357
Levelling, land surveying and, 596, 692, 792, 883
Levenshulme, main roads arbitration, 228
Lewis, D. W. and Son, in re, 155
Lewis's gift to Liverpool and Manchester, 885
Leyland collection sale, 786
Liabilities, drainage, 521
Liability : contractors, 391 ; employers', 51, 156, 194, 326, 358, 391, 423, 455, 622, 719, 785 ; for rebuilding party wall, 554 ; lessees', 357 ; owners', for abatement of nuisance, 719 ; relative, of employer and sub-contractor, 227
Libel action : against timber merchant, 753 ; by builders' furnisher, 455 ; by clerk of works, 193 ; by surveyor, 622, 687
Libraries : Bishopsgate charity, 763 ; Lincoln cathedral, 456, 465, 751
Libraries, free : Bermondsey, 168 ; Birmingham, 191 ; Poplar, 857 ; Willesden, 751
Licenses to assign, 884
Light : and air question, 391 ; right of, 226 (grant of) 193
Lighting : and decoration of rooms, 361 ; electric (domestic) 300 (guide to) 794 (in the City) 233
Lightning, protection from, 231
Lights, ancient, in new buildings, 390
Lille, Palais des Beaux Arts, 367
Limited liability companies, 596
Lincoln cathedral library, 456, 465, 751
Lines : building, 155, 553, 622 ; frontage, 455, 719
Linlithgow palace, 730
Literature and architecture, 493
Liverpool : and Manchester, gift to, 885 ; architectural society, 117, 883
Loads, uniform, for bridges, 728
Lockwood's builders' pricebook, 235
Lodges : Newent Court, 369 ; Sussex, four, 467
Lofty buildings : fires in, 190 ; iron skeletons for, 457
Long span telephone wire, 786
London : and Middlesex notebook, 225 ; board school repairs, 228 ; bridge, 825 ; building law consolidation bill, 860 ; building legislation, 230 ; County Council (and theatres) 522, 523 (contract conditions of) 756 (members) 359, 392 (suggested building act amendment) 3, 55 ; public health act, 235, 529, 793 ; school board, 424 (quantity surveyors and) 456, 487, 786 (v. Holloway) 326 (v. Johnson) 192 ; street improvements, 717 ; subway railways in, 717, 753 ; water question, explanation of, 267, 333
Low Countries, art of the, 563
Luff, Geo., in re, 227
Lunatic asylums : and hospitals, 224 ; Blackburn, 356, 718 ; Cork, 117 ; Coxlodge, Newcastle, 292, 550 ; Hawkhead, 620 ; Sunderland, 303, 356 ; Wandsworth, 353

MACADAMISED roads, maintenance of, 190
Machines, brickmaking, 154, 192
Madras high courts, 587
Magdalen tower, Oxford, 90
Main roads arbitrations : Bournemouth, 81 ; Levenshulme, 228
Maintenance of macadamised roads, 190
Mammoth, a, in Endsleigh-street, 555
Manchester : Academy exhibition, 294 ; and Liverpool, gift to, 885 ; height of buildings in, 119 ; Royal Exchange, 465 ; ship canal, 359 ; society of architects, 128 ; Thirlmere water supply, 720 ; town hall, frescoes, 522 ; Whitworth Institute, 128
Mansion House, subways at the, 786
Man, the unpractical, 459
Manual : of brass repoussé, 225 ; of physics, 235 ; universal office, 529
Manufacture of terracotta, 269
Manufacturers' portraits, 4
Manufactures and specialities, sanitary, 465
Map, parish, 422
Market, Farringdon-road, 849
Master builders' associations : Bath, 359 ; Coventry, 763 ; Leicester, 191 ; National, 237 ; Nottingham, 191
Masters, old, at the Academy, 56
Materials, strength of, 154
Mechanical : engineering, first principles of, 794 ; engineer's pocket-book, 80
Medallist, R.I.B.A. royal gold, 230
Memorial : Drummond of Hawthornden, 303 ; of dead, society for preserving, 852 ; Oxford (Shelley) 751
Merchants, builders, commissions from, 358
Mersey aqueduct tunnel, 456
Metals : application of, to architectural design, 757 ; work in precious, 757
Methods of removing snow from streets, 83, 263
Metropolitan : building acts amendment (is it desirable) 299 (L.C.C. suggestions for) 3, 55 (R.I.B.A. do.) 8 (Socy. Architects do.) 860 ; drawing classes, 452 ; public gardens assocn., 528 ; smoke, 885 ; subways, 456, 786 ; water supply, 424, 720, 753, 853, 885
Milan cathedral, pillars of, 492
Milbank prison as a Tate gallery site, 424
Mills : Heywood, 882 ; Newhey, Rochdale, 783 ; out-of-date, utilisation of, 618
Minimum height of habitable rooms, 302, 357
Minor picture galleries, three, 595
Mission hall, Cape Town, 433
Mistakes in quantities, 81
Model windmill, is it a sky sign ? 423
Modern world, architects and the, 425
Money deposits by tenderers, 157, 886
Montgomerie v. McKnight, 51
Monumental brasses, 659
Monuments : Mayer, Newcastle-under-Lyme, 555 ; Wellington in St. Paul's, 555, 655
Morgan, T., F.S.A., the late, 157
Mortar, what is ? 555
Mortgages, builders and, 455
Mosaic : at Chislehurst, 335, 390 ; pavings, rubbings of, 225 ; Salviati's Venetian, 167
Motive power for warming and ventilating buildings, 198
Müller, Carl L., the late, 157
Municipal buildings : 1 (Bath) 59, 128 (Bury, Lancs.) 663 (Croydon) 763 (Oxford) 6, 855 ; engineers (association) 359, 653, 818, 882 (handbook) 80
Mural paintings, Manchester Town Hall, 522, 687
Museums : Barnard Castle (Bowes) 885 ; Exeter (Albert) 551 ; Gizeh, 852 ; South Kensington (ironwork at) 818
Mysticism, myth and architecture, 529
Myth, mysticism, and architecture, 529

NATIONAL assocn., master builders, 237
Nature : in ornament, 528 ; relation of art to, 392
Needham, W., in re, 589
Negotiating purchase, surveyor's fee for, 358
Netherlandish old masters, 761
New : building, what is a ? 553 ; chapters in Greek history, 794 ; competition suggestions, R.I.B.A., 855 ; double-action closet, 762 ; England, colonial furniture, of, 684 ; English art club, 595 ; estates, public carriageways on, 193 ; holidays in Essex, 793 ; public health (London) act, 235, 529, 793 ; sanitary regulations, 190 ; South Wales, public works in, 721, 786 ; stabling in the City, 332 ; streets (and buildings) 459 (and compensation to frontagers) 118 (legal ambiguity as to) 118, 719 (width of) 358 ; street, what is a, 118, 719 ; York (aquarium) 886 (cathedral) 620
Newcastle-on-Tyne asylum competition, 292, 550
Newport, Mon, park competition, 633
Nonconformist church building, 86, 160
No need for architects' registration, eh ? 520
Northern architectural assocn., 191, 716
Northumberland, plumbers' registration in, 53
Norwich board schools competition, 883
Notes : A.A. travelling student's, 761 ; from Edinburgh, 79, 563 ; on building (construction) 80 (prices) 151, 258 ; on new public health (London) act, 793 ; on terracotta, 116, 268, 332, 488, 497, 630 ; parliamentary, 294, 326, 358, 392, 424, 456, 488, 498, 555, 720, 753, 786 ; Sydney Archi. Assocn., 80 ; wayside, 6, 78, 111, 149, 189, 222, 256, 290, 322, 354, 368, 418, 452, 486, 518, 530, 584, 618, 652, 682, 716, 750, 782, 814, 848, 862
Notices to treat, 785
Nottingham : master builders' assocn., 191 ; municipal works in, 653
Nuisance, abatement of, owners' liability for, 719

OAK and ash, dry, 453
Oaks, transplanted, growth of, 885
Obituary : Bailly, A. N., 82 ; Barradaile, I., Leicester, 368 ; Beaty, T., Carlisle, 327 ; Bidlake, G., 632 ; Blanchard, M. H., 294 ; Bradshaw, B., 662 ; Bruce, Dr. J. C., 522 ; Brunlees, Sir Jas., 815 ; Burnell, E. H., 555 ; Chaffers, W., 584 ; Chesser, J., 227 ; Colville, J., Edinburgh, 157 ; Conquest, A. W., 294 ; Coode, Sir J., 359 ; Davis, Jackson, 327 ; Dobson, A., 862 ; Doyle, H. E., C. B., 327 ; Edwards, Miss A. B., 584 ; Eidlitz, Marc, 696 ; Evans, C., 261 ; Freeman, E. A., 424 ; Hammon, H. J., 730 ; Hardwick, P. C., 227 ; Hudson, Wm., 368 ; Johnson, R. J., Newcastle-on-Tyne, 584 ; Morgan, Thos., 157 ; Muller, C. L., Paris, 157 ; Phipson, Wilson W., 528 ; Rhind, Jno., A.R.S.A., 522 ; Ridley, W., 696 ; Roper, G. Freeth, 696 ; Smith, Wm., Aberdeen, 53 ; Stocks, L., R.A., 632 ; Strahan, J., 862 ; Stratton, D., 862 ; Thomson, Prof. Jas., 696 ; Van Osdel, J. M., Chicago, 119 ; Watson, J. Dawson, 82 ; Zerffi, Dr. G. G., 227

Observatory, Edinburgh, 551, 828
Office manual, universal, 529
Offices: Admiralty (new) 326; builders', and the building act, 720; Keighley (school bd.) 6; Leeds (assurance) 80; Stafford (county council) 829, 863
Officialism, fussy, 817
Old masters at the Academy, 56
Open firegrates, action of heat from, 87
Operative bricklayers' socy., 623
Ophthalmic hospital, South London, 497
Oppressive building law, an, 197
Ordnance survey reform, 623, 720
Origin of building stones, 162, 200
Ornament, nature in, 528
Orphan school, Haverstock Hill, 117
Osdel, J. M. Van, the late, 119
Osric's remains in Gloucester cathedral, 590
Other methods of removing snow from streets, 263
Out-of-date mills, utilisation of, 618
Overcrowding, concentration and, 828
Overloading party wall, damages for, 391
Overton and Avis, in re, 719, 851
Owners: and drains, 193; and party walls, 589; house, rating of, 293, 753; liability for abatement of nuisance, 719
Oxford: cathedral, discovery of three apses, 190; Fortnum gift to, 818; height of buildings in, 721; municipal buildings, 6, 855

PAINE Bros., in re, 391
Painters: house, Phoenix society, 424; water colour (institute) 393 (society) 593
Paints: to prevent condensation, 718; Wolston's Torbay, 82
Pair of labourers' cottages, club designs, 453
Paisley Cross area competitiom, 588, 753
Palace, Linlithgow, 730
Palais des Beaux Arts, Lille, 367
Pallisers' specifications, 862
Parish: hall, club designs, 296; map, 422
Parks: Brockwell, 786; Newport, Mon, 633
Parliamentary: notes, 294, 326, 358, 392, 424, 456, 488, 498, 555, 720, 753, 786; schemes, 327
Partially executed works, architects' fees for, 554
Party: and party-fence walls, 57; wall, (damages for overloading) 391 (liability for rebuilding) 554; walls, owners and, 589
Past A.A. excursions, domestic work seen on, 257, 265
Pastels in the architect's studio, 527
Patented plans for improvement of: artisans' dwellings, 731, 784, 816, 849; schools, 223, 260
Patent, protection for, 155
Pavement for city traffic, best, 195
Pavements, street, brick for, 793
Paving: disputes, 454; grooved wood, 457
Pavings, mosaic, examples of, 225
Peabody dwellings, dust shoots in, 489
Pearl Assurance Co., 327
Pediments, 269
Penalties: enforcement of, 226; extras and, 81
Pen and ink, architectural rendering in, 663
Pershore abbey, 203
Perspective, shadows in, 126, 394, 724
Peterhead harbour, 322, 530
Phipson, Wilson W., memoir of, 528
Phœnix Society of House Painters, 424
Phonopore, the, 597
Photographic survey, Warwickshire, 392
Physical laws operative in building, 84
Physics, manual of, 235
Pictures at the Royal Academy, 591, 626, 658
Piers: Beaumaris, 355, 452; Brighton (new) 359; Dover, 530; theatres on, 194
Pile driving, 390
Pillars of Milan cathedral, 492
Pipes: cast iron, with indiarubber joints, 392; hot water, action of heat from, 87, 122, 165, 225, 232; water, to prevent freezing in, 119
Places of amusement, safety of, 523
Planning: artistic, 557; the art of, 161; theatre, recent developments in, 427, 432
Plans: authorised, deviations from, 455; for reconstructed premises, 489; patented (artisans' dwellings) 731, 784, 816, 846 (schools) 223, 260
Plaster, fireproof, 390
Plinths and skirtings, 562
Plumbers: and fire fittings, 794; registration, 53, 157, 228, 359, 556, 523, 886 (bill) 294, 392, 424, 456, 520, 555, 782 (in Australia) 784
Plumbing: domestic, 590; ordinances in Chicago, 457
Plymouth, a revised tender, 786
Pocket book: architect's and builders, 235; Clarke's, 153; mechanical engineer's, 80
Pocklington, sewerage of, 686
Police stations: Holyhead, 751; Shrewsbury, 128, 355
Pollution of rivers case, 293
Poplar free library competition, 857
Portland: cement trade of the world, 463; stone, 325
Portsea Island building society, 521
Portsmouth R.C. cathedral, 519
Portraits, art workers and manufacturers, 4
Position of the building trades, 789
Post office: Leeds, 335; small, club designs for, 560
Pot-boilers, architectural, 789
Potter, G., Leicester, in re, 293
Practical difficulties in architecture, 229
Practice of an architect and surveyor, 430
Precious metals, work in, 757
Precipitation works, foreign sewage, 848
Prescott-Hewett water colour drawings, 4
Presentation to Thos. Ferguson, Glasgow, 119
Preservation of timber, 261
Presto double-action closet, 762
Preston water supply, 720
Pricebooks, builders': Laxton's, 528; Lockwood's, 235; Spon's, 529
Prices: 88, 166, 266, 323, 396, 462, 526, 585, 695, 729, 826; building, notes on, 151, 258; schedule of, 193
Priene, temple of Minerva, 118
Princess' idea, the, 684
Principles, first, of mechanical engineering, 794
Problem, an architectural, 557
Professional and artistic architecture, 2
Progress of school design, 235
Property, insanitary, compensation for, 193, 293
Proscenium curtains, 88
Protection from lightning, 231
Provisions, statutory, against fire, 152
Prudential Assurance Co., 392
Public: architects and the, 625; baths and washhouses, 619; building, is a school infirmary a, 423; buildings, Colwyn Bay, 565; carriageways on new estates, 193; dangers, 625; gardens, association, 528; hall, Bangor, 751; health (acts amendment bill) 424 (London, act) 235, 529, 793; libraries (Bermondsey) 168 (Birmingham) 191 (Poplar) 875 (Willesden) 751
Pulpits, church: Vitre, 50; Westergemeinde, Altona, 467
Pupilage system, the, 689

QUANTITIES, mistakes in, 81
Quantity surveyors and the London School Board, 456, 487, 786
Quarry, an unsuitable, 589
Question: a curious, 621; London water, 267, 333; of light and air, 391
Quiet enjoyment, covenant for, 719

RAILWAY: bills in parliament, 327; improvements in Coventry, 782; rates on timber, 261; stations (Bingley) 620 (Hampstead) 590
Railways: Lancashire and East Coast, 816; London subway, 717, 753; S.E.R. extension to Chatham, 322
Raleigh house, Brixton, 852
Ramped coping, circular, 390
Ramsey, contractors' claims at, 687
Rates: railway, on timber, 261; water, law as to, 785
Rath-haus, Breslau, 499
Rating of house owners, 293, 753
Reading rooms competition, Aspatria, 697
Rearrangement and conversion of buildings, 755
Rebuilding party wall, liability for, 554
Recent developments in theatre planning, 427, 432
Reconstructed buildings, plans for, 489
Redress by arbitration, 793
Reducing cross-section to triangle, 488
Rees, H., in re, 455
Reflections at the Academy, 691
Reform of the Ordnance Survey, 623
Reforms, building, 425
Refuse, town, collection of, 861
Registration: architects' (bill) 358, 424, 786, 8.8 (in Columbia district) 489 (no need for, eh?) 520 (wanted) 324, 356; plumbers', 53, 157, 228, 359, 556, 623, 886 (bill) 294, 392, 424, 456, 520, 555, 782 (in Australia) 784
Regulation of building heights and spaces, 159
Regulations: drainage, 357; new sanitary, 190
Reigate-hill, arbitration as to, 423
Relation of: architect to workmen, 758; art to nature, 392
Relative liability of employer and subcontractor, 227
Relief from forfeiture, 687
Remains of ancient Rome, 586
Removal of snow from town street, 83, 263
Renaissance: architecture of the, 52; English, houses of the, 850; wrought ironwork, 492
Rendering, architectural, in pen and ink, 663
Repairs: destroyed by fire, 293; road, French system of, 457, 590; to London board schools, 228
Reports: Amal. Socy. Carpenters and Joiners, 525; Metro. Public Gardens Assocn., 528; Science and Art Department, 157
Répoussé, brass, 225
Retaining walls and dams, textbook, 862
Reviews: Academy Architecture, 885; Account of the Discovery of Three Apses at Oxford Cathedral, 190; Architect's and Builder's Pocket-Book, 235; Architectural Antiquities of Isle of Wight, 369; Architectural Rendering in Pen and Ink, 663; Architecture, Mystics and Myth, 529; Architecture of the Renaissance in England, 860; Art and Craft of Cabinet Making, 190; Bernard Mannfeld's Original Radirungen, 369; Biography of Geo. Meikle Kemp, 861; Brick for Street Pavements, 793; BUILDING NEWS Club designs, 150, 296, 395, 453, 530, 791; Capital at Bay, 529; Carpenters' and Builders' Complete Companion, 190; Catalogues (Birmingham Permanent Collections) 590 (Young and Marten's) 623; Clarke's Pocket Book, 153; Collection, Treatment and Disposal of Town Rubbish, 861; Colonial Furniture of New England, 684; Dangerous Structures, 793; Denkmaeler Deutscher Renaissance, 50; Drainage of Habitable Buildings, 794; Electrical Instrument Making for Amateurs, 862; Electricity up to Date, 153; Electric Light Cables, 190; Essex Review, 225, 793; Examples of Mosaic Pavings from Rubbings, 225; First Principles of Mechanical Engineering, 794; Gas and Gas Works, 793; Guide to Electric Lighting, 794; Hampshire Antiquary, 794; Handbook of Greek Archæology, 334; Hayward and Eckstein's Diaries, 82; History of Hampshire, 861; History of Lower and Upper Heyford, 861; History of the Coal Devouring Cooking Range, 529; Hospitals and Asylums of the World, 224; House Drainage, Handbook for Architects and Building Inspectors, 717; House Drainage Hydro-Mems, 862; Hydropathic Establishmect and its Baths, 153; Is my House Healthy, 861; Land, its Attractions and Riches, 794; L'Habitation Humaine, 334; Laxton's Builder's Price Book, 528; Lockwood's Builder's Price Book, 235; London and Middlesex Notebook, 225; London Street Improvements, 717; Maintenance of Macadamised Roads, 190; Manual of Instruction in Brass Répoussé, 225; Manual of Physics, 235; Mechanical Engineers' Pocket Book, 80; Municipal and Sanitary Engineer's Handbook, 80; Nature in Ornament, 528; New Chapters in Greek History, 794; New Holidays in Essex, 793; Notes on Building Construction, 80; Notes on the New Public Health (London) Act, 793; Oxbarrow and Money-Kent's Universal Office Manual, 529; Phipson, Wilson W., Memoir of, 528; Progress of School Design, 235; Public Health (London) Act, 235, 529; Redress by Arbitration, 793; Remains of Ancient Rome, 586; Report of the Metropolitan Public Gardens Association, 528; R.I.B.A. Transactions, 190; Sanitation in the West, 862; Secondary Batteries, 528; Six Months in the Apennines, 858; Specifications by Pallisers, 862; Spon's Architects' Price Book, 529; Sydney A.A. Notes, 80; Textbook on Retaining Walls and Dams, 862; Transactions of Cremation Society, 529; Transactions of Edinburgh Architectural Association, 529; Transactions of Royal Scottish Society of Arts, 235; Westminster Abbey, 51
Rhind, Jno., A.R.S.A., the late, 522
Richmond, Surrey, extension of borough, 422
Riddell, J., in re, 589
Ridley, William, the late, 696
Right of light: 226; grant of, 193
Rights, trade, advertisers', 154
Ringsend technical school competition, 751
Rising Essex watering place, a, 597
Rivers pollution case, important, 293
Road repairs: 488; French system of, 457, 590
Roads, macadamised, maintenance of, 190
Robinson and Co., in re, ex parte Dicksee, 850
Rochester cathedral restoration, 730
Rome: Ancient, remains of, 586; proposed new cathedral for, 489
Roper, Geo. Freeth, the late, 696
Roof: details, iron, 236, 760; king-post, 390
Roofing, duroline, and the building acts, 227, 423
Rooms: habitable, minimum height of, 102, 357; lighting and decorations of, 361
Rosslyn chapel, 271
Royal: Academy, 682 (architecture at) 592, 627 (cartoons) 50, 168 (lectures) 82 (old masters at) 56 (pictures at) 591, 626, 658 (reflections at) 691 (sculpture at) 691; asylum, Cheadle, 399; Cambrian Academy, 191, 818; gold medallist, 230; Institute, British Architects, 126, 161, 230, 364, 492, 686, 693, 718, 757 (fellowship) 793, 823 (new competition suggestions) 855 (prize drawings) 121 (suggestions for building act amendment) 3 (transactions) 190; Institute Water Colour Painters, 393; Scottish Academy 489 (exhibition) 234 (do. architecture at) 291; Scottish Society of Arts, 235; Societies (British Artists) 460 (Water Colour Painters) 593
Royton sewage works, 522
Rubbings of mosaic pavings, 225
Ruinous premises at Torquay, 194
Ryder, Jas., in re, 554

SACRISTY cupboard, 271
Safety of places of amusement, 528
Saint: Aidan (West Hartlepool) 499; Andrew (Ayr) 633; Augustine (Brinksway) 697 (preaching Christianity) 50, 168; Bartholomew (W. Smithfield) 80; Clement (Ipswich) 5; Cuthbert (Kensington) 795; George (Westcombe park) 191; Gervais (Paris) 424; Joseph (Dublin, R.C.) 685; Margaret (Alderton) 620; Martin (Werrington) 717; Mary, (Edinburgh, cathedral) 487 (North Eling) 620; Michael (Newcastle-on-Tyne) 663 (Smethwick) 763; Pancras Vestry, appointment of surveyor, 157; Paul's cathedral (clock) 153 (Wellington mont.) 555, 655 (works in progress at) 662; Paul (Walsall) 487; Peter (Northampton) 795; Silin (Llansilin) 335
Sale, bills of, acts, 655
Salford gasworks extensions, 590
Salisbury cathedral, 293
Salviati's Venetian mosaic, 167
Sanders, W. A., Exeter, disappearance of, 489
Sanitary: and hydraulic appliances, 88; inspectors (action for false imprisonment) 488 (assocn.) 82; manufactures and specialities, 465; regulations, 190
Saracenic architecture, 163
Sash fastener, the "Guardian," 367
Scamped corporation contracts, alleged, 554, 735
Scavenging and refuse disposal, 687
Schedule of prices, 193
School: design, progress of, 235; infirmary, is it a public building? 423
Schools: Bolton (girls' high) [illegible]; Bruton (Sexey's trade) 565; Burley, Leeds (Sunday) 783; Colwyn Bay (Rydal Mount) 203; Haverstock Hill (orphan working) 117; Lichfield (Midland truants) 260; Manchester (Moss-side Unitn.) 237; patented plans for improvement of, 223, 260; Ringsend, Dublin (technical) 751; Royal Academy, Architectural, 682; technical, 292 (Aston) 355 (Batley) 90 (Darwen) 303, 338, 889 (design and equipment of) 123 (Heywood) 560
Science and Art Department, report, 157
Scientific study of timber, 683
Scottish: Academy, Royal, 489; exhibition, 234 (architecture at) 297; observatory, Edinburgh, 551, 828; Society of Arts, 235
Screens: Innsbruck church, 50; Tewkesbury abbey, 58
Screen walls and the building act, 155
Sculpture at the Academy, 691
Scum on terracotta, 389, 421, 454, 654, 686, 718, 752
Secondary batteries, 528
Sections, terracotta, 116, 268
Semi-Classic styles, the two, 755
Settlement, Bermondsey, 58
Sewage: farms of Berlin, 524; precipitation works, foreign, 848
Sewerage difficulties at York, 358
Shadows in perspective, 126, 394, 724
Shakespeare's time, how they built in, 262
Sheffield: jerry building in, 817; society, architects and surveyors, 117, 237, 388, 716
Shelley memorial, 751
Shoots, dust, in Peabody dwellings, 489
Signs, sky: are model windmills, 423; doomed, 227
Sites of buildings, excavated, 760
Skeletons, iron, for lofty buildings, 437
Sketching tour in Brittany, 424
Skirtings and plinths, 562
Sky signs: are model windmills, 423; doomed, 227
Sleaford, artesian well at, 422
Slip, a district surveyor's, 118
Small post office, club designs for, 560
Smith: and Boycock v. Aldridge, 455; Wm., of Aberdeen, the late, 53
Smoke, London, 885
Snow, removal of, from town streets, 83, 263
Soane drawings, 121
Societies: Architects, 112, 132, 149, 191, 226, 231, 299, 362, 430, 527, 659, 860 (proposed students' branch) 588 (Cardiff do.) 388 (Manchester do.) 128; Architects and Surveyors (Sheffield) 117, 237, 388, 716; Architectural (Exeter) 883 (Leeds and Yorkshire) 128, 356, 487, 632 (Liverpool) 117, 883; Arts, 157; British Artists, Royal, 460; Carpenters and Joiners, Amalg., 525; Operative Bricklayers', 623; Preserving Memorials of Dead, 852; Water Colour Painters', 593
Soirée, the Architectural Assocn., 684
Soft steel for bridges, 590
Some recent developments in theatre planning, 427, 432
Something about chimneys, 301, 330, 366, 397, 422, 461, 494
South: Kensington Museum, ironwork at, 818; London Fine Art Gallery, 754
Southern Italy, architecture of, 202
Southport art exhibition, 359, 335
Space, cubical, and floor area, 329
Spaces, building, regulation of, 159
Specialities and manufactures, sanitary, 465
Special trades, 723
Specifications, Pallisers', 862
Spoiling of Streatham Hill, 392, 754
Spon's architect's price book, 529
Stability of domestic chimneys, 85
Stables, ventilation of, 192, 357
Stabling, new, Queen-street, E.C., 332, 458
Staff as a building material, 886
Stafford County Council offices, 329, 863
Stained glass: 81, 194, 622, 686; artists and architects, 297; faculties for, 521
Stairways, wide, in theatres, 686
Stations: police (Shrewsbury) 128, 355; railway (Bingley) 620 (Hampstead, disaster) 590
Statues, Chichester cathedral, 156
Statutory provisions against fire, 152
Steel, soft, for bridges, 590
Stiff, James, 4
Stirling Abbey Craig, protection of, 522, 655
Stocks, Lumb, R.A., the late, 632
Stone: Portland, 325; Staffs., sewerage of, 467
Stones, building: of Great Britain, 628, 725; their structure and origin, 162, 200

Storer, D., in re, 455, 589
Stoves, action of heat from, 87, 122, 165, 225, 232
Strahan, J., Belfast, the late, 862
Strand to Holborn, new thoroughfare, 294
Stratton, D, Newington, N.B., the late, 862
Streatham Hill spoiled, 392, 754
Street: cables, 127; improvements, London, 717; "New" (and compensation to frontages) 118 (legal ambiguity as to) 118 (what is a) 118, 719 (width of) 358; pavements, brick for, 793
Streets: new, building laws as to, 154; removal of snow from, 83, 263
Strength: crushing, of building stones, 628, 725; of materials, 154
Structure: is a screen wall a, 155; of building stones, 162, 200
Structures, dangerous: 263; handbook on, 793
Strutt v. Kellaway, 488
Students': branch of the S A., 588; notes, A.A. travelling, 761
Studio, pastels in the architect's, 527
Studios, artists', 150
Study, scientific, of timber, 683
Styles, the two Semi-Classic, 755
Sub-contract, conditions of, 193
Sub-contractor and employer, relative liability of, 227
Subsidence: at Greenock, compensation for, 322; of a chapel, compensation for, 194
Subways, Metropolitan: 456; at the Mansion House, 786; railway, 717, 753
Suggestions, new competition, R.I.B.A., 855
Summerhouse, club designs, 791
Sunderland asylum competition, 303, 356
"Superintendence," what is, 295, 356
Surface water, keeping out of cesspool, 192
Survey: archæological of India, 827; Ordnance, 720 (reform of) 623; Warwickshire photographic, 392
Surveying: 588; instrument, the tacheometer as a, 167; land, and levelling, 596, 692, 792, 883
Surveyor: alleged libel on, 622, 687; assault on, 194
Surveyors: fee for negotiating purchase, 358; institution, 126, 222, 419, 463, 588, 633, 761 (examinations) 696
Swansea water bill, 489
Sweating the profession at Brighton, 5
Swimming baths, 260
Sydney A.A. notes, 80
System, the pupilage, 689

TABERNACLE, Kensington pro-cathedral, 632

Tachcometer as a surveying instrument, 167
Take, give and, 394
Tall chimneys, 491
Tansa Lake water supply for Bombay, 555
Tate gallery, Milbank prison as a site for, 424
Teaching, architectural, 197
Technical arts at the Albert Hall, 754, 849
Technical schools: 292; Aston, 355; Batley, 90; Darlington, 621; Darwen, 303, 388, 389; design and equipment of, 123; Heywood, 550; Ringsend, Dublin, 751
Temples: Argos, 367; Priene (Minerva) 118
Tenants, landlords and drains, 193
Tenderers, money deposits by, 157, 886
Tenders: about, 53, 81; contracts and, 361; from architects, 522; withdrawn and revised, 786
Terracotta: notes on, 116, 268, 332, 488, 497, 630; scum on, 389, 421, 454, 654, 686, 718, 752
Tests: hot, for cement, 862; cement concrete, 525
Textbook for retaining walls and dams, 862
Theatre: planning, recent developments in, 427, 432; regulations, London County Council, 522, 523
Theatres: Cape Town, 303; Edinburgh (Princess's, as Salv. Army citadel) 551; Ipswich (old, as do.) 882; New York (Harrigan's) 433; on piers, 194; wide stairways in, 686; width of exits to, 754
Thirlmere water supply for Manchester, 720
Thirteenth and fourteenth century architecture, 786, 815
Thomson, Prof. Jas., the late, 696
Three minor picture galleries, 595
Tiles, Broseley, trade customs as to, 155
Timber: gantry, 662, 718, 752; merchant, libel action against, 753; preservation of, 261; railway rates on, 261; scientific study of, 683
Too good a house for the estate, 553
Tour, sketching, in Brittany, 424
Tower: bridge, 857; clock, Ledbury, 697
Towers and bells, church, 850
Town: halls (Breslau) 499 (Canterbury) 421 (Croydon) 763 (Manchester, frescoes) 522, 687 (Oudenarde) 399 (Portsmouth) 762; house, Academy designs, 271, 303; refuse, collection of, 861
Trade: customs as to Broseley tiles, 155; rights, advertisers', 154
Trades, special, 723
Transactions: Cremation Socy., 529; Edinburgh Architectural Assocn., 529; R.I.B.A., 190
Traps, 155, 192
Travelling student's notes, A.A., 761
Triangle, reducing cross-section to, 488
Trist, J., in re, 193
T-square, improved, 783
Tunnels: Blackwall, 885; Mersey aqueduct, 456
Turners' Co. prizes, 786
Two Semi-Classic styles, the, 755

UNDERGROUND urinals, Westminster, 421
Underpinning by boreholes, 730
Underwood, best time to cut, 195
Unfounded charge against an architect, 455
Unhealthy houses, conditions constituting, 564
Uniform loads for bridges, 728
Universal office manual, 529
Unpractical man, the, 459
Unstable chimneys, 329
Unsuitable quarry, an, 589
Urinals, underground, Westminster, 421
Utilisation of out-of-date mills, 618

VALUE v. cost in building, 790
Van Osdel, J. M., the late, 119
Varley's Japanese paintings, 595
Vaulting, fan, in brick, 192
Venetian mosaic, Salviati's, 167
Ventilating and warming buildings, 198
Ventilation: 155; of Nonconformist churches, 86; of stable, 192, 357
Ventilator, Boyle's latest air-pump, 267
Viaduct, railway, Roslin, 783
Victoria, Brit. Columbia, cathedral competition, 519, 690, 731, 763, 795, 863
Villa, Improved Co., in re, 156

WALREDDON manor, 419
Wallpapers: are they unsanitary? 555; Cotterell, Bros., 157; Osborne, 271
Wall, party: damages for overloading, 391; liability for rebuilding, 554
Walls: of insufficient thickness, 521; party (and party fences) 57 (owners and) 589; retaining, textbook for, 862; screen, and the building act, 155; waterproofing, 718
Walsall board school competition, litigation as to, 303, 389, 391
Wandsworth lunatic asylum, 376
Wanted, architects' registration, 324, 356
Ward, C. W., in re, 51
Warming and ventilating buildings, 198
Warwickshire photographic survey, 392
Washhouses, public baths and, 619
Water: colour painters (institute) 393 (society) 593; colours (Prescot-Hewett) 4; filtering, 824; gate, 863; question, explanation of the London, 267, 333; rates, law as to, 785; surface, to keep out of cesspool, 192
Watering-place, a rising Essex, 597
Waterproofing walls, 718
Watson, J. Dawson, the late, 82
Wayside notes, 6, 78, 111, 149, 189, 222, 256, 290, 322, 354, 368, 418, 452, 486, 518, 530, 584, 618, 652, 682, 716, 750, 782, 814, 848, 862
Wellington monument, St. Paul's, 555, 655
West: Cowes water supply, 721; Ham, improvements at, 81; Hartlepool, 128
Westminster: abbey, 51, 498; improvements, 456
What is: a "new" (building?) 553 (street?) 118, 719; architecture? 117; mortar? 555; superintendence? 295, 356
Whitby and Ellesmere Port, sewerage of, 590
Whitchurch, Glam., drainage, 721
White, William, 4
Whitworth Institute, Manchester, 128
Wide stairways in theatres, 686
Width of: exits to theatres, 754; "new" streets, 358
Wight, Isle of, architectural antiquities of, 369
Wiles of the heating contractor, 330, 422
Windmill, model, is it a sky sign? 423
Window glass in architecture, 393
Wires, long span telephone, 786
Wolston's Torbay paints, 82
Wooden houses, 260
Wood: paving, grooved, 457; works of, exhibition of, 657
Work, domestic, seen on past A.A. excursions, 257, 265
Workman, relation of architect to, 758
Works in: progress at St. Paul's, 662; wood, exhibition of, 657
Worley v. Kensington Vestry (frontage lines) 719
Wrong side, building on the, 294
Wrought ironwork of the Renaissance, 492

YORK: Architectural Assocn., 128, 550; sewerage difficulties at, 358, 456
Young v. Armstrong and Co., 850

ZERFFI, Dr. G. G., the late, 227
Zinc chloride, impregnating logs with, 885

INDEX TO ILLUSTRATIONS.

*** The Lithographic Illustrations will be found immediately following the Pages indicated.

ABBEYS: Pershore (lantern tower) 204; Tewkesbury (choir screen) 60; Westminster, three interiors of, 8
Academy, royal: architecture (large town house, designs by H. Baker, A. Macintosh, and C. S. Spooner) 272; cartoon (St. Augustine preaching Christianity, P. R. Montford) 8, 170; sculpture (Jacob and the Angel, P. R. Montford) 238 (Shelley monument) 698 (wall fountain) 698
Action of heat from firegrates and hot water pipes, 87, 88, 122, 123, 165
Adams, M. J., portrait of, 8
Adams, S. H., portrait of, 8
Additions to: Todenham, Glos., 796; Wern, Tremadoc, 698
Adoration of Christ (mosaic at Chislehurst) 336
Air pump ventilator, Boyle's latest, 267
Alphabet, Renaissance, by J. West, 92
Altar piece by Crivelli, in the National gallery, 634
Altona, pulpit in Westergemeinde church, 468
Amsterdam, street in, 336
Ancoats, Manchester, girls' institute, 496, 497
Angel, Jacob and the, 238
Angels in chancel cornice, Nicholston, 532
Animals on outer wall, Cardiff Castle, 8, 60
Annunciation, the, Holy Cross Church, Berlin, 272
Approach of the fleet to Venice, 594
Arch, elliptical, 292
Architectural: assocn. excursions, domestic work seen in, 238; rendering in pen-and-ink, 664
Architectural, historic house, 336
Armourers' and Braziers' exhibition, sketches at, 698
Art galleries: British, proposed (S. R. J. Smith's design) 566; Glasgow, 532, 549, 566, 698 (designs, T. M. Deane) 600 (Honeyman and Keppie) 796, 830 (Stark and Rowntree) 600, 732 (Treadwell and Martin) 600
Artisans' dwellings: patented improvements in plans, by D. J. Williams, 816
Artist, small house for, club designs, 130
Asylum, royal, Cheadle, 400
Autun, 16th century fountain, 417
Azai-le-Rideau, chateau of, 336

BACK-TO-BACK houses, Bradford, 289
Bank fireplaces at Manchester, 353
Banks: Bradford (London and Midland) 764; Southport (Parr's) 698; Wimbledon Hill (L. and S. W.) 370
Bath: municipal buildings (selected, J. M. Brydon) 60 (2nd, Burgess and Oliver) 130; stones, cross stress curves in, 630
Baths: Coventry (2nd design, Giles, Gough, and Trollope) 336; Turkish, 113
Batley board schools: higher grade, 92; technical, 109
Belfry, timber, Foot's Cray church, 597
Berkhamsted, co-operative stores, 598
Berlin, Holy Cross church, mural paintings in, 272
Bermondsey: public library, 170; settlement, 60
Birmingham, Victoria law courts, 8
Bishopstoke, Italian cabinets at, 600
Blackford-hill, Edinburgh, royal observatory, 830
Blackman-Smead ventilating and warming system, 198, 199
Board Schools: Batley (higher grade) 92 (technical) 109; Clerkenwell (High Myddelton) 365, 370; Lavender-hill, 500
Bobio, town and bridge of, 859; S Columban's shrine, 859
Bolton: *Evening News* office, 304; high school for girls, 400
Bond-street: Grafton galleries, 634; New, premises in, 498, 500
Boyle's latest air pump ventilator, 267
Bradford: back-to-back houses, 289; London and Midland bank, 764
Bramford church, font in, 566
Braziers co. exhibition, sketches at, 698
Breslau rath-haus, 500
Bridal procession at Damascus, 594
Bridges: Bobio, 859; iron foot, details, 464, 468, 500
Brighton, Hotel Metropole, garden of, 8
Brinksway, Stockport, St. Augustine's ch., 698
British: Columbia, cathedral designs ("Ars") 764, 864; ("Duomo") 764 ("Hope") 796, 864 ("New and Old") 732; gallery (S. R. J. Smith's design) 566; manufacturers' portraits, 8
Brixworth church, 796
Bromley, Kent, Ralston house, 92
Bruges, la Porte d'Ostende, 595
Bruton, Sexey's trade school, 566
Buddha, statue of, Kama-Kura, 60
Building: heights and spaces, regulation of, 159; stones, stress-strain curves, 628, 629, 630

INDEX TO ILLUSTRATIONS.

BUILDING NEWS designing club: cabinet, rosewood, 796; chair, 400; chiffonier, 400; labourers' cottages, 434; parish hall, 304, 451; small house for artist, 130; small post office, 566; summer house, 864
Bury: Lancs., municipal buildings (selected design, A. N. Bromley) 664; St. Edmunds, old inn, 238
Business premises: Berkhamsted (co-operative) 598; Bolton, 304; Bradford (bank) 764; Cheapside, E.C., 170; Colwyn Bay, 583; Ipswich, 532; Leeds (co-operative) 434 (factory) 664; New Bond-st., 498, 600; Plymouth (co-operative) 204; Southport (bank) 698; Wimbledon-hill (bank) 370

CABINETS: Dutch, 370; Indian, 881; Italian, at Bishopstoke, 600; Moorish, 749; oak, 370; rose-wood (club design) 796
Caen, hotel d'Ecoville, 336
Candelabra, three light, 689
Candlestick, 698
Canopies, font: Tewston, 336; Kippax, 336; Ufford, 8
Cape Town: mission hall, 434; theatre, 304
Cardiff castle, animals on outer wall, 8, 60
Carpenter's shop at Nazareth, by W. D. Lance, 204
Carpentry and joinery, 269, 270, 562, 563
Cartoons, academy (St. Augustine preaching, P. R. Montford) 8, 170
Carved: angels, Nicholaston ch., 532; animals, Cardiff Castle, 8, 60
Carvings of the Passion, Stalshund ch., 130
Castle, Cardiff, animals on outer wall, 8, 60
Cathedrals: Chichester, 500; Durham (Galilee chapel) 170; Erfurt, 370; Kensington (R.C. pro-, tabernacle) 634; Pavia (tomb of St. Augustine of Hippo), 850; Victoria, Brit. Columbia, designs ("Ars") 764, 864 ("Duomo") 764 ("Hope") 796, 864 ("New and Old") 732
Chairs: 400; Chinese, 370; heraldic, 370; tapestry, 881
Chancel cornice, angels in, Nicholaston, 532
Chapels: Durham cathedral (Galilee) 170; Nuneaton (Wesln.) 400; Rosslyn, N.B., 272; St. Leonard's-on-Sea (Wesln.) 130
Chateau, Azai-le-Rideau, 336
Cheadle, royal asylum, additions to, 400
Cheapside, E.C., business premises, 170
Chests of drawers, colonial New England, 664
Cheyney Court, chimneypiece at, 238
Chichester cathedral and cross, 500
Chiffonier, club designs, 400
Chimneypiece at Cheyney Court, 238
Chimneys, 301, 302, 331, 332, 366, 367, 398, 461, 495
Chinese chair, 370
Chislehurst, mosaic at church of the Annunciation, 336
Choir screens: Innsbruck, 8; Tewkesbury Abbey, 60
Christ's Passion, Stalshund church, 130
Churches: Berlin (Holy Cross, mural paintings) 272; Bramford (font) 566; Brinksway, Stockport (St. Augustine) 698; Brixworth, 796; Chislehurst (Annunciation, mosaic) 336; Drinkstone (screen) 187; Earls Barton, 796; Fewston (font and cover) 336; Foot's Cray (timber belfry) 597; four Northamptonshire, 796; Freshwater, I.W. (All SS.) 370; Gospel Oak (Good Shepherd) 830; Innsbruck (Franciscan, choir screen) 8; Kensington (St. Cuthbert, priests' stalls) 796; Kilpeck (south door) 170; Kippax (font and cover) 336; Lammari (statue of our Lord over font), 858; Llansilin (St. Silin) 336; Lucca (S. Frediano), 858; Newcastle-on-Tyne (St. Michael) 664; Newtown, Dorset (St. Saviour) 566; Nicholaston (angels in cornice) 532; Northampton (Holy Sepulchre) 796 (St. Peter) 796; Pershore (abbey, lantern tower) 204; Shonfeld (sacristy cupboard) 272; South Norwood (St. Alban) 468; Stalshund (carvings of the Passion) 130; Tewkesbury (abbey, screen) 60; Ufford (font and canopy) 8; Vitre (Notre Dame, external pulpit) 8; Westergemeinde, Altona (pulpit) 468; West Hartlepool (St. Aidan) 500; Woking (Christ) 732
City business premises, Cheapside, 170
Clarence, Duke of, glass wreath for, 167
Clerkenwell, Hugh Myddelton bd. schools, 365, 370
Clothing factory, Leeds, 664
Club, BUILDING NEWS designing: cabinet, 796; chair, 400; chiffonier, 400; labourers' cottages, 434; parish hall, 304, 451; small house for artist, 130; summer house, 864
Clubhouse, St. Austell, Libl., 92
Clyffe house, Mousehold, Norwich, 813
Colleges: Leeds (Yorkshire) 634, 651; Oxford (Magdalen) 92 (University, Shelley memorial) 698
Colonial furniture of New England, 664
Colwyn Bay: public offices and shops, 583; Rydal Mount school, 204
Competitions: art galleries (selected, Simpson and Milner-Allen) 532, 549, 566, 698 (T. M. Deane) 600, 634 (Honeyman and Keppie) 796, 830 (Stark and Rowntree) 600, 732 (Treadwell and Martin) 600; baths (Coventry, 2nd, Giles, Gough and Trollope) 336; "B.N." designing club, 130, 304, 400, 434, 451, 566, 796, 864; board schools (Batley, higher grade, selected. H. B. Buckley) 92 (do, technical, H. B. Buckley's design) 109; cathedral (Victoria, Brit. Columbia —"Ars") 764, 864 ("Duomo") 764 ("Hope") 796, 864 ("New and Old") 732; courthouse (Cork, 2nd, Deane and Son) 92; house, large town (Academy, H. Baker, A. Macintosh and C. S. Spooner) 272, 304; lych-gate (Manchester A.A., R. Oldham) 532; municipal buildings (Bath, selected, J. M. Brydon) 60 (do., 2nd, Burgess and Oliver) 130 (Bury, selected, A. N. Bromley) 664; public library (Newington, selected, E. I'Anson) 238
Compton Wynyate, 238
Constantine, Joseph, portrait of, 8
Constructional drawings: iron foot bridge, 464, 468; iron roof, 236, 238, 760, 764; timber gantry, 662, 664
Contemporary manufacturers, portraits of: Adams, M. J., 8; Adams, S. H., 8; Constantine, Jos., 8; Goodman, Sidney, 8; Stiff, J., 8; White, Wm., 8
Convalescent homes: proposed (R. W. Edis) 8; Swanley, 170
Co-operative premises: Berkhamsted, 593; Leeds, 434; Plymouth, 204
Cork: courthouse (2nd design, Deane and Son) 92; Y.M.C.A. building, 170
Cornice: angels in, Nicholaston, 532; stone, 817
Cottages: at Royal asylum, Cheadle, 400; Lunsford, Hastings, 847; pair of labourers, club designs, 434; Wimboldsley (allotment) 813
Council house, Shrewsbury, 336
Court cupboard, colonial New England, 664
Courthouse, Cork (2nd design, Deane and Son) 92
Courts law: Birmingham, 8; Croydon, 764
Coventry baths (Giles, Gough, and Trollope's design) 336
Covers, font: Fewston, 336; Kippax, 336; Ufford, 8
Cranbourne-street, Daly's theatre, 428
Crivelli's Madonna and Child, National gallery, 634
Crooksbury house, Farnham, 60
Cross: Chichester market, 500; Christ bearing the, 130, 272; section, reducing to triangle, 422, 488
Croydon municipal buildings, 764
Crypt chapel, St. Albans, South Norwood, 468
Cupboard: court, colonial New England, 664; sacristy, Shonfeld church, 272
Curves, stress-strain, building stones, 628 629, 630

DAIBUTSU, statue of, Kama Kura, 60
Daly's theatre, Cranbourne-st., plan, 428
Damascus, bridal procession at, 594
Decoration, Academy cartoon for (St. Augustine preaching Christianity, P. R. Montford) 8, 170
Decorative: alphabet, Renaissance style, 92; furniture, 370, 749; painting, St Mary's school, Wantage, 204
Designing club: cabinet, 796; chair, 400; chiffonier, 400; labourers' cottages, 434; parish hall, 304, 451; small house for artist, 130; small post office, 566; summer house house, 864
Designs: Academy cartoon (St. Augustine preaching, P. R. Montford) 8, 170; alphabet, Renaissance (J. West) 92; artisans' dwellings (patented, T. Hughes) 732; "B. N." club, 130, 304, 400, 434, 451, 566, 796, 864; British gallery (S. R. J. Smith) 566; convalescent home (R. W. Edis) 8; frieze (Ruth and Naomi, W. J. N. Westlake) 864; large town house (Academy, by H. Baker, A. Macintosh, and C. S. Spooner) 272, 304; lych-gate (Manchester A.A., R. Oldham) 532; schools (patented, T. Hughes), 223; wall paper (Osborne, H. W. Batley) 272; water gate (R. O. Allsop) 864
Desk: inlaid, 881; screen, 8
Details: art galleries (Glasgow, Honeymoon and Keppie's design) 830; cabinet 796; chimneys, 301, 302, 331, 332, 366, 367, 398, 461; drips, 532; fonts (Bramford) 566 (Fewston and Kippax) 336; footbridge, iron, 464, 468, 500; furniture, 749; gantry, timber, 662, 664; hall, new, Wickham Lodge, Egham, 864; heating, 87, 88, 122, 123, 165; hotel de ville (Oudenarde) 400; lychgate, 532; observatory (Edinburgh, royal) 830; pediments, 269, 270; post office (Leeds) 434; pulpit (Westergemeinde, Altona) 468; roof, iron, 236, 238, 760, 764; skirtings and plinths, 562, 563; slating, vertical, 152; summer house, 864; terracotta, 116, 269
Developments in theatre planning, 427, 428, 429, 434
Dining room, Farnham Royal, 60
Distance, innaccessible, measuring, 884
Dolomites, stress-strain curves, 629
Domestic work seen in A.A. excursions, 238
Door, south, Kilpeck church, 170
Drawers, chests of, colonial New England, 664
Drawings: constructional (iron foot bridge) 464, 468 (iron roof) 236, 238, 760, 764 (timber gantry) 662, 664; measured, settles (F. Mitchell) 147
Draw-out table, 749
Drill hall, Bolton, 764
Drinkstone church, screen, 187
Drips, 552
Ducal palace at Venice, 468
Durham cathedral, Galilee chapel, 170
Dwellings, artisans': T. Hughes' patented improvements, 732; D. J. Williams' anticipations of, 816

EARLS Barton church, 796
Eastbourne, Prof. Huxley's house, 130
Eastgate house, Rochester, 238
East Grinstead: house at Forest Row, 204; new wing, St. Agnes' school, 634
Ecoville, Caen, hotel de, 336
Edinburgh, royal observatory, Blackford-hill, 830
Egham new hall, Wickham Lodge, 864
Electric: lamp, 698; light fittings, 8
Elliptical arch, 292
Entrance to Ribur hall, 370
Erfurt cathedral, 370
Estate cottages, Lunsford, 847
Exchange, royal, Manchester, now and as altered, 466, 468
Excursions, A.A., domestic work seen in, 238
Exhibitions: Armourers' and Braziers' Co., 698; institute water-colour painters', 468; society water-colour painters, 594, 595
External pulpit, Vitre church, 8

FACTORY, clothing, Leeds, 664
Farm buildings in Normandy, 634
Farnham: Crooksbury house, 60; Royal, dining-room at, 60
Fastener, Guardian sash, 367
Ferguslie Park, Paisley, 732
Fewston church, font and cover, 336
Filtering tank, 824
Finger plate, 698
Firegrates, action of heat from, 87, 88, 122, 123, 165
Fireplaces in a Manchester bank, 353
Fittings, electric light, 8
Fleet, approach of to Venice, 594
Florentine cabinets at the Mount, Bishopstoke, 600
Font and canopies: Bramford, 566; Fewston, 336; Kippax, 336; Ufford, 8
Font, Lammari, statue over, 858
Footbridge, iron, details of, 464, 468, 500
Foot's Cray chuch, timber belfry, 597
Forest-row, East Grinstead, house at, 204
Fountain: at Autun, 417; wall (by W. R. Stephens) 698
Four Northamptonshire churches, 796
Free libraries: Bermondsey, 170; Croydon, 764; Newington, S.E., 238
Freshwater, I.W., All SS. ch., 370
Frieze, design for, Ruth and Naomi, by W. J. N. Westlake, 864
Furniture: colonial, of New England, 664; decorative, 749; inlaid from West End mansions, 881; of Hon. Lewis Wingfield, 370

GALILEE chapel, Durham cathedral, 170
Galleries, art: British (S. R. J. Smith's design) 566; Glasgow, 532, 549, 566, 698 (designs, T. M. Deane) 600, 634 (Honeyman and Keppie) 796, 830 (Stark and Rowntree) 600, 732 (Treadwell and Martin) 600; Grafton, Bond-st., 634
Gallery, National, altarpiece by Crivelli in, 634
Gantry, a timber, 662, 664
Garden: at Montacute, 468; Christ in the, 130; of the Hotel Metropole, Brighton, 8
Gate: Bruges, Ostend, 595; lych, R. Oldham's design, 532; water (R. O. Allsop's design) 864
Gates, wrought iron, at Stratford, 8
Girls' institute, Manchester, 496, 497
Give and take boundaries, 394
Glasgow art galleries, Kelvingrove park designs: selected, Simpson and Milner-Allen, 532, 549, 566, 698; T. M. Deane, 600, 634; Honeyman and Keppie, 796, 830; Stark and Rowntree; 600, 732 Treadwell and Martin, 600
Glass wreath for Duke of Clarence, 167
Godalming, house at Munstead corner, 336
Goodman, Sidney, portrait of, 8
Gospel Oak, church of the Good Shepherd, 830
Grafton galleries, Bond-street, 634
Grammar school, Lincoln, 387
Granites, stress-strain curves, 630
Grinstead, East: house at Forest-row, 204; new wing, St. Agnes' school, 634
Guardian sash fastener, 367
Guildhall, Westminster, 830

HALL lantern, 698
Halls: Bolton (drill) 764; Cape Town (mission) 434; Compton Wynyate, 238; Leeds (Yorkshire college) 634, 651; Lostock, Lancs., 304; parish (club designs) 304; Plaish, Salop, 238; Pleasington (old) 304; Ribur (entrance to) 370; Wickham Lodge, Egham, 864
Hargreaves' collection, cabinets in the, 600
Harrigan's theatre, New York, 434
Hartlepool, West, St. Aidan's church, 500
Hastings, cottages, Lunsford, near, 847
Heat, action of, from firegrates and hot water pipes, 87, 88, 122, 123, 165
Heights and spaces, regulation of building, 159
Heraldic chair, 370
High: Beeches, Sussex, lodge, 468; school for girls, Bolton, 400
Highcroft, Sussex, lodge at, 468
Higher grade bd. schools, Halifax, 92
Hill's mansion, Shrewsbury, 238
Historic house architecture, 336
Homes, convalescent: design by R. W. Edis, 8; Swanley, 170
Hospital, Weekley, 238
Hotel: Brighton (Metropole, garden of) 8; Caen (d'Ecoville) 336
Hotel-de-Ville, Oudenarde (details) 400
Hot water pipes, action of heat from, 87, 88, 122, 123, 165
House architecture, historic, 336
Houses: Amsterdam, 336; artisans' (Hughes' patented improvements in) 732; Azay-le-Rideau, 336; Bradford (back-to-back) 289; Caen (hotel d'Ecoville) 336; Compton Wynyate, 238; Crooksbury, Farnham, 60; Eastbourne, (Prof. Huxley's) 130; Eastgate, Rochester, 238; Farnham, Royal (dining-room) 60; Ferguslie Park, Paisley, 732; for artists, small (club designs) 130; Forest-row, East Grinstead, 204; High Beeches, Sussex (lodge) 468; Highcroft, Sussex, (lodge) 468; Ightham-park 500; Josselyn, 664; large town (Academy designs by H. Baker, A. Macintosh, and C. S. Spooner) 272, 304; Leicester, 617; Lostock (hall) 304; Munstead corner, Godalming, 336; Monkays Tonquin, 336; Montacute (garden) 468; Mousehold, Norwich, 813; Newent Court (lodge) 370; Normandy (farm) 664; Nuremberg, 468; Plaish (hall) 238; Pleasington (hall) 304; Prospect Hill-park, Reading, 304; Ralston, Bromley, Kent, 92; Ribur hall (entrance to) 370; Sedgwick Park (lodge) 468; Selehurst (lodge) 468; Shrewsbury (council) 336 (Hill's mansion) 238; Stones Hill, Limpsfield, 532; summer, 864; Sunningdale (Sir J. D. Hooker's) 130; Todenham (additions to) 796; Uplands, Sussex (lodge) 468; Vitre, 664; Walreddon (manor) Tavistock, 400; Wern, Tremadoc (additions to) 698; Wickham (lodge), Egham, 864; Wimsboldsley (cottages) 813; Withdeane Court (lodge) 468; Yamina, 336
Hugh Myddelton schools, Clerkenwell, 365, 370
Huxley, Prof., Eastbourne residence of, 130
Hydraulics, 817

IGHTHAM park, Sevenoaks, residence, 500
Improved T-square, 783
Improvement, patented plans for: artisans' dwellings (T. Hughes) 732; schools (T. Hughes) 223
Inaccessible distance, measuring, 884
Inlaid furniture from West End mansions, 881
Inn, Bury St. Edmunds, 238
Innsbruck, Franciscan church, choir screen, 8
Institute: Manchester (girls) 496, 497; water-colours painters, selections from exhibition, 468
Ipswich: font, Bramford church, 566; furnishing premises, 532
Iron: footbridge, details, 464, 468, 500; roof do., 236, 238, 760, 764
Italian cabinets at the Mount, Bishopstoke, 600

JACOB wrestling with the Angel, 238
Joinery and carpentry, 269, 270, 562, 563
Josselyn, a farmhouse at, 664
Judas, the kiss of, 130
Jury room, Birmingham law courts, 8

KAMA-KURA, Japan, statue of Daibutsu, 60
Kelvingrove park art galleries, Glasgow: 532, 549, 566, 698; designs (T. M. Deane) 600, 634 (Honeyman and Keppie) 796, 830 (Stark and Rowntree) 600, 732 (Treadwell and Martin) 600
Kensington: pro-cathedral, brass tabernacle, 634; St. Cuthbert's ch., priests' stalls, 796
Kilpeck church, south door, 170
Kiln, terracotta, 631
Kippax church, font and cover, 336
Kiss of Judas, the, 130
Kutscher hof, Nuremberg, 468

LABOURERS' cottages, pair of, club designs, 434
Lammari, statue over font at, 858
Lamp, electric, 698
Land surveying and levelling, 692, 693, 792 883
Lantern: hall, 698; tower, Pershore abbey, 204
Large town house, Academy designs by H. Baker, A. Macintosh, and C. S. Spooner, 272, 304
Lavender-hill board schools, 500
Law courts: Croydon, 764; Victoria, Birmingham, 8
Leeds: clothing factory, 664; co-operative premises, 434; oak settles from, 147; post office, 336, 434; Wesln. schools, New Wortley, 77; Yorkshire college, 634, 651
Leicester, two houses in Springfield-road, 617
Levelling and land surveying, 692, 693, 792, 883

INDEX TO ILLUSTRATIONS.

Libraries, public: Bermondsey, 170; Croydon, 764; Newington, 238
Limestones, stress-strain curves, 629
Limpsfield, Stones Hill house, 532
Lincoln grammar school, 387
Llansilin, St. Silin church, 336
Load, safe, 260
Lock and plate details, 749
Lodges: High Beeches, Highcroft, Sussex, 468; Newent Court, 370; Sedgwick Park, Selehurst, Uplands, and Withdeane Court, Sussex, 468; Wickham, Egham, 864
London board schools: Lavender-hill, 500; Myddelton, Clerkenwell, 365, 370
Long oak settles from Leeds, 147
Lostock hall, 304
Lucca, church of San Frediano, 858
Lunatic asylum, Cheadle (royal) 400
Lunsford, Hastings, estate cottages, 847
Lychgate, R. Oldham's design (Manchester A.A.) 532

MADONNA and Child, by Crivelli, 634
Magdalen tower, Oxford, 92
Magistrates' room, Birmingham law courts, 8
Manchester: archi. assocn. design for lychgate (R. Oldham) 532; bank fireplaces, 353; girls' institute, Ancoats, 496, 497; royal exchange, now and as enlarged, 466, 468
Manor house, Walreddon, Tavistock, 400
Mansions: Hill's, Shrewsbury, 238; West End, inlaid furniture from, 881
Manufacturers' portraits: Adams, M. J., 8; Adams, S. H., 8; Constantine, J., 8; Goodman, S., 8; Stiff, J., 8; White, W., 8
Market cross, Chichester, 500
Materials, strength of, 155
Measured drawings, settles, long oak (F. Mitchell) 147
Mermaid panel, 698
Metal art at Brasiers' Co., 698
Metropole hotel, Brighton, 8
Mission hall, Cape Town, 434
Mocking of Christ, 130
Modern English fireplaces, 353
Monkay, Tonquin, house at, 336
Montacute, the garden at, 468
Monument, Shelley, University College, Oxford, 698
Moorish cabinet, 15th century, 749
Mosaic, church of Annunciation, Chislehurst, 336
Mousehold, Norwich, Clyffe house, 813
Municipal buildings: Bath (selected design, J. M. Brydon) 60 (2nd, Burgess and Oliver) 130; Croydon, 764; Bury, Lancs. (selected design, A. N. Bromley) 664
Munstead corner, Godalming, house at, 336
Mural paintings, Holy Cross church, Berlin, 272
Museums: Kelvingrove-park, Glasgow, 532, 549, 566, 698 (designs, T. M. Deane) 600, 634 (Honeyman and Keppie) 796, 830 (Stark and Rowntree) 600, 732 (Treadwell and Martin) 600
Myddelton board schools, Clerkenwell, 365, 370

NAOMI and Ruth, design for frieze (W. J. N. Westlake) 864
National gallery, altar piece by Crivelli, 634
Nazareth, Carpenter's Shop at, 204
New: Bond-street, premises in, 498, 500; England, colonial furniture of, 664; Wortley, Leeds, Wesleyan schools, 77; York, Harringan's theatre, 434
Newcastle-on-Tyne, St. Michael's church, 664
Newent Court, lodge at, 370
Newington free library, 238
Newspaper offices, Bolton, 304
Newtown, Dorset, St. Saviour's ch., 566
Nicholaston church, angels in cornice, 532
Normandy, farm buildings in, 664
Northampton, churches of Holy Sepulchre, and St. Peter, 796
Northamptonshire churches, four, 796
Norwich, the Clyffe, Mousehold, 813
Norwood, South, St. Alban's church, 468
Notes on terracotta, 116, 269
Nuneaton Wesleyan chapel, 400
Nuremberg, the Kutscher hof, 468

OBSERVATORY, royal, Edinburgh, 830
Offices: Bolton (newspaper) 304; Colwyn Bay (public) 583; Leeds (post) 336, 434; small (post, club designs) 566
Old hall, Pleasington, 304
Osborne wall paper, H. W. Batley's design, 272
Oudenard, hotel de ville, details, 400
Oxford: Shelley monument, University college, 698; the Magdalen tower, 92

PAINTING: Berlin, Holy Cross church, 272; Wantage, St. Mary's school (carpenter's shop at Nazareth) 204
Pair of labourers' cottages, club designs, 434
Paisley, Ferguslie Park, 732
Palace, Ducal, Venice, 468
Panels, engraved, in copper, 698
Paper, wall, Osborne, 272
Parish halls, club designs, 304
Party wall, 292
Passion, carvings of the, Stalshund church, 130
Patented plans for improvement of: artisans' dwellings (T. Hughes) 732 (D. J. Williams' anticipation of) 816; schools (T. Hughes) 223
Pavia, tomb of St. Augustine of Hippo, 860
Pediment, new town hall, Portsmouth, 762
Pediments, 269 270
Pen-and-ink, architectural rendering in, 664
Pershore abbey, lantern tower, 204
Perspective, shadows in, 127, 395, 725
Philbeach-gardens, W., St. Cuthbert's ch., 796
Pictures: at institute water-colour painters, 468; at society water-colour painters, 594, 595; National gallery, 634
Pilate washing his hands, 130
Pillar, the 'Prentice, Rosslyn, 272
Plaish hall, Salop, 238
Planning, theatre, recent developments in, 427, 428, 429, 434
Plans: art galleries (Glasgow—selected, Simpson and Allen) 549 (T. M. Deane) 600 (Honeyman and Keppie) 796 (Stark and Rowntree) 600 (Treadwell and Martin) 600; baths (Coventry, Giles and Gough's design) 336; Turkish, 113; building, Y.M.C.A. (Cork) 170; business premises (Cheapside, E.C.) 170 (New Bond-st., W.C.) 498 (Plymouth) 204; cabinet, 796; cathedral designs (Victoria, B.C. "Ars") 764 ("Duomo") 764 ("Hope") 796, 864 ("New and Old") 732; chapels (Nuneaton, Wesln.) 400 (St. Leonard's-on-Sea, Wesln.) 130; chiffoniers (club) 400; churches (Brinksway, St. Augustine) 698 (Freshwater, I.W.) 370 (Gospel Oak, Good Shepherd) 830 (South Norwood, St. Alban) 460 (West Hartlepool, St. Aidan) 500 (Woking, Christ) 732; club (St. Austell, Lib.) 92; college (Leeds, Yorkshire) 651; convalescent home (design by R. Edis) 8 (Swanley) 170; cottages (Cheadle asylum) 400 (labourers' club) 434 (Lunsford, Hastings) 847 (Wimboldsley) 813; courthouse (Cork, 2nd, Deane and Son) 92; cupboard, sacristy (Shönfeld) 272; drill hall (Bolton) 764; dwellings, artisans' (Hughes' patented) 732 (Williams', D. J.) 816; fonts (Bramford) 566 (Fewston and Kippax) 336; footbridge, iron, 468, 500; gallery, proposed British (S. R. J. Smith's design) 566; gantry, timber, 664; halls, parish (club designs) 304; houses (Bradford, back-to-back) 269 (Compton Wynyate) 238 (Crooksbury, Farnham) 60 (Eastbourne, Prof. Huxley's) 130 (Ferguslie Park, Paisley) 732 (Forest-row, East Grinstead) 204 (Godalming) 336 (Ightham park) 500 (large town, Academy designs) 272 (Leicester) 617 (Norwich) 813 (Prospect-hill park, Reading) 304 (Ralston, Bromley) 92 (small, for artist, club) 130 (Stone's-hill, Limpsfield) 532 (Sunningdale) 130; Wickham Lodge, Egham, additions to, 864; institute (Manchester, girls') 497; kiln (terracotta) 631; lodges (four Sussex) 468 (Newent Court) 370; lunatic asylum (Cheadle, royal) 400; mission hall (Cape Town) 434; municipal buildings (Bath, selected, J. M. Brydon) 60 (do., 2nd, Burgess and Oliver) 130 (Bury, selected, A. N. Bromley) 664; observatory (Edinburgh, royal) 830; patented, for improvement of schools (T. Hughes) 223; post office (club designs) 566 (Leeds) 336 (public library, Bermondsey) 170; pulpit (Westergemeinde ch., Altona) 468; royal exchange (Manchester) 466; schools (Batley, higher grade) 92 (Bolton, girls' high) 400 (Bruton, Sexey) 566 (Clerkenwell, Myddelton bd.) 370 (Colwyn Bay) 204 (Lavender-hill board) 500 (Lincoln, grammar) 387 (New Wortley, Wesln.) 77; screen (Drinkstone ch.) 187; summer house, 864; theatres (Cape Town) 304 (Cranbourne-street, W.C., Daly's) 428 (New York, Harrigan's) 434 (St. Martin's-lane, Trafalgar) 427; tower (Pershore abbey) 204; ventilating and warming system (Blackman-Smead) 198, 199
Plate, finger, 698
Pleasington old hall, 304
Plinths and skirting 562, 563
Plymouth, co-operative premises, 204
Porte d'Ostende, Bruges, 595
Portraits, manufacturers': Adams, M. J., 8; Adams, S. H., 8; Constantine, J., 8; Goodman, S., 8; Stiff, J., 8; White, W., 8
Portsmouth town hall, pediment, 762
Post office: Leeds, 336, 434; small, club designs, 566
Premises: Berkhamsted (co-operative) 598; Bolton, 304; Bradford (bank) 764; Cheapside, E.C., 170; Colwyn Bay, 503; Ipswich (furnishing) 582; Leeds (co-operative) 434 (factory) 664; New Bond-st., 498, 500; Plymouth (co-operative) 204; Southport (bank) 698; Wimbledon-hill (bank) 370
'Prentice pillar, Rosslyn chapel, 272
Priests' stalls, St. Cuthbert's, Kensington, 796
Pro-cathedral, Kensington, brass tabernacle to, 634
Procession, bridal, in Damascus, 594
Proposed: British gallery (S. R. J. Smith) 566; convalescent home (R. W. Edis) 8
Prospect Hill-park, Reading, house in, 304
Public: free libraries (Bermondsey) 170 (Croydon) 764 (Newington) 238; offices and stores, Colwyn Bay, 583
Pulpits: Vitre (Notre Dame, external) 8; Westergemeinde, Altona, 468

RALSTON house, Bromley, Kent, 92
Rath-haus, Breslau, 500
Reading, house in Prospect Hill park, 304
Recent developments in theatre planning, 427, 428, 429, 434
Reducing cross-section to triangle, 422, 488
Regulation of building heights and spaces, 159
Renaissance alphabet, by J. West, 92
Residence, Ightham-park, 500
Ribur hall, entrance to, 270
Riding school, Bolton, 764
Rochester, Eastgate house, 238
Roof, iron, details, 236, 238, 760, 764
Rosewood cabinet, club designs, 796
Rosslyn chapel, N.B., 272
Royal Academy: designs (large town house, by H. Baker, A. Macintosh, and C. S. Spooner) 272, 304 (St. Augustine preaching Christianity, P. R. Montford) 8, 170; sculpture (Jacob and the Angel) 238 (Shelley monument) 698 (wall fountain) 698
Royal: asylum, Cheadle, 400; exchange, Manchester, 466, 468; observatory, Edinburgh, 830
Rudesheim, the tower of, 595
Ruth and Naomi, design for prize (W. J. N. Westlake) 864
Rydal Mount school, Colwyn Bay, 204

SACRISTY cupboard, Shönfeld church 272
Safe load, 260
Saint: Agnes (East Grinstead, school) 634; Aidan (West Hartlepool) 500; Alban (South Norwood) 468; Augustine (Brinksway) 698 (preaching Christianity, Academy cartoon, P. R. Montford) 8, 170 (tomb, Pavia) 860; Austell, liberal club, 92; Columban (shrine of) 859; Cuthbert (Philbeach-gardens) 796; Frediano (Lucca), 858; Leonard's-on-Sea, Wesln. chapel, 130; Marie-aux-Anglais, 664; Martin's-lane, Trafalgar theatre, 427; Mary (school, Wantage, painting in) 204; Michael (Newcastle-on-Tyne) 664; Peter (Northampton) 796; Saviour (Newtown, Dorset) 566; Sepulchre (Northampton) 796; Silin (Llansilin) 336
Sandstones, stress-strain curves, 628, 629
Sash fastener, Guardian, 367
Schools: Batley (higher grade) 92 (technical) 109; Bolton (high, girls') 400 (riding) 764; Bruton (Sexey's trade) 566; Clerkenwell (Hugh Myddelton, bd.) 365, 370; Colwyn Bay (Rydal Mount) 204; East Grinstead, 634; Lavender-hill (bd.) 500; Lincoln (grammar) 387; New Wortley (Wesln.) 77; patented plans for improvement of (T. Hughes) 223; Wantage (St. Mary, painting in) 204
Sconce, copper, 698
Scottish observatory, Edinburgh, 830
Scourging of Christ, 130
Screens: chancel (Drinkstone) 187; choir (Innsbruck, Franciscan church) 8 (Tewkesbury abbey) 60; desk, wrought iron, 8
Sculpture, academy: Jacob and the Angel, 238; Shelley monument, 698; wall fountain, 698
Seats, theatre, 429
Sections: art galleries (British, proposed) 566 (Glasgow) 582 (do. T. M. Deane's design) 634; artisans' dwellings (T. Hughes' patented) 732; board schools (Clerkenwell, Myddelton) 365; cornice, stone, 817; cottages, labourers', 434; courthouse (Cork, 2nd design, Deane and Son) 92; cross, reducing to triangles, 422, 488; font cover (Fewston) 336; footbridge, iron, 468; gantry, timber, 664; halls, parish, 304; houses (small, for artist) 130; lychgate, 532; observatory (Edinburgh) 830; regulation of building heights, 159; roof, iron, 764; stable, 154; summerhouse, 864; terracotta, 116, 269; theatre (Cape Town) 304; tower (Pershore abbey) 204; Turkish baths, 113
Sedgwick Park, lodge at, 468
Selehurst, Sussex, lodge, 468
Settlement, Bermondsey, 60
Settles, long oak, from Leeds, 147
Sexey's trade school, Bruton, 566
Shadows in perspective, 127, 395, 725
Shelley monument, University College, Oxford, 698
Shönfeld church, sacristy cupboard, 272
Shops, Colwyn Bay, 583
Shrewsbury: Council house, 336; Hill's mansion, 238
Shrine, silver, of St. Columban, Bobio, 859
Sketches: armourers' exhibition, 698; decorative furniture, 370, 749
Skirtings and plinths, 562, 563
Slating, vertical, to wall, 152
Small: house for artist, club designs, 130; post office, club designs, 563
Society water-colour painters, pictures at, 594, 595
Something about chimneys, 301, 302, 331, 332, 366, 367, 398, 461, 495
South: door, Kilpeck church, 170; Norwood, St. Alban's ch., 468
Southport, Parr's new bank, 698
Spaces, building heights and, 159
Stable, ventilation of, 154
Staircases: Colwyn Bay (school) 204; Reading, 394; Stone's Hill, Limpsfield, 532; theatre, plans, 428, 429
Stalls, priests', St. Cuthbert's, Kensington, 796
Stalshund church, wood carvings of the Passion, 130
Statics, a problem in, 357
Statues: Daibutsu, Kama-Kura, 60; our Lord, over font at Lammari, 858
Stiff, James, portrait of, 8
Stockport, St. Augustine's, Brinksway, 698
Stone: building, stress-strain curves, 627, 629 630; cornice, 817
Stone's Hill house, Limpsfield, 532
Stores, co-operative: Berkhamsted, 598; Leeds, 434; Plymouth, 204
Stoves, action of heat from, 87, 88, 122, 123, 165
Strain curves, stress, in building stones, 628, 629, 630
Street in Amsterdam, a, 336
Strength of materials, 155
Stress-strain curves in building stones, 627, 629, 630
Strode's electric light fittings, 8
Stratford, wrought iron gates at, 8
Summer house, club design, 864
Sunningdale, Sir J. D. Hooker's house, 130
Surveying, land, and levelling, 692, 693, 792, 883
Swanley convalescent home, 170

TABERNACLE to high altar, Kensington pro-cathedral, 634
Tables: draw out, 749; writing, 881
Tank, filtering, 824
Tavistock, Walreddon manor, 400
Technical school, Batley, 109
Terracotta: kiln, 631; sections, 116, 269
Tewkesbury abbey, choir screen, 60
Theatre planning, recent developments in, 427, 428, 429, 434
Theatres: Cape Town, 304; Cranbourne-street (Daly's, plan) 428; New York (Harrigan's) 434; St. Martin's-lane (Trafalgar, plan) 427
Three interiors of Westminster Abbey, 8
Timber gantry, a, 662, 664
Todenham house, additions to, 796
Tomb of St. Augustine of Hippo, Pavia, 860
Tonquinese house, 336
Towers: Oxford, Magdalen, 92; Pershore Abbey, 204; Rudesheim, 595
Town halls: Breslau, 500; Bury, Lancs., 664; Croydon, 764; Oudenarde, 400; Portsmouth (pediment) 762; house (Academy designs by H. Baker, A. Macintosh, and C. S. Spooner) 272, 304
Trade school, Bruton, 566
Trafalgar theatre, St. Martin's-lane, plan, 427
Tremadoc, additions to Wern house, 698
Triangle, reducing cross-section to, 422 488
T-square, improved, 783
Turkish baths, 113

UFFORD church, font and canopy, 8
Uplands, Sussex, lodge at, 468

VENETIAN glass wreath for Duke of Clarence, 167
Venice: by Fulleylove and Pilleau, 468; by S. J. Hodson, 594
Ventilating system, Blackman-Smead, 198, 199
Ventilation of smoke, 154
Ventilator, Boyle's latest air-pump, 267
Vertical slating to wall, 152
Victoria: British Columbia, cathedral designs ("Ars") 764, 864 ("Duomo") 764 ("Hope") 796, 864 ("New and Old") 732; law courts, Birmingham, 8
Vitre: external pulpit at Notre Dame; sketch at, 664

WALL: fountain (by W. R. Stephens) 698; of Cardiff castle, carved animals on, 8, 60; paper, Osborne, 272; party, 292
Walreddon manor, Tavistock, 400
Wantage, painting at St. Mary's school, 204
Warming and ventilating system, Blackman-Smead, 198, 199
Water-colour painters: institute, selections from exhibition, 468; society, do. do., 594, 595
Water: filtering, 824; gate (R. O. Allsop's design) 864
Weekley hospital, 238
Wern house, Tremadoc, additions to, 698
West End mansions, inlaid furniture from, 881
Westergemeinde church, Altona, pulpit, 468
West Hartlepool, St. Aidan's church, 500
Westminster: abbey, three interiors of, 8; Guildhall, 830
White, William, portrait of, 8
Wickham Lodge, Egham, new hall, 864
Wimbledon Hill, L. and S. W. bank, 370
Wimboldsley, two allotment cottages, 813
Wingfield sale, sketches at the, 370
Withdeane Court, Sussex, lodge at, 468
Woking, Christ church, 732
Wood carvings of the Passion, Stalshund ch., 130
Wortley, New, Leeds, Wesleyan school, 77
Wreath, Clarence, Venetian glass, 167
Writing-table, 881

YAMINA, house of King of Sego, 336
Yeomanry drill hall, Bolton, 764
Y.M.C.A. building, Cork, 170
Yorkshire college, Leeds, 634, 651

THE BUILDING NEWS

AND ENGINEERING JOURNAL.

MUNICIPAL BUILDINGS.

GROWING and active municipalities who do not like to be behind other towns are alive to the necessity of erecting commodious and handsome structures for the conduct of their civic duties and judicial administration. The stimulus of example has materially helped the movement of which we speak. Cities, like individuals, do not like to be left behind in the adoption of improvements—whether they be in the formation of new streets and parks, or in the erection of public buildings. Of course, a handsome town hall appeals to the ambition of mayor, aldermen, and burgesses; it proclaims the importance of their functions, and signalises their tenure of office. We cannot wonder that the growth and enterprise of great municipalities have been identified with the erection of great cloth and town halls, like those of Ypres, of Brussels, and Bruges, with their noble belfries; or those of Italy known as Brolettos, of which the town halls of Padua and Cremona are examples. The municipal palaces of Belgium, including town halls, courts of justice, and the trade halls and guildhalls, are famed for their grandeur and picturesqueness, and are worthy monuments of the commerce and manufactures of that country during the Middle Ages. Turning to our English cities, a similar, though less conspicuous, regard for great municipal buildings is noticed. Macaulay gives a graphic description of the growth of English towns and the splendour of a few of them since the Restoration. Bristol, he tells us, was the first English seaport, Norwich the first English manufacturing town, and he goes on to picture these cities and many others which have since grown to enormous wealth and influence in the commercial world.

That the chief magistracy and administrative authority of a town should seek to clothe their functions in a building appropriate and representative is very natural, and, therefore, in every municipality the greatest building next the cathedral or the parish church is the guildhall or municipal offices. Cities and towns like Manchester, Glasgow, Liverpool, Bradford, Birmingham, Leeds, Ipswich, Yarmouth, Wakefield, Burnley, Halifax, Portsmouth, Sunderland, and Sheffield have erected buildings worthy of their importance, alike representative of the prosperity of these great centres as they are of modern architecture. Indeed, if we were asked where modern architecture is to be seen, or in what direction it has associated itself with modern ideas and progress, we should point to our great civic buildings, palaces of justice, and legislature. From ecclesiastical, the stream of architectural art has flowed to secular buildings. The greatest competitions of the last two decades have been for municipal buildings. Many of the most eminent and successful members of the profession have won their reputations by competitions for them (one name, that of Mr. Alfred Waterhouse, R.A., being conspicuous), and it would be very instructive to turn our attention to a few of these triumphs of architectural art. On the whole, we have few buildings to compare for architectural planning and design with the Manchester Town Hall and the Glasgow Municipal Buildings, conceived in opposite styles, but equally worthy of the architectural genius of the age. Between these examples come a crowd of civic structures, which would take an article itself to enumerate, many of them showing power in plan and external design, and we have only recently chronicled or illustrated those of Sunderland, Sheffield, Bath, and a few other places. Such an examination of what has been done would be interesting; but we now refer to a few of the points in municipal-building design which are worth attention by those interested in future competitions, and to some causes of failure in the past.

First, as to site. The position and environment are important, and corporations who are thinking of erecting a town-hall and public offices should, before preparing to advertise for designs, consider well the advantages or disadvantages attending a certain site. How many buildings of this kind are sacrificed by being situated between narrow streets, where access to the main departments is rendered difficult or impossible! Manchester, Birmingham, Leeds have spacious and accessible sites, centrally situated. The sites for the new buildings at Sheffield and at Bath are well selected, and direct and separate approaches are obtained for the chief departments, such as the accountants', water, police-court, and public hall. The obvious advantages offered by a site which is isolated or surrounded by streets are so many that authorities would do well to pause, or postpone the erection of municipal offices till such a situation can be found. Very often intended street improvements offer a splendid opportunity for making a site. For instance, at Newcastle, four different sites have been proposed, the Eldon-square area offering a unique opportunity for making a great improvement; but we fear the city council will for the present content themselves with tinkering up the existing inadequate and incommodious building. Irregular, triangular, or quadrilateral sites, as those of the Town Hall, Manchester, and of Sheffield Municipal Buildings, cannot be avoided; but building committees and assessors, who prepare plans and conditions for architects should endeavour to avoid the serious drawback of obtuse and acute angles in the main façades. Mr. Waterhouse accomplished the problem of how to make the best of a triangular site in his Manchester Town-hall with considerable ingenuity. At Sheffield the main fronts to Surrey and Pinstone-streets were set to a square angle in the premiated design, and the main façade has square returns at each end. In the quite recent designs for the Bath Municipal Buildings, the competitors have differently understood the plan of site. The acute angle between High-street and Orange-grove, joined by a quadrant, shown in the site plan, has been followed by far the greater number of competitors, including the author of the premiated design. The designs of "Lex," "Progress," "Three Horseshoes," and one other only show a departure, their authors evidently coming to the conclusion that it would be better to sacrifice a little space and make the principal corner towards the Abbey church square, than to follow that very doubtful precedent of a rounded corner, one that has always been a bugbear to the architect. Where a building or frontage line is laid down, there should be a clear injunction how far it is to be followed, or the actual line should be defined. In this instance competitors have evidently considered the dotted line meant the actual frontage line, except in the few instances named. The "give-and-take" principle is not always a safe one in the hands of competitors, and perhaps the safest direction is to show by dotted line the external limit of land all round, allowing each competitor to use his own discretion in setting back within this line, making this meaning perfectly clear.

Another point is the programme or scheme. It is sometimes usual to set this forth in a "sketch plan" prepared by the corporation surveyor. We have always entertained doubts about the desirability of a sketch plan. Even if it be offered as a mere suggestion, it is too often blindly followed to the detriment of the author's design; if it is to be observed it is a serious restriction to independent effort, and excludes many more able solutions. On the other hand, a prepared scheme prevents ill-directed effort, much loss of time, and may suggest the only desirable division of departments. Probably a scheme such as that adopted by the Bath Town Council, and formulated by Mr. Young, the assessor, in his report in writing, is sufficient to prevent waste of labour, pointing out where increased accommodation is to be given, and where certain approaches or access of light are necessary. Should there be certain positions for the municipal offices or for particular departments like the rate office, the sanitary, the police cells, and court, the public hall, the council chamber, that are desirable, and only known to local officials—these should be pointed out, also the entrances and staircases, and best lights and aspects.

It is remarkable how many fall into errors if no guide to accommodation is given. Hence the value of approximate areas or dimensions, especially for the magistrate's court, sessions court, council chamber, and public hall. Where assessors are appointed to advise a committee, these areas are generally given. Another equally important instruction is to state how many and what rooms are to be connected with, or be attached to, each official department. Thus it is important to know how many offices are to be provided for the town clerk and borough surveyor and treasurer, the inspector of nuisances, of weights and measures, how many persons or officials are to be provided for in the council chamber, and what rooms are necessary in connection therewith for the mayor, and how many committee rooms should be provided near the chamber, and, if possible, in connection thereto. Again, to the court certain rooms ought to be attached for the magistrate and judge, for witnesses, for juries, and for those engaged as barristers and solicitors. Many of the plans we see for offices are weak in providing the necessary rooms and offices to each special department, or if they are provided, they are not conveniently placed. Those who have had anything to do with municipal business know the importance, for instance, of having one or more committee-rooms near to and entering directly into the council chamber, and of having the town clerk's offices not far off, as well as convenient to, the main entrance.

One of the neglected points of otherwise well-conceived plans for municipal buildings is the means of extension. Public offices quickly outgrow the provision made for them—new offices are required for extended powers of administration. The growth of the municipality necessitates a larger council chamber, magistrates' court, and public hall. Many very perfect plans are without the means of enlargement. We may instance the Leeds Town Hall, which has been found inadequate to the requirements, the Bath Guildhall, and several other buildings. Unless there is room for extension, the difficulty of enlarging is almost insuperable. The site should be therefore sufficiently large to enable future accommodation to be added. At Newcastle, the requirements have quite outstripped the accommodation of the old building, and have rendered reconstruction imperative. At Leeds the town-hall was found too small, and galleries have been found necessary at the end and sides. For half our recently-built town-halls it will be almost impossible to make any extension, as the halls and courts are sometimes packed in between offices or bounded by streets. In new plans it is worth while, therefore, for both authorities and architects to provide room for extension, either lengthwise or laterally, by placing the hall and the courts next to an area large enough for the purpose, or, as in the central hall at Manchester, with an open space round it. Again, it may be sometimes possible to build round the old Guildhall, as they intend to do at Bath, where the sessions court, council chamber, and banqueting hall will be retained, and wings added to contain additional courts and council chamber and new offices; but in many cases additions are out of the question, and involve a remodelling, which is costly and at best unsatisfactory. We might raise other points. The style of buildings is one of the important questions which has to be decided by circumstances and surroundings. The traditions of a town have to be observed; but there is one almost as important a question about which corporations seem a little diffident—we mean the internal decoration of town halls. There is no class of building upon which appropriate embellishment may be more fitly bestowed. Unfortunately, the cost of building is often prohibitive of anything like sculptural and internal decoration; but in selecting a design the civic authorities should provide for the suitable adornment of friezes and tympana, and by mural painting in the great hall, council-chamber, and courts. At Glasgow, Mr. William Young succeeded in persuading a corporation famed for its parsimony to carry out a well-thought-out and complete scheme of statuary and carving by indicating it clearly in his original competition drawings. In the great civic structures of the Continent, and in recent edifices like those of Vienna and Brussels, no expense has been spared to render the town halls of those cities monumental to a degree which leaves English municipalities a long way behind.

PROFESSIONAL AND ARTISTIC ARCHITECTURE.

TO what extent a building is the actual work of the architect—or, in other words, how much of it is due to him, and how much to those who are engaged in its construction, is a question of some importance in deciding whether architecture, as now practised, is a profession or an art. It is not a matter that concerns the public, who only look at results, and do not care a straw about a question that so little affects them so long as they get what they want. In one very practical sense a building is not the work of the architect at all. He has no part in the handiwork or execution which is intrusted to others, for though he may have designed every detail of the building, the real, executed work may fall very short of the design. In this sense the architect is placed at a very decided disadvantage with the sculptor or painter. Every detail must be intrusted to the hands of a workman who may have little or no sympathy with art; secondly, he is out of touch with the designer, whose aim and intentions are unknown to him. But in another sense the identity between the art of the architect and the real building is lost or destroyed by the system of introducing a third party, the contractor, who is in the position of the middleman. By this system the design has to pass through other hands, which renders it often impossible to trace the original authorship in the building actually carried out. We often notice how different the executed building looks, compared with the original design. We should not know it to be the same. The design on paper or in the illustration published is artistic, the executed building a sorry travesty. The paper details are boldly suggestive of relief: there is solidity, depth of reveal to all the windows, the pilasters are pronounced, the cornices strongly marked; in the actual structure these details look flat; the projections are superficial and "skin-deep." In the design there is life and vigour; in the real building the appearance is lifeless and vapid. Well may the architect who feels the importance and value of art declare modern architecture to be a "business" only, when the real structure is so painfully disappointing and so unlike the design.

Can we be surprised at the doubts expressed as to whether architecture is an art or a profession when we find so great a gulf fixed between art and practice, that those who profess the art of design should be satisfied with such very poor results of their labours, and in fact, permit the contractor's ideas of art to be substituted for their own? The architect is to some extent answerable for this, for he can design something less expensive, rather than allow his design to be robbed or shorn of its intention, as, for instance, in the cutting down of projections, the reduction of thickness and sculptural relief. To reduce cost by cutting down the price without at the same time modifying the design is a common and most injurious practice adopted by many professional men. Starved and meagre results are sure to follow.

But a system which encourages the production of speculative designs without reference to execution, which deputes to other hands the preparation of a drawing for a building, which disregards the craftsman and only deals with the contractor as a commercial intermediary—is one which completely dissociates the architect from the building. The system has grown naturally out of the modern idea of architecture. Mr. Leopold Eidlitz, in his "Functions of Art and Architecture," very truly points out that the study of architectural styles has only resulted in a sort of pictorial knowledge of architecture, not a knowledge of it as a living art. He says: "The reason is that the study of styles is pursued as an inquiry into forms instead of as an inquiry into the *causes* of forms"—a proposition we have more than once enforced in these pages, though architects have not yet realised the truth of this dictum, nor are likely to do so, so long as they think that art can be taught independently of the co-operation of the craftsman. The teaching of art, then, has favoured the distinction between architecture as an art and architecture as a business or agency. It has created such empty phrases as "art-furniture," "art-ironwork," "art-fabrics"—products of men who only know art through the introduction of a sort of fashionable dilettanteism. We have been told by one who worked nobly and diligently in the truest interest of architecture, that the birthplace of art was the workshop, not the drawing office. The late Mr. John D. Sedding was a sedulous worker, and did not disdain to associate himself with craftsmen and artists of all materials.

When art is studied rationally, as it once was, when the *cause* of this or that style or form is discovered and analysed, so that architects may again understand the true principles of design, and how it is to be practised, the present attitude of the profession towards the workman will be changed also. Academicism has crushed life out of art, and has given us the husks instead of the germs. Schools and congresses and lectures have abounded just in proportion to the emptiness of art. We have been patronising art fashions instead of learning what to do, and how to work. Architects have fallen under this blight; they have been learning "professionalism" during the last 300 years; how to exist and earn a living apart from the builder and workman; to take as many commissions as they can regardless of the time and labour they can spare to each, and to pose as gentlemen artists and general agents. Many have endeavoured to keep up the tradition of professional men as observed in other callings: to exalt their services; to ignore all contact with workmen and the actual building operations, and to only do the genteel part of the business. The attitude thus assumed has drawn into the profession a large number of men who ought to have followed other businesses or callings—who are anything but artists, and more competent as agents. We hear of so-called architects—but who are really estate agents—undertaking to "supply designs"; who, in fact, treat architecture as a vicarious business, employing a draughtsman or another architect to make designs for them, no matter for what it may be. If academicism has rendered art inert, mere professionalism has made it lifeless. Our need now is to check, as far as possible, this tendency. Something may be done by discouraging those students who have no aptitude for art, from following architecture as a profession. We have plenty of institutions which undertake to make architects, to instruct them in science and business, and then turn them adrift. The Association has undertaken to supply all the instruction needed, both in classes and studio, to make the "constructor" and the "man of business"—to use Mr. MacVicar Anderson's definition of two of the classes of the Institute—but it does not undertake to make the artistic architect. The result of these aids will be the introduction into the profession of the "business" element, which has been so much deplored. We are almost inclined to agree with Mr. H. Wilson in thinking this gigantic scheme of education would create "a set of professional prigs, a set of business agents—men who were qualified to have the superintendence of a factory, but nothing more." These facilities are valuable for those who have the gift; but for others the effect may be detrimental. French academicism has acted like a frost on art: it has quenched individuality, and the same will be the result if students rely too implicitly on the school and the office, and imagine that proficiency in the art is to be measured by the rules of surveying, legal knowledge, or sanitary science. The branches are valuable in the practice of the architect; but there is a danger that expertness in these things will be thought sufficient to make an architect. The same with draughtsmanship: the most dexterous drawing and perspective, and the study of models must not be mistaken for the power or aptitude to design. A man may be skilled in styles and details and yet be unable to make an original design for any building.

We are just now beginning to formulate a system of architectural education; but there is a risk that a "cut-and-dried" programme, a kind of Procrustean formula, will take the place of a truly educative process. As some one pointed out the other day, there is such a thing as "Institutism" becoming injurious. There is no practical distinction between Fellows and Associates, although there ought to be some preference attached to the former title; but as a matter of fact many Associates of the Institute are more competent men than their seniors; at least, there is no art-distinction, as there ought to be. Again, in the examinations of the Institute each candidate is supposed to go through the same studies, whatever his aptitude or inclination; he has no choice in determining what he would like to be examined in. How can we expect the highest results from this process? We have here endeavoured to point out some of the means by which architecture as an art is likely to be checked. It would be more rational, and would put a desirable limit on the number of those who seek to enter the profession, if every candidate could be proved to possess some taste for design before being admitted as a candidate for examination. One chief weakness of an indiscriminate test on subjects that bear only collaterally on architecture is to increase the number of men who possess the scientific and business capabilities, but who have very little sympathy with art in its higher aspect.

THE INSTITUTE'S SUGGESTIONS FOR THE CODIFICATION AND AMENDMENT OF THE METROPOLITAN BUILDING ACTS.

THE "Suggestions for a Draft Bill for the Codification and Amendment of the Metropolitan Building Acts," prepared by the Practice Standing Committee, and adopted by the Council of the Institute of British Architects, covers the whole ground of the Acts and By-laws in operation. Several suggestions are made which may be usefully considered: one is, that details of construction, which are subject to variation from time to time, such as new inventions, new materials, or modes of construction, should be placed in schedules attached to the new Act, power being given to the County Council and to the Commissioners of Sewers to vary these as occasion shall require, the object being to allow of change in details, without the necessity of going to Parliament. It is suggested further that the new Act should be "confined to, and extend to, everything within and inclosing the curtilage of a building, including any vaults under a public way"; also sanitation (*i.e.*, drainage, air spaces, ventilation, plumbing, &c.), and regulations respecting lines of frontage. Roads, sewers, and bridges, and everything in the nature of public thoroughfares should be excluded; also rights of light and air, which are matters of private property, and questions of taste and design. Erections not buildings, such as glass covers to yards, private bridges between buildings in one occupation, telephone and telegraph posts on buildings, wall-signs, fowl-houses, and similar structures should be subject to the control of district surveyors. We think that rights of light and air should be included in the new Act, as though they are in the nature of private property, they are as much matters of sanitation as ventilation or plumbing, and, therefore, of public interest. In the clauses of the proposed draft Bill the definitions have been amplified, and in some cases improved. Thus, under the term "public building," the old Act defines it to mean every building used as a church, chapel, or other place of public worship; also every building used for purposes of public instruction; also every building used as a college, public hall, hospital, theatre, concert-room, public ball-room, public lecture-room, exhibition-room, or for any other public purpose—a definition cumbrous in enumerating examples. The proposed draft clause is more scientific and comprehensive, for under "building" "every erection is included, comprising a cubical space defined by walls, piers, posts, or other structures, and a roof or other covering, whether such erection is wholly inclosed or not, and whether it is fixed on permanent foundations or not, and of whatever materials it is constructed, and for whatever purpose it is used, &c.," a definition which includes every conceivable form of erection. The term "public building" is amplified, and is made more comprehensive. Other definitions are given, as "wall-sign," which includes "any word, letter, model, sign, device, or representation in the nature of an advertisement or announcement fixed to or against any wall, shop-front, or other vertical inclosure, and includes "every part of any framework, bracket, or other support," so that the present "sky sign" definition in the Act 1891 is left as it is, the "wall sign" being intended to apply to advertisements hung or supported from walls or fronts. A warehouse is defined; "domestic building" is defined under three classes, A, B, and C. There is a need for including certain buildings that are neither warehouses nor public buildings, such as business offices or shops; the class B division of outbuildings or stables appears also to be required to bring every kind of erection within the Act. The definitions of "habitable" room and "living room" will make it difficult for anyone to evade the Act. "Underground room" is also defined as "any habitable or living room in a domestic building, the surface of the floor of which is more than 3ft. below the surface of the footway or of the adjoining street, or the ground adjoining or nearest to the room." This is an important definition which would render the section referring to underground rooms more operative. Definitions are added of "story" and "topmost story," which are not found in the present Act. The term "site" is defined as the actual ground covered by the building, and any ground appertaining thereto, or belonging to the owner within a line at a uniform distance of 3ft. from the outer edge of the footings; whereas the present meaning refers to the space occupied between the bottom of foundations and the level of base of walls.

The draft definition of "cubic contents" appears inadequate: it takes the superficial measurement within the inside of external walls, instead of including the walls,—surely this is not intended. The height is measured from lowest floor to underside of rafters or joists; it would be more correct to take the height to half-way the distance from springing to apex of rafters. Other terms, such as "fire-resisting," are added, to which we cannot refer now. An important alteration is made as regards the clauses of 1878, referring to roadway, and centre of roadway,—instead of roadway, the word "street" is substituted. In buildings exempted from the operation of the Act, one important addition is made (clause 6) after the present clause, to this effect: "No building shall be exempt where it is erected on any estate laid out for building, on which it is intended to erect other buildings, or to let, or sell, any ground other than to the owner of such building within the said distance of 30ft.," &c. This amendment will serve to check overcrowding on estates. Referring to greenhouses, which are exempted as regards the necessary woodwork of sashes, doors, and frames, the draft suggestions append the following qualification: "but if any greenhouse be attached to any other building, the exemption shall only apply to those greenhouses which do not exceed in area 300ft., and do not exceed in height at any point 20ft. measured from the floor." Two very important clauses are introduced, one referring to alterations or conversion of buildings, and the other to the restoration of buildings of architectural, archæological, or historical interest. The first provides that any building exempt from the operation of the Act shall remain so only so long as it is used for the purpose, or retains the character, or is converted to a use by reason whereof it would be so exempt; but on its ceasing to be so exempt, or on its conversion to a use or purpose other than previously, it is to become subject to the provisions of the Act applicable to its new use or purpose. The next clause provides for the restoration or reinstatement of old buildings taken down or destroyed with or without the consent of the Council.

The section on By-laws of 1878 on Foundations and Sites of Buildings is slightly altered by leaving open the manner by and material with which any holes caused by excavation are to be filled up, these being determined as the Council shall by by-law make from time to time. The provision for a layer of concrete 6in. thick is altered. The "floor area over the earth under every building" is substituted for the word "site," and the thickness of concrete is left to the Council to determine by by-law. The Council is also to decide on thickness of the bed of concrete or other material of the foundations, given in a schedule, according to the height of walls. We cannot here enter into other structural clauses of the draft Bill relating to the old sections 12—13 referring to the structure of walls, recesses, and openings. Many emendations are made, other sections are omitted. Some important additions and alterations are made to the sections of the old Act relating to separation of buildings and limitation of their areas (sect. 27); the limiting height of buildings other than churches or chapels is fixed at 75ft., exclusive of two stories not exceeding 20ft. on the roof, and of ornamental towers, turrets, or other architectural features, which is more reasonable than the 90ft. provided in the Act of 1890. The latter portion of the section is, however, retained, which limits any increase of height to 90ft. (exclusive of above) without consent of Council.

LONDON BUILDING (CONSOLIDATION) BILL AMENDMENT.

SEVERAL important amendments have been suggested by the Building Act Committee of the London County Council. After section 4 of the Consolidation Bill, regulations to insure an adequate strength of joists are introduced with minimum scantlings; in section 7, provisions to secure access to roof, in case of fire, either by a dormer window or door opening on to roof, a trap-door and fixed ladder, or other means. It is proposed to increase the minimum height of habitable rooms from 7ft. to 8ft., and to make a window opening directly into the open air, a condition (sect. 12 of Consolidation Bill). Under sect. 15, a clause is proposed to regulate oriel windows in streets 40ft. wide. Section 18 is most important, and has been framed after several conferences with the architect and medical officer. The committee do not agree with the Local Government Board by-law, adopted by Manchester, exacting open space at the rear of small houses of 25ft. in depth; but adopt so much of it as will secure a space of 20ft. between buildings at the rear, or 10ft. for each building, as in force in Liverpool. The rest of the ground may be covered by buildings, "provided that no part of them (except chimneys, &c.) pass above a line drawn from the rear boundary of the plot towards the house at an angle of 45° with the horizon." This rule does not unduly interfere with owner's rights, and it gives each house an open space in proportion to its height. These provisions are not intended to extend to the city. Under section 19, it is proposed to limit the height of buildings to 75ft. with two stories on the roof, the same as suggested by the R.I.B.A. It is also proposed to regulate the width and construction of staircases, passages, and doorways of all churches and chapels. Several important definitions have been added, and others much improved and simplified. Other amendments simplify the law relating to party-walls.

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BRITISH ART WORKERS AND MANUFACTURERS.

WE give this week another sheet of portraits of art workers and manufacturers who have distinguished themselves successfully in connection with the crafts and trades connected with architecture:—

Mr. M. J. Adams was born at Eastbourne, and educated privately. He served an apprenticeship with Messrs. Ransomes, Sims, and Head, of Ipswich, the well-known engineers. On leaving the works, he studied civil engineering and architecture in different capacities, and subsequently commenced private practice, later becoming a partner in the firm of Adams and Co. He is the author of various patents in general engineering and sanitary work.

Mr. S. H. Adams was born at Eastbourne, and privately educated. He served articles in the engineering works of Messrs. Hunt and Tawell, and later spent many years with a well-known civil engineer in the North of England, where he had extensive practice in drainage and waterworks, mine and land surveying, railway work, &c., subsequently joining the firm of Adams and Co. He has introduced many valuable patents, well known in the special work with which he is connected.

Mr. Sidney Goodman, of the firm of Goodman, Hughes and Co., Bishopsgate-street, London, was born in London, and is the son of Mr. Josiah Goodman, a very prominent and widely-known Nonconformist, who, with his brother, had carried on an extensive business as builders, and who had, in connection therewith, joinery mills at Bow, and a lime and cement wharf on the Regent's Canal. He was educated at Bishop's Stortford and in Germany, under the personal supervision of Herr Mess, at Neuwied, on the Rhine. In 1879 he entered the service of Messrs. Prier, Wotton, and Co., with the idea of finally starting on his own account. Subsequently, however, his father having purchased his uncle's share in the Regent's Canal business, presented him with the entire concern, which he, with ample working capital, carried on so successfully, that, while still running the business, he entered into the present partnership with Mr. Hughes in March, 1889, which has since proved so satisfactory. Messrs. Goodman and Hughes, in spite of the fact that the firm has only been constituted for the short space of three years, already take a place in the front rank of City timber merchants. They have lately opened a timber auction mart, which has been remarkably successful, and is likely to be still more so.

Mr. Joseph Constantine, the senior partner of the firm of J. Constantine and Son, warming and ventilating engineers, Manchester, is well known as the author of "Hydropathy at Home," "Health and Activity in Middle and Later Life," also "Practical Ventilation and Warming"; he is a practical hygienist, and has had an experience in those matters within a few months of fifty years. He was born on the 10th of June, 1823, in the Worth Valley, near Haworth, now famous as the Home of the Brontës. In 1842 he began to pay attention to the water cure, in 1848 he was engaged at a bathing establishment, and in 1850 he opened baths of his own in Manchester. In 1857 the Turkish bath was introduced into this country; the first attempts at heating it were on the Oriental plan—primitive, unscientific, and wasteful of fuel; ventilation was not considered at all, smoke flues traversed under the floor, or in the walls of the hot rooms; there was no constant supply, or change of air, to carry away the effluvia thrown off by the patients when perspiring; this was a sanitary defect, serious if not of a dangerous nature, which called for immediate remedy. Mr. Constantine first heated his Turkish baths by a tier of pipes fixed in a chamber. This system has been passed off twice of late years as a new invention. From these pipes a large volume of warm air was produced, but they soon burned out, and had to be frequently renewed. He then tried various stoves, and found that they all cracked, there being no provision for expansion and contraction, and after many experiments and failures, in conjunction with the late Thomas Whitaker, the convoluted stove was completed, in which not only expansion and contraction was provided for, but an immense addition of heating and radiating surface was gained, which accounts for the great saving of fuel where it is in use. With this invention the problem of heating economically and the thorough ventilation of the Turkish bath was solved, and it became at once a reliable and definite science. The necessary size and power of heating apparatus for the cubical area to be heated, the size of flues for fresh air, and size of inlet flues for warm air, and outlet for vitiated air is now a mere matter of calculation with the firm of J. Constantine and Son.

Mr. James Stiff is the senior partner in the old-established firm of James Stiff and Sons, who carry on the manufacture of sanitary and general stoneware and plumbago crucibles, &c., at the London Pottery, Lambeth. More than sixty years since Mr. Stiff left his native village of Rougham, Suffolk, with the hope that in London he might find some better prospect of rising from the labouring to the artisan class. After much difficulty and discouragement, his perseverance, industry, and thrift, enabled him about fifty years ago to seize an opportunity which then offered of renting a small pottery with one kiln, in High-street, Lambeth. The pottery had been established nearly a century earlier, by a Dutchman, for the manufacture of wall tiles, and included a portion of Hereford House, the ancient palace of the Bishops of Hereford. Mr. Stiff's enterprise and success resulted in a rapid extension of the pottery, until it comprised the present large freehold premises bounded by High-street, Broad-street, and the Albert Embankment. Mr. Stiff s earliest manufactures consisted chiefly of bottles, jars, jugs, and other similar pottery ware; but the introduction of stoneware drain-pipes, of which he was one of the earliest makers, gave a great impetus to the business, and until the year 1870 these goods formed the staple productions of the pottery. At this period Mr. Stiff decided to hand over most of the practical management to his sons, in order to devote his time more largely to public work. He was elected on the first School Board for London in 1870, and continued a member of the Board for twelve years, and for about half that period he held the position of Chairman of the Works Committee. Mr. Stiff has also been an earnest worker in the cause of philanthropy and religion. It may be mentioned, among other benefactions, that he has built, chiefly at his own cost, a large Baptist chapel at Stockwell, and has founded and endowed almshouses for the aged poor in his native village of Rougham. In 1889 Mr. Stiff was elected Master of the Worshipful Company of Loriners, and is so represented in the accompanying portrait. During the last 20 years the firm has extended its range of manufactures to include architectural terracotta, for which it obtained the only gold medal awarded for this material at the Calcutta Exhibition. Much of this firm's work has been sent to India, no less than six large Government buildings in Calcutta being adorned with terracotta manufactured at the "London Pottery." Several palaces of native princes have also been supplied with this effective ornament. A great variety of sinks, latrines, sewer-air, and grease-traps, and other sanitary appliances have also been added to this firm's manufactures, and the growth of electrical science, and especially of electric lighting, has brought demands for insulators, battery-jars, porous-cells, and other pottery appliances.

Mr. William White, of Abergavenny and Newport, Mon., commenced business early in life as a builder and contractor, and made ecclesiastical work and church restoration the leading feature of his work. Nearly all the churches restored by the late Mr. John Pritchard, diocesan architect, of Llandaff, were placed in Mr. White's hands, and also a good deal of work by Mr. Ewan Christian for the Ecclesiatical Commissioners. Mr. White had naturally in many cases to contend with damp walls, and the methods then followed of rendering walls damp-proof appeared to him most unsatisfactory. After a great many experiments and much thought, he invented and patented what is now known as the hygeian rock method of building walls, and this method being successful, he subsequently devoted the greater part of his time to its development. Mr. White has also invented and patented a new method of laying pavements and roadways (of which we gave a notice some short time ago), and which, after exhaustive experiments, is believed to have all the advantages of McAdam's and asphalte, without the disadvantages of either. A company, called the Patent Composite Block Road and Paving Co., of which Mr. White is the managing director, has been founded, and he is now engaged in building new works and laying down machinery on the banks of the Usk at Newport, Mon.

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THE PRESCOTT-HEWETT WATER-COLOUR DRAWINGS.

THOSE who value our native school of painters will be much interested in the fine collection of water-colour drawings on view at South Kensington Museum, the Prescott-Hewett gift to the National Gallery of British Art at that institution. The drawings are arranged on screens, but are irregularly numbered, a defect which we hope will be rectified. Sir Prescott-Hewett's collection is chiefly representative of the traditions of the Old Water-Colour Society, the names of Sir John Gilbert, R.A., the veteran painter of historic and dramatic scenes, G. H. Andrews, Thomas Danby, George A. Fripp, Francis Oliver Finch, H. G. Hine, Prout, Albert Goodwin, Carl Haag, and C. Green being among the artists. Mr. G. H. Andrews' "Amphitheatre, Arles" (1) is an example of the old school in its treatment and poetic delineation of classic ground; the drawing is decisive and the colour strong. William Bennett, who died in 1871, was a clever painter in water-colours of the last generation. His boldly-painted torrent of mountain water and bridge near Capel Curig, North Wales, or "Bridge and Waterfall" (3), is executed with much depth of tone; the rushing torrent is full of movement, and the masses of rocks and foliage in the foreground handled with considerable power. One of the most characteristic painters of the older school, Thomas Danby, is represented by two landscapes of excellent quality. "Snowdon" (4) is remarkably fine in its sunlit atmosphere and soft stippled effect produced by abrasion of colour in the mountain distance—a fine evening effect; while the companion picture, "Welsh Mountains—Morning," is a dexterous piece of handling in the foliage and foreground and hilly distance, and the colour and sunlight effect is warm. Another classical painter is George H. Dodgson, who died in 1880. Three subjects, two of Knole Park (9 and 10), dated 1863 and 1876 respectively, are shown depicting, in his own inimitable and poetic manner, beech glades. The foliage, under the varied effects of sunlight and shadow, is rendered with masterly skill, and the variety of yellows and bluish-greens charming. In another the majestic trunk of a beech is seen against a mass of dark foliage. The colour and foreground drawing are very fine. "On the Coast of Yorkshire" (11), one of those wild and grand pieces of rock seen on the coast, like Flamborough Head, is an example of this painter's power—a dark mass of rocky headland, with waves breaking into foam and spray. One of the earlier painters of the present century, who died in 1862, is Francis Oliver Finch. His "Moonlight" (16) takes us back to the time of the old classic landscapes, with its rounded foliage, broken temples, lakes, and river scenery, such as Lorraine gave us. This drawing represents the earlier Italian style of landscape, of which Wilson was an exponent, in which the colours were mainly blues and browns put on broadly and thinly. The exceptional strength and romantic beauty of Sir John Gilbert in his best days is seen in his fine picture the "Arrival of Cardinal Wolsey at Leicester Abbey" (23) a subject well adapted to the genius and dramatic skill of the president of the old society. The Cardinal in his scarlet robes is surrounded by a host of personages. Torches light up the scene. The bishop holding his crosier, and the women kneeling at the cardinal's side, make up a crowded scene, full of pathos and dramatic action. The light and shade and colour contribute to the effect of this fine composition. The works by George A. Fripp (19-22) are equally characteristic of the period. The "Old Windmill near Eastbourne," painted in 1868, is an admirable specimen of this artist's work, a clear, bright sunlight suffusing an open landscape; standing majestically in its solitude is a windmill. The decision and crisp handling which we see in Mr. Fripp's modern work are conspicuous in "Children of the Mist"—a moorland scene bathed in mist, a torrent rushing through a rocky bed, with swift-footed deer gambolling in the distance —delightful in tone and colour; and some delicate handling is shown in "Dunstaffnage Castle, Argyleshire" (22). Another living artist, Albert Goodwin, has a delicately-finished drawing of "Allington Castle, Kent," hardly equal to his genius, though we can see enough in his minute manipulation of foliage and depth of tone to admire. Mr. H. G. Hine also is not represented by his best work, which to those who know his capabilities appears to be the open landscape and downs of Sussex. Those here seen are two coast views, one a "Reef of Rocks at Peveril Point, Dorset" (31)—a fine rendering of rock stratification and sea, painted in 1865—and "Entrance to the Kyles of Bute" (32). They are at least interesting examples of conscientious study. In the same class of subject is the late John Mogford's "Coast of Cornwall" (37), painted also in 1865—a very beautiful study of stratified rock and laving sea, which is scarcely to be surpassed by the more vigorous and broader style of painting now in vogue. An example of Henry Moore (38) is numbered next. As a seascape we have little to surpass the exquisitely finished study of "A Grey Day at Sea" (41), by F. Powell, a fine rendering of sea waves and lighted crests and troughs, as admirable in colour as it is in drawing. "The Winkle Gatherer" (46), by J. D. Watson, is strong in colour, the rocks and pools drawn with masterly effect. Other powerful landscapes are J. W. Whittaker's "Road between Capel Curig and Lake Agmen," dated 1863—a wild hilly scene painted with masterly breadth and strength of colour, and Cuthbert Rigby's "On the Moors," a clever piece of handling. A charming drawing of a tomb, G. J. Skinner Prout, "The Knight in Dust," on a canopied tomb (43), is worth attention for its nice colour and tone.

One of the finest figure studies is Josef Israel's "Worn Out," a cottage interior, representing an old man in a sort of cupboard bed, a dog on a chair by his side, and his hard-working wife seated mending a garment. The whole is powerfully and pathetically painted, the depth of tone, chiaroscuro of the darkened casement-lit chamber adding to the impressive and emotional aspect of the scene. We see in the barely discerned lineaments of pain and hardship in the solitary inmates the painter's love and appreciation of the mystery of life, its woes, and realities. Sir J. D. Linton is represented by a Cavalier-looking student, a finely executed and scholarly work (35); also "The Reliquary," equal in its drawing and refined colour. One of the finest figure studies is H. B. Roberts's "The Sermon" (45), an elderly man, his head resting on his arm, pathetic in motion, and admirable in the chiaroscuro. Carl Haag's brilliant figure subjects, "In the Desert" and "In the Sugar Plantations" (28 and 29), are masterly. We must also notice James Holland's "Canal in Venice" (33), which is full of nice harmony; C. Green's "Rabbit Hutch" (27); W. W. Deane's "Street in Venice" (6).

"SWEATING" THE PROFESSION AT BRIGHTON.

A SPIRITED discussion arose at the last meeting of the Brighton Board of Guardians in reference to the appointment of an architect to prepare plans for the new parochial offices to be erected in Prince's-street. The sub-committee, having considered applications, or rather tenders, from twelve architects, recommended that Messrs. Nunn and Hunt, of 129, Queen's-road, Brighton, be appointed as architects on the following terms—namely, "If the cost of the building does not exceed £5,000, their fee to be 2¼ per cent. on the ultimate cost; if the cost of the building exceeds £5,000, their fee to be 2 per cent. on the ultimate cost. The foregoing terms are inclusive of the preparation of all necessary sketch-plans."

The vicar (Prebendary Hannah) vigorously opposed the adoption of the report, remarking that he did not call this economy. It was cheese-paring; in fact, "sweating" with a vengeance. He had had a good deal to do with the employment of architects, and he had never known one accept less than the recognised professional remuneration of 5 per cent., and, so far as his experience went, that charge was only a fair one. To him it seemed undignified for the board of guardians to go behind the professional custom and to seek to get the work done in the cheapest manner. He had not one word to say against the gentlemen selected; but he did not think it right that a board like the board of guardians should "sweat" the professional classes by hawking about such a job as this to see how cheaply they could get it done. He moved as an amendment to refer the report back to the committee for further consideration. The amendment was seconded by Mr. Councillor Loader, an architect, who stated that, in the advertisement inviting tenders, not one word was said as to what amount it was contemplated to spend—whether two, five, or ten thousand pounds, and he also argued that the proper course would have been to invite competitive designs. The Chairman denied that the matter had been "hawked about." The tenders were invited by public advertisement; but, for reasons he could not explain, it was not deemed desirable to mention any amount. If architects chose to go below the recognised 5 per cent., there was no reason on earth why the board should not accept their offer; and he might mention that they had others nearly as low as the one they proposed (and as he thought wisely) to accept. The clerk to the board explained that the board were not in a position to advertise for competitive plans. When the architect and Inspector of the Local Government Board came down to see the site that had been selected, they told the committee that it would be useless to send up any plans to the Local Government Board for approval until a deputation of the board had been to London, with the architect who would have the preparing of the plans, to see some parochial offices that had recently been erected there. It, therefore, first became necessary to secure an architect that would undertake the preparation of the plans, and an advertisement was issued inviting tenders for the performance of that work on commission. Mr. Councillor Booth said the vicar had come there to bolster up trades-unionism amongst architects; but he appealed to the members to support the committee. After further discussion the report was adopted, only four members, including the vicar and Mr. Arthur Loader, voting against it.

ARCHÆOLOGICAL.

THE FOUNDATIONS OF KING'S CROSS.—In constructing the subway between the Great Northern Railway terminus and the King's Cross station of the Metropolitan Railway, the engineers, Mr. E. P. Seaton, C.E., and Mr. A. N. Hawtrey, A.M.I.C.E., have had numberless obstructions and difficulties to overcome; in the first instance to find sufficient room beneath the roadway and the crown of the tunnel of the Underground Railway to construct the subway, 8ft. deep and 8ft. wide. Next came the Fleet Sewer, which has had to have its crown reduced some 6in. In addition to this, the gas and water mains running parallel with the sewer have had to be diverted and encased in subways. After completing this part of the work, Messrs. Fairbank's men came across a solid block of concrete several yards square, 2ft. under the centre of the roadway, a few feet north of the Metropolitan tunnel. According to old plans, it is the foundation of the cross erected in 1290, by order of Edward I., as one of the resting places of the body of Queen Eleanor on its way from Hornby, in Lincoln, where she died, to Westminster Abbey. Owing to the close proximity of the traffic above, it has been found impracticable to blast the block by powder or dynamite. Consequently, the men have to work upon it with steel wedges and sledge hammers, very little impression, however, being made day by day, as the wedges quickly turn up. It is expected the work will be completed by April.

* * *

As a memorial to the late Lady Bruce, the three lancet windows at the west end of Christ Church, Castlerock, have been filled with stained glass. The subjects selected are "The Six Acts of Mercy," and the artists were Messrs. Wailes and Strong, of Newcastle-on-Tyne. A peal of bells has also been hung in the tower of the church. The dedication took place last week.

The forthcoming exhibition of Old Masters at Burlington House, which opens to the public on Monday next, will contain an important selection of Dutch and English pictures lent by Lady Wallace from Hertford House, the bulk of the Italian collection belonging to the Earl of Dudley, and a number of works by Rubens and other masters from the collection of Mr. Banks, of Kingston Lacey.

Building Intelligence.

IPSWICH.—The parish church of St. Clement was re-opened on Tuesday week, after being partially restored from plans by, and under the supervision of, Mr. E. F. Bisshopp, of Ipswich. The arcades and piers have been cleansed from coatings of whitewash and paint, and the patchings with plaster replaced by stonework. The whole of the floors beneath the pews, which were infested with dry rot, have been removed, the vaults beneath filled up, and wood-block flooring, with oak centres, substituted for deal boards. Oak benches of 15th century detail, and poppy-head ends, take the place of the former pews, and new prayer-desks, also of ash, have been introduced into the chancel, which is now paved with Godwin's encaustic tiles. The work has been carried out by Messrs. Hawkins and Pettit, of Monks Eleigh and Ipswich, contractors. The expenditure has been about £800.

SALISBURY.—New baths have just been completed for the Salisbury Swimming Baths Co. The building is about 94ft. long by 50ft. wide, with slipper-baths adjoining. The roof consists of iron principals with lantern ventilators, and is covered partly with slates and partly with glass. The bath itself is 80ft. long by 34ft. wide, lined with glazed bricks, and the water is procured from a well sunk on the premises and warmed by steam injection to a temperature of 75° Fahr. A gallery runs along the two sides and one end of the building, under which the dressing-boxes are arranged, accommodation being made for 41 bathers. These dressing-boxes, as also the building, are warmed by steam-pipes. In connection with the swimming-baths, and fronting on Church-street, a steam laundry has been erected, fitted with every modern improvement, and capable of turning out £60 of work weekly. The hot water for baths and laundry is supplied by a 20ft. Cornish boiler. The total cost of the laundry and baths, exclusive of the site, was about £4,500. The roofs are glazed by Messrs. Rendle and Co., of 5, Victoria-street, Westminster, on their patent "Acme" system. The contractor for the building was Mr. John Wort, of Park-street, Salisbury, and the building was designed and carried out by Mr. Alfred C. Bothams, A.M.I.C.E., architect, of 51, Silver-street, Salisbury.

WOLVERHAMPTON.—The new buildings at the Borough Hospital for Infectious Diseases, Wolverhampton, were formally opened last week. The additions to the hospital comprise an entrance-lodge, enlargement of the administrative block, and a hospital pavilion. The pavilion is designed to accommodate eighteen beds, and has two main wards (male and female), each 50ft. by 26ft. Each ward is arranged for eight beds, every bed having a wall space of 12ft., 162sq.ft. of floor space, and 2,268c.ft. of air space. Between these two wards is the nurses' duty-room. In the centre of the front wall to each ward casement windows are arranged which open into a verandah. Mr. H. Lovatt was the builder, whose contract for the work was £3,604. The buildings were erected from designs prepared by the borough surveyor, Mr. Berrington.

CHIPS.

Holy Trinity Church Schools, Idle, are about to be enlarged, from designs by Messrs. J. Kendall and J. H. Bakes, M.S.A., architects, Leeds and Idle.

On Sunday, the 20th ult., a stained-glass window was unveiled at Idle Parish Church, as a memorial to the late vicar, the Rev. Henry Harrison. The subject is "The Good Samaritan," and the work has been carried out from designs by Messrs. Kayll and Co., 70, Albion-street, Leeds, under the supervision of Messrs. J. Kendall and J. H. Bakes, M.S.A., architects, Leeds and Idle.

Mr. William Henry Punchard, railway contractor, of Bourton Hall, Totnes, died on Sunday. Mr. Punchard had been suffering from influenza, but his death was somewhat unexpected. He had constructed a large number of railways abroad, and had also been engaged in extensive marine enterprises.

New co-operative stores at Winnington, Cheshire, were opened last week, the buildings including a public hall at the rear, seated for 700 persons, a library and reading-room, besides shops and warehouses. Mr. Hawksley, of Manchester, was the architect, and Mr. Molyneux the contractor.

WAYSIDE NOTES.

A HAPPY NEW YEAR! I am relieved to find myself in the land of the living so that I may present this seasonable compliment. About this time of the year a miserable feeling comes over me that I may be buried alive in the annual shoal of diaries, almanacs, &c., of the enterprising manufacturer. Wonder of wonders!—I have received none! It is true the next few days may put a different aspect on affairs, and it may be necessary to "dig, basket, and wheel" to the approaches to our office door in order to clear away the *débris*—otherwise, the accumulation of calendars, &c., deposited by a relentless Post Office. Yet am I hoping that the yearly protests in my own particular corner of the "B. N." may have proved of some avail, and that manufacturers will at last awaken to the fact that an architect in his right senses does not plaster his office walls with a hundred-and-one calendars, nor does he require to enter his doings for the day into fifty separate journals.

We draw the line at almanacs, although there is no denying that some members of our august profession do put strange things upon their office walls. Some business or another once took me into a gentleman's drawing-office, at the end whereof I noted a large frame crammed full of —photos. of cathedrals? By no means. The frame contained a score or more of *contemporary actresses and professional beauties!* The idea, doubtless, was that "the flowing line" was suggestive of new and elegant mouldings, though to me the impression was that I had better make good my escape from so strangely ordered a place whilst my skin remained intact. Well, taste in these matters of office-decoration is a funny thing, unaccountable and perverse as many, if not most, matters of taste. Our old friend Mr. Pecksniff, it will be remembered, had his own highly professional style of adorning the walls with various and diverse portraitures of Salisbury Cathedral. As a rule, I fancy that architects "offer up" perspectives—"highly-coloured," for preference—of their great jobs, and fill up odd corners with their smaller ones, so that when the new client comes in he may be duly impressed. This is a great thing.

I see that the Institute contemplates adding to the pictures on the walls at Conduit-street by placing thereupon a portrait of Mr. Waterhouse. It was no surprise to learn that the movement had been well supported, and that a large number of members had given their support. No one has proved himself more worthy of the honour than Mr. Waterhouse, and it only remains to hope that the portrait will be a good one.

Readers having in their mind the proposals made to establish a National Gallery of British Art, will have wondered whether anything practical would come from the talk on the subject, and may be interested to hear that, in a letter to Tuesday's *Standard*, Mr. Frederick Wedmore deals with the question "up to date." It seems to have been for some time a common understanding that the Government has declined to purchase, for a hundred and fifty thousand pounds, an Embankment site at Blackfriars that the City Corporation offered for the purpose. This is scarcely surprising; the outlay would be tremendous for such a purpose, and a cheaper site should be sought. Mr. Wedmore expresses a hope that the abandonment of the scheme as regards this site may not cause the Government to lose interest in the proposed Gallery, and advocates the adoption of an alternative site at the east and west galleries by the Horticultural Gardens. It appears that a sub-committee appointed to inquire into the suitableness of this site has given a wholly favourable judgment, and that the galleries could be prepared at a small cost, and immediately. This scheme is to be recommended for its economy; but the dressing-up of old galleries seems scarcely to fill the imagination—so to speak—prepared by the past talk on the subject; and something midway between the very costly Embankment site and this very modest Kensington one would seem to me to meet the case. An increasingly difficult matter, however, is that of finding sites in London —a difficulty that may well be said to increase as the square of the size of the building—and if there is to be endless trouble in the finding of a site for the proposed gallery, better at once adopt the proposal relating to the old Kensington buildings.

I suppose there has been, or will be, another controversial outbreak respecting fires at theatres and theatre-staircase construction, *in re* the last Gateshead disaster—the *last*, advisedly, because all will remember the comparatively recent accident with the rickety condensers, and the deplorable loss of life that followed. The unfortunate point about these accidents—so far as concerns future lessons—is that there is always something new or novel in the disaster that seems to put it out of the category of things that might have been prevented by attention to past experiences. Like all—or most—railway accidents, where a certain part of the train generally "comes off" worst, the theatre fire generally brings most direful consequences to the gallery. Improvement in gallery exits and staircases should be the endeavour; but herein lies the difficulty, for to take more space for the gallery means cutting short the exits and staircases from other parts of the house. It is evident, too, that taking a third-class ticket for the railway, and a gallery ticket for the theatre must of necessity entail an increased risk in case of accidents. A life is a life, however, whether in a first-class carriage or a third, and whether in the stalls or the gallery of a theatre, and this should be realised by planners and managers of all places of amusement where, from the intricate nature of the seating arrangements and means of access and egress, there must always be an element of risk in cases of fire, or panic from an alarm of fire.

Our "Constant Reader" sends me further cuttings from the *Sussex Daily News* respecting the appointment of an architect to the new parochial offices that the Brighton Board of Guardians propose to erect. A report of the meeting of the board shows how, in the Rev. Prebendary J. J. Hannah, the Vicar of Brighton, architects have a true friend and champion. The vicar protested against the attempt to cut down the recognised remuneration of architects, which he well designated as sweating and cheese-paring. The report of the Parochial Offices' Site Committee will give readers an idea of how this matter has progressed:—"Your Committee report that they have received applications from twelve architects, residing or practising in Brighton, willing to prepare plans, specifications, and estimates for the erection of the proposed new parochial offices in Prince's-street, and having carefully considered the same, they recommend that Messrs. Nunn and Hunt, of 129, Queen's-road, Brighton, be appointed as architects on the following terms, viz.: If the cost of the building does not exceed £5,000, their fee to be 2¼ per cent. on the ultimate cost; if the cost of the building exceeds £5,000, their fee to be 2 per cent. on the ultimate cost. The foregoing terms are inclusive of the preparation of all necessary sketch plans." The recommendation of the committee was finally accepted.

At first I took it that the 2 or 2¼ per cent. of the successful tenderers was simply for the preparation of plans, &c., and that superintendence was not included; but from the remarks of Mr. Councillor Booth I gather that it is in place of the usual 5 per cent.—in which case there is "sweating" indeed; and the Vicar of Brighton has every reasonable argument on his side. If it just pays an architect to plan and look after a building for the same percentage on its value that an auctioneer takes for a few hours' work, how can the former individual be expected to devote the same thought and attention for one half, or less, of this remuneration? The Brighton guardians—with the exception of an architect, the Vicar, and two others—like most of their class, cannot see farther than their noses. Very immediate and very evident saving of outlay is the only economy they can appreciate. I suppose one should be a little incensed with the gentlemen "tendering"; but somehow, in this case, I only feel that the guardians are to blame. They, first of all, carefully excluded outside architects—and therefore outside criticism—and set the Brighton men against one another. As a natural result of this piece of business, a paragraph in the *Sussex Daily News* speaks of "the firm tendering for the work at the lowest commission." I am glad to see that the Vicar of Brighton has given notice of a motion at the next meeting of the board; and our best thanks should certainly be given to both him and "Constant Reader" for directing attention to and kindly defending interests vitally affecting the future of the architectural profession, in the regrettable absence of any competent corporation or governing body capable of making and enforcing reasonable rules of professional etiquette.

GOTH.

COMPETITIONS.

CANNOCK.—The Cannock School Board have selected the designs of Mr. Geo. H. Cox, architect, of Birmingham, for the proposed schools at Chadsmoor.

KEIGHLEY.—The designs for new School Board offices, Keighley, submitted in limited competition by Mr. Ledingham, architect, Bradford, have been selected.

NORTHAMPTON.—At the last meeting of the Northampton School Board the report of Professor T. Roger Smith, F.R.I.B.A., on the designs submitted for the new schools in Stimpson-avenue was considered and adopted. Eleven designs were sent in, and the first position was obtained by "Supervision," sent in by Mr. C. Dorman, architect, of Abington-street, Northampton; and the second by "Avondale," prepared by Mr. M. H. Holding, A.R.I.B.A., of the Corn Exchange, Northampton. The estimated cost of the former is £8,800, and of the latter £8,250. Professor Smith, in his report as assessor, remarks, of the design placed first, that the three departments "extend back eastwards roughly like the wards of a hospital on the pavilion plan—a disposition which offers considerable opportunities for good ventilation. The planning is so arranged that all the classrooms are under the personal view of the head teacher. Left-handed lighting is provided in many of the classrooms, and in every classroom but one and in the schoolroom cross-ventilation by good-sized windows is secured. The architectural treatment is satisfactory, and the general arrangement is very practical." "Avondale," the second design, is, he reports, planned on the central-hall system, as were three other designs. The buildings are kept distinct. Each of the three schools has its own central hall and its classrooms in connection therewith, the area of the halls not being reckoned as part of the floor area for teaching purposes. The central-hall system, though no novelty, is, comparatively speaking, of recent adoption, and is well adapted to very large town schools, but it entails difficulties which have to be considered—expense being the chief. There is also, especially in schools where open fires or gas is employed, difficulty in warming the hall, and to some extent an administrative difficulty.

OXFORD.—The following are the names of the five selected competitors for the Municipal Buildings at Oxford, chosen by the referee, Mr. T. E. Collcutt, out of the 132 architects who submitted designs in the first contest. The choice has only this week been confirmed, or we should have printed the names a fortnight ago. They are: Messrs. Charles Bell, A.R.I.B.A., London; E. Runtz, London; J. B. Hikins, Liverpool; J. T. Hare, A.R.I.B.A., London; and Messrs. Perkin and Cheston, London. We need hardly say that the adjudication was made before the names were known to anyone concerned in the competition, and we believe that the list has not been published elsewhere.

A bacon-curing factory has been built at Redruth at a cost of £8,000, and was inaugurated last week. The plans were drawn by Mr. O. Caldwell, of Penzance, and the building contract let to Messrs. J. Julian and Sons, of Truro, whilst that for machinery was given to Messrs. Pontifex and Wood, of London.

After having undergone alterations, the bank premises on the street level of the Town Hall Buildings at Newcastle-on-Tyne have, this week, been taken possession of by the financial departments of the Newcastle Corporation. The requisite alterations were carried out under the superintendence of the city engineer, Mr. W. G. Laws.

A private Bill is being promoted, under which power is sought to construct a railway, beginning by a junction with the Epsom Downs branch of London, Brighton, and South Coast Railway, and terminating at Banstead, near Walton-on-the-Hill. The total length of the proposed railway is just under three miles, and the capital sought is £99,000.

THE BUILDING NEWS DIRECTORY.

At the request of many advertisers it has been determined to commence with 1892 the weekly publication of a BUILDING NEWS DIRECTORY, to which Architects may easily refer when in search of the makers and vendors of Architectural and Building Specialities.

The large Advertiser is, of course, to a considerable extent independent of such help. By his judicious iteration of the merits of his specialities he effectually impresses the mind of the constant reader with his claims to attention. But he will find it to his interest to avail himself of our new help to publicity; and besides, there are hundreds of Manufacturers who never advertise in the ordinary way, or who, if they do so, only advertise one or a few of the articles they make and supply, and who yet essentially need *constantly to remind Architects of their existence.*

It may be urged that the Trade Directories and Price Books to a certain degree supply this want; but when it is remembered how limited, comparatively, is their circulation, and how swamped the comparatively few that are wanted are for the most part amongst hundreds of thousands of other names and addresses in which Architects have no interest, and among which they are seldom likely to search for what they require, it will be seen at once how advantageous in a Journal like THE BUILDING NEWS will be the introduction of the feature we contemplate.

We propose, therefore, to devote space *in the body of the paper, immediately preceding and following the Illustrations,* and not among advertisements, or on the inside pages of the outer sheet, to a carefully-arranged *Directory of Makers and Vendors of Architectural Specialities and Builders' Appliances,* under generic and suggestive heads which will naturally suggest themselves to Architects and others in search of Advertisers' addresses.

It will be evident, of course, that many Manufacturers will desire to have more than one entry in the list, because they supply more than one speciality. For the majority possibly one entry will be ample, and that we undertake to make and to repeat weekly in every edition for the sum of ONE POUND PER ANNUM, payable strictly in advance, and expiring on the 31st of December in each year. We cannot undertake to charge for parts of years in connection with this matter, so that entries should at once be forwarded, accompanied by the necessary subscription, that they may appear throughout the whole of 1892.

Clients who may desire to have more than one entry under different heads can do so to any extent they please by payment of *One Pound each* for every additional entry.

All payments *must be made in advance,* as this feature is not introduced as a remunerative one to the Publisher in itself, and the small charge made will barely defray expenses, and will not allow of booking. Name and address must not exceed one line.

The following firms have already entered their names up to Dec. 31. We have more in hand, which will appear next week, and any others that may reach us.

ARCHITECTURAL DESIGNERS—
Finsbury Tracing and Drawing Office, 113, Pavement, E.C.

ARCHITECTURAL PHOTOGRAPHERS—
Bedford, Lemere, and Co., 147, Strand, London, W.C.

ARCHITECTURAL TERRACOTTA—
Gibbs and Canning, Ltd., Tamworth.

ARTISTS IN STAINED GLASS—
Bourne Swain, 61, King Edward-road, Birmingham.

ASPHALTE—
Avelines Sicilian Asphalte. Joseph Bernays, 96, Newgate-street, E.C.

BATH STONE—
Bath Stone Firms, Limited, Bath.

BOOKS—
B. T. Batsford (Professional), 52, High Holborn, London, W.C.

BRICKS—
Accrington Brick and Tile Co. (Facing Bricks, Plastic and Semi-Plastic), 8, St. James-street, Accrington.
Gibbs and Canning, Ltd. (White Glazed), Tamworth.
Heather Brick and Terracotta Co , near Ashby-de-la-Zouch.

BRICK AND TILE MACHINERY—
Clayton Howlett Co., Woodfield-road, Harrow-road, W.

BUILDING & QUANTITY SURVEYORS—
Flew, J., 11, Popplewell Chambers, Bradford.

BUILDING COMPOSITION—
White, W., Great Western Works, Abergavenny.

CEMENT MANUFACTURERS—
Rugby Portland Cement Co., Rugby.

CEILING DECORATIONS—
Heaton, J. Aldam, 26, Charlotte-street, Bedford-square, W.C.

CONCRETE—
Fambrini and Daniels, Excelsior Art Concrete Works, Lincoln.

CURTAIN BLINDS—
Heaton, J. Aldam, 26, Charlotte-street, Bedford-square, W.C.

DECORATORS—
Campbell, Smith, and Co., 75 and 78, Newman-street, London, W.
Lamb, J. (Specialist), 14, Marlbro'-road, Turnham Green.

IRON AND STEEL MERCHANTS—
Walmsley, B., Court Chambers, Mawdsley-street, Bolton.

ELECTRIC BELLS—
Gray, J. W., and Son, 9, Gracechurch-street, E.C.

FANLIGHT OPENERS—
Osborn, David, High-street, Berkhamsted.

FIREPROOF FLOORS—
Lindsay Neal, W. H., and Co., 15, North Wharf, Paddington.

FIREWOOD SPLITTING & BUNDLING MACHINERY—
Glover, M., and Co , Patentees and Saw Mill Engineers, Leeds.

FURNITURE—
Foster and Cooper, 63, Long-row West, Nottingham.

GRANITE MERCHANTS—
Webb, Percy C., 41, Eastcheap, London, E.C.

HEATING APPARATUS—
Boyd, Jas , and Sons, Paisley.
Grundy, J , 30, Duncan-terrace, City-road, London, N.

HORTICULTURAL BUILDINGS—
Boyd, Jas., and Sons, Paisley.
Gloucester Railway and Carriage and Wagon Co., Gloucester.

HYDRAULIC RAMS—
Blake, John, Oxford-street Works, Accrington, Lancashire.

INTERIOR WOODWORK—
Foster and Cooper, 63, Long-row, Nottingham.

JOINERY—
Elliott, Saml., Albert Joinery Mills, Newbury.
Gloucester Railway and Carriage and Wagon Co., Gloucester.

JOINER'S OILSTONES—
Whittle Hill Hone Co., Charley Forest, near Loughboro'.

LIGHTNING CONDUCTORS—
Gray, J. W., and Son, 9, Gracechurch-street, E.C.
Morris and Gold, Wardrobe Chambers, Queen Victoria-street, E.C.

LIFTS AND CRANES—
Waygood, R , and Co., Falmouth-road, Gt. Dover-street, S.E.

LIME BURNERS—
Rugby Portland Cement Co., Rugby.

PAPERHANGINGS—
Land, J. and H., 93, Cannon-street, E.C.

PASSENGER LIFTS—
Waygood, R., and Co., Falmouth-road, Gt. Dover-street, S.E.

PAVEMENT ROLLERS—
Gilchrist, Alex., 25, Eglinton-street, Glasgow.

PERSPECTIVES—
Finsbury Tracing and Drawing Office, 113, Pavement, E.C.

PHOTO-LITHOGRAPHY
Whiteman and Bass, 236, High Holborn, W.C.

PIPES—
Gibbs and Canning, Ltd. (Glazed Stoneware), Tamworth.

QUANTITY LITHOGRAPHERS—
Pettitt, T , and Co , 22 and 23, Frith-street, and 50, Old Compton-street, London, W.

RAIN WATER SEPARATORS—
Roberts, C. G., Haslemere, Surrey.

SANITARY APPLIANCES—
Gibbs and Canning, Ltd., Tamworth.

SINKS—
Gibbs and Canning, Ltd. (Cane-colour Glazed), Tamworth.

SPEAKING TUBES—
Gray, J. W., and Son, 9, Gracechurch-street, E.C.

SPECIAL ENGINEERING BRICKS—
Accrington Brick and Tile Co., 8, St. James-street, Accrington.

STAINED-GLASS—
Adam, Stephen, and Co. (formerly Adam and Small), Glasgow.
Camm, T. W., High-street, Smethwick, Birmingham.
Worrall, W , and Co , 75, Endell-street, London, W.C.

STEEPLE JACKS—
Morris and Gold, Wardrobe Chambers, Queen Victoria-street, E.C.

STONE—
Fielding, J. (Alton Stone, Red, White, and Mottled), Alton, Staffordshire.

STONE WORKING MACHINERY—
Powis Bale, M., and Co., Appold-street, London, E.C.

TELEPHONES—
Gray, J. W., and Son, 9, Gracechurch-street, E.C.

TERRA-COTTA—
Accrington Brick and Tile Co. (and Ornamental Brickwork). 8, St. James-street, Accrington.
Pulham, J., and Son, 50, Finsbury-square, and Broxbourne, Herts.
Thompson, Jabez, Northwich, Cheshire.

TILES—
Carter and Co. (Encaustic, Mosaic, and Faience), Poole, Dorset.

TRACINGS—
Marshfield and Co. (Photo-copied), 5, Little Queen-street, Westminster, S.W.

VENTILATION—
Acme Ventilating and Heating Co., Liverpool and London.
Buchan, W. P., R.P., S.E., 21, Renfrew-street, Glasgow.
Gibbs, John, and Son, 27, South John-street, Liverpool.
Howorth, Jas , and Co., Victoria Works, Farnworth, Bolton.

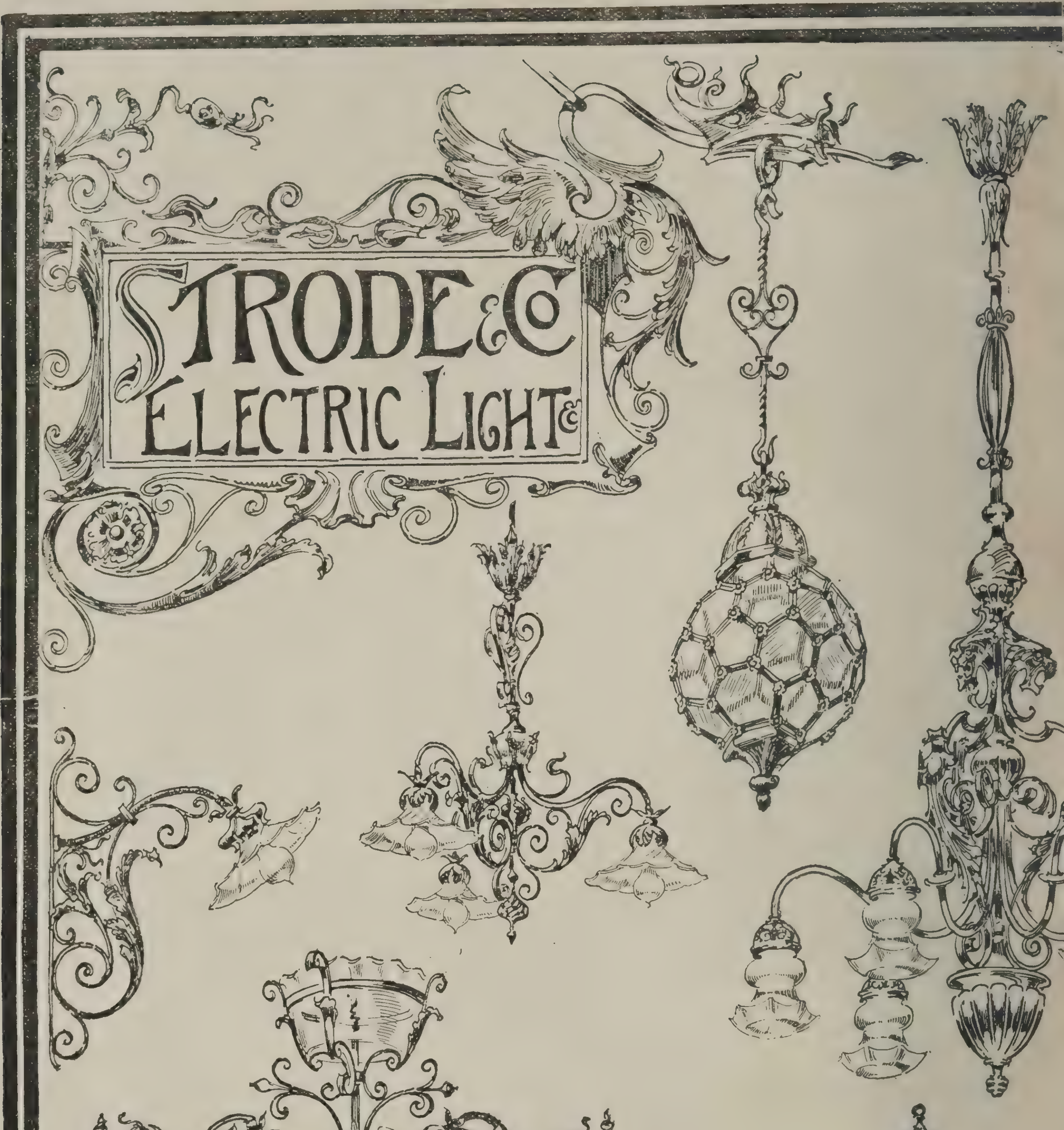
WATER CLOSETS—
Bostel and Son, 73, Ebury-street, S.W.

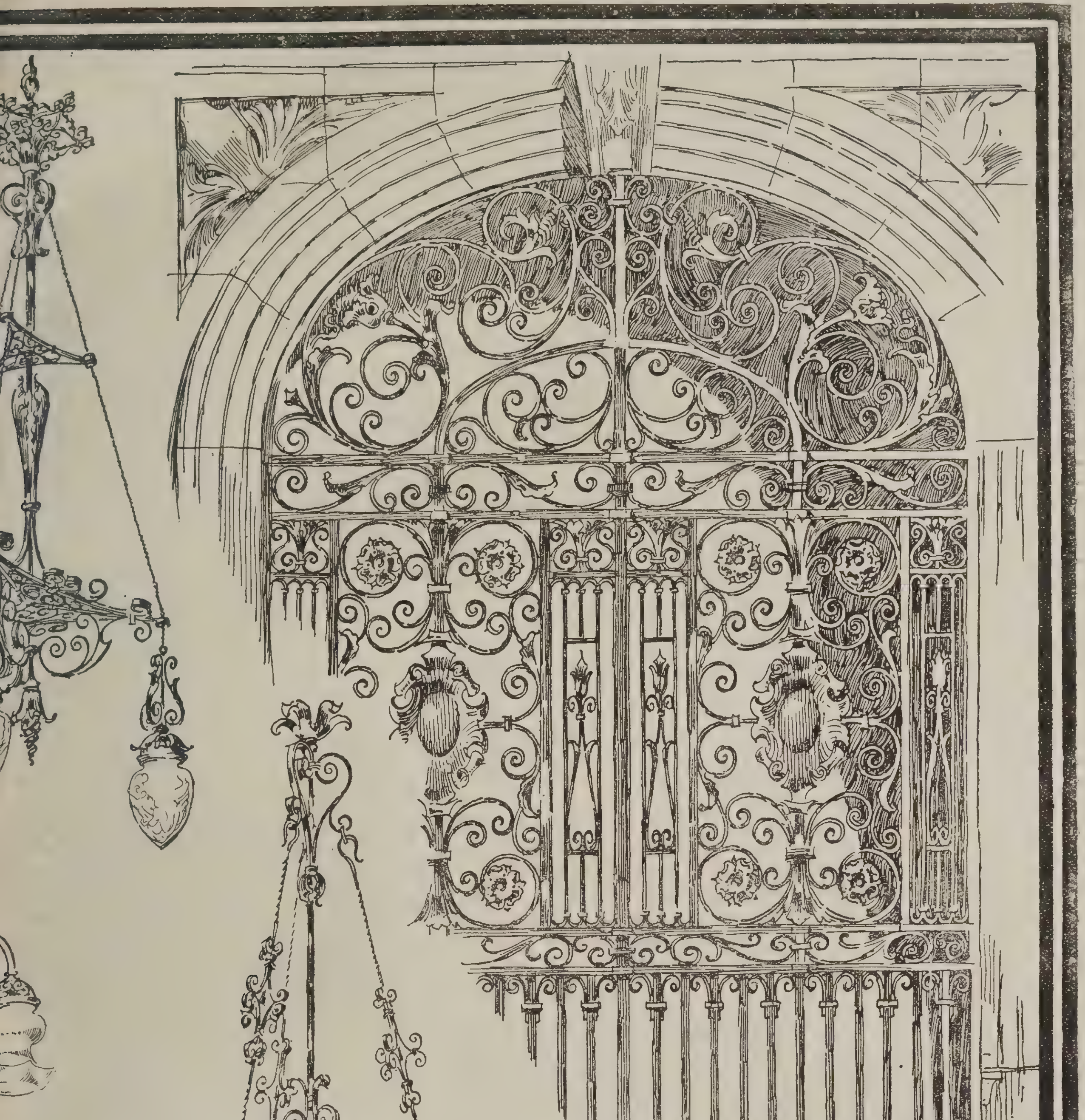
WOOD BLOCK FLOORING—
Gregory, T., and Co., Station Works, Clapham Junction, S.W
Lowe, Roger L., Worsley-road, Farnworth, Bolton.

WOOD CHIMNEY PIECES—
Foster and Cooper, 63, Long-row, Nottingham.

WOOD-WORKING MACHINERY—
Reynolds, F. W , and Co., Acorn Works, Edward-street, Blackfriars-road, S.E.

WROUGHT IRON GATES, GRILLES, &c.—
Worrall (Specialist), Byrom-street, Liverpool.


STRODE & Co
ELECTRIC LIGHT &c



CONTENTS.

Municipal Buildings ... 1
Professional and Artistic Architecture ... 2
The Institute's Suggestions for the Codification and Amendment of the Metropolitan Building Acts ... 3
London Building (Consolidation) Bill Amendment ... 3
British Art Workers and Manufacturers ... 4
The Prescott-Hewett Water-Colour Drawings ... 4
"Sweating" the Profession at Brighton ... 5
Archæological ... 5
Building Intelligence ... 5
Wayside Notes ... 6
Competitions ... 6
The Building News Directory ... 7
Our Illustrations ... 50
Legal Intelligence ... 51
Water Supply and Sanitary Matters ... 51
Correspondence ... 52
Intercommunication ... 53
Legal ... 53
Our Office Table ... 53
Meetings for the Ensuing Week ... 53
Tenders ... 54

ILLUSTRATIONS.

"ST. AUGUSTINE PREACHING CHRISTIANITY IN ENGLAND."—THE MAGISTRATES' ROOM AND JURY ROOM AT THE BIRMINGHAM VICTORIA LAW COURTS.—ANIMALS FROM THE OUTER WALL, CARDIFF CASTLE.—EXTERNAL PULPIT, CHURCH OF NOTRE DAME, VITRE.—IN THE GARDEN OF THE HOTEL METROPOLE, BRIGHTON.—THE CHOIR AND CHANCEL SCREEN, FRANCISCAN CHURCH, INNSBRUCK.—FONT AND CANOPY AT UFFORD CHURCH, SUFFOLK.—PROPOSED CONVALESCENT HOME, BY R. W. EDIS, F.S.A.—THREE INTERIORS OF WESTMINSTER ABBEY.—CONTEMPORARY BRITISH MANUFACTURERS.—ELECTRIC LIGHT FITTINGS BY STRODE AND CO.

Our Illustrations.

"ST. AUGUSTINE PREACHING CHRISTIANITY IN ENGLAND": ROYAL ACADEMY PRIZE DESIGN FOR THE DECORATION OF A PUBLIC BUILDING.

Mr. Paul Raphael Montford's prize design, which we illustrate to-day, represents a scene supposed by the artist to have taken place after the election of St. Augustine to the Archbishopric of Canterbury; but the composition is really intended to illustrate the decay of heathenism as typified by the ruins of the Ancient Roman Temple in the picture, and the happy and glorious growth of Christianity as developed in England under the powerful influence of the Throne and the great administrative piety of this Catholic prelate. King Ethelbert and his Queen, Bertha, are seated to the left of the group, with the Archbishop, in the vestments of his office, preaching in the midst, while boys swing thuribles behind his Grace. In the background stands a crowd of monks and clergy, some bearing processional crosses and banners, and one carries the pastoral staff. The figure chosen by the artist for his enlarged cartoon is that of the deacon standing on the steps. The design must be considered rather for its composition than as an exact historical representation, elaborated with a precise care for ecclesiological detail. We shall illustrate the large cartoon figure at an early date. The present plate was reproduced from Mr. Montford's original prize water-colour drawing.

THE MAGISTRATES' ROOM AND THE JURY ROOM, THE VICTORIA LAW COURTS, BIRMINGHAM.

We publish to-day two photographs recently taken of these two handsome apartments in the new Law Courts at Birmingham. The refined and rich detail of this building renders it one of the most remarkable erections of the kind in England during the past few years, and any illustrations of its parts cannot fail to be interesting. Messrs. Aston Webb and Ingress Bell are the architects. We illustrated the competition designs in our issue for August 13th, 1886, and in July last, when the courts were opened, we printed some further illustrations, with a plan of the buildings as executed, and a description of the work.

ANIMALS FROM THE OUTER WALL, CARDIFF CASTLE, THE LATE WILLIAM BURGES, A.R.A., ARCHITECT.

Lord Bute's mansion at Cardiff continues to receive additions, and during the past year the beasts surmounting the outer wall over against the public street have been executed, in accordance with the original intention of the architect, the late William Burges, A.R.A. We were much struck by their force and boldness of design when we first saw them a few months ago. The double page of photographs which we print among our plates to-day illustrate five of these animals, each one of which is placed over a gabled pier of the wall. The lions with the heraldic shields stand on the entrance gateway piers, one on either side. Some of the beasts are painted in natural colours, and have glass eyes inserted. The bear and the lioness seem particularly clever and sturdy in design, sufficiently conventionalised without any loss of the characteristics of the beasts represented. The seal, too, rides well over the gable of the wall. For quaint humour, the apes have only to be named. The sculptor is Mr. Thomas Nicholls, of Kennington-road, S.E., who did the other carving in the castle, under Mr. Burges.

EXTERNAL PULPIT CHURCH OF NOTRE DAME, VITRE.

There are a few old external stone pulpits in England, such as those at Shrewsbury from the ruined abbey; Magdalen College, Oxford; and at the priory at Hereford. None seem to exist in Scotland, and only one is named in Ireland—viz., the pulpit in the cloister at Sligo cathedral. In France at St. Lô, on the N.E. side of the cathedral of Notre Dame, is a handsome external stone pulpit commanding the street; and at St. Dié, a small village not far from Blois, there is another old example in the cloisters of the cathedral. A plan and view of this figure in Viollet-le-Duc's "Dictionary," Vol. II. p. 413. Several others, no doubt, could be named, and we illustrate to-day one of the most notable from the church of Notre Dame at Vitré in Brittany, with its rich 15th-century canopy, built out solid from one of the main buttresses of the building. Like the one at St. Lô, it has a staircase within the thickness of the wall of the building communicating with the interior of the church. The carvings are spirited and grotesque, and the general proportions of the composition are admirable and effective. As an artistic arrangement of well balanced solid and void, the elevation of the whole thing, as shown in our drawing, leaves little to be desired. Vitré church itself is not one of special interest among those to be seen in this district of North-West France, and its details are chiefly Flamboyant in character. In one of the chapels is a frame containing 32 small Limoges enamels of some note. We published a drawing of an oriel window from the ruined castle at Vitré in the Building News for May 1st this year, with some account of the town.

IN THE GARDEN OF THE HOTEL METROPOLE, BRIGHTON.

The illustration we give is across the garden of the Hôtel Métropole, Brighton, a feature which adds greatly to the attractiveness of this now celebrated hotel. On the south side of the garden stands the ball-room, size 75ft. by 39ft., with a large recess for the band at the one end, and a crush room at the other. This latter room opens on to the upper garden, and communicates by an underground way and lifts with the kitchens of the hotel, which are situated at the top of this immense building. A broad and spacious corridor runs along the side of the ball-room away from the garden, connecting it with the ball reception-room, private dining-rooms, and other adjuncts. The turret contains a clock by Gillett and Co., of Croydon, with mosaic dials and musical chimes. As the ground rises considerably at the back of the hotel towards the north, advantage has been taken of this to make the garden of two levels. Broad flights of steps rise on either side to the upper garden. Below the arch supporting the steps is a fish-pond, which, like other points of interest in the garden, is illuminated in the evening with the electric light.

THE CHOIR AND CHANCEL SCREEN, FRANCISCAN CHURCH, INNSBRUCK.

The Hof-Kirche at Innsbruck is well known as the shrine of the celebrated sculptured marble tomb of Maximilian I., with its high grille of intricate metalwork, surrounded by the wonderful group of bronze statues representing kings and queens, and national heroes of historic fame, at once forming one of the most remarkable monuments in Europe, and of its kind it is certainly unique. The Emperor left directions in his will for the erection of the church and the sepulchre in which he was to be laid; he was, however, really never interred there, but lies at Wiener-Neustadt in Austria. Ferdinand I., his grandson, erected this church, and also the monument in the ten years following 1553. The lofty marble sarcophagus stands in the middle of the nave, and carries a bronze effigy of Maximilian, by Ludovico del Duca, in a kneeling posture, with his face towards the high altar. The colossal metal effigies of the "worthies" of Europe are eminently picturesque in design, skilfully executed in detail, and life-like in character. They are the work of Gregory Löffler and the Brothers Godl. The statues chiefly represent distinguished personages of the house of Austria; but among them is to be noted a figure of our own King Arthur. All the 28 figures are gorgeously dressed in full armour, or clad in costume of the richest description, but are not always in dignified postures nor in becoming attitudes. Our drawing to-day shows the screen and entrance to the chancel, with the statues right and left of the responds. Charles the Bold, Duke of Burgundy, and his father, Philip the Good, stand on the south side, and Joanna, wife of Philip I., mother of Charles V., is seen on the north of the archway. Beyond her is Ferdinand, the Catholic King of Aragon, her father. The church itself is comparatively poor in taste, erected in a long drawn-out and ill-proportioned rendering of a Composite order floridly treated, with angle set volutes to the caps of the columns, and covered with a flatly-contrived coved roof, shaped with groinings. The altar-piece in the chancel is very Rococo in design. The organ gallery in the centre of the church and the silver chapel with the choice altar and statue of the Virgin are both conspicuous features of note in this remarkable building, which also contains several other monuments of great interest, such as the *grave of Hofer*, whose body was brought here in 1823 from Mantua, where he was shot in 1810. The organ gallery is situated at the crossing, with the instrument in a rather crowded position below the groining of the nave in the middle of the building in front of the chancel screen. Our present illustration shows the soffit of this organ gallery, and the glimpse into the choir indicates the relative height of the main vaulting or ceiling of the church as compared with the underside of this gallery. We are indebted to "Denkmaeler Deutscher Renaissance,"* by K. E. O. Fritsch, for the view which we have reproduced, and we take this opportunity of directing the attention of our readers to the interesting fact that at last Herr von Ernst Wasmuth, of Berlin, has completed the entire work, and just lately has issued the concluding part to the subscribers, so that the finished publication can now be obtained by intending purchasers. It would be hardly possible to over-estimate the value of such a work to the architect and artist, containing, as it does, so vast a series of permanent photographic representations of some of the richest and most remarkable buildings erected during the best period of the Renaissance in Germany. No doubt much of this work is coarse in detail compared with Italian buildings in this style, or even French contemporary examples; but for quaintness and picturesqueness there certainly is much to admire, if not directly to imitate. The finishing part of the book now before us includes photographs of a timber-built quadrangle at Frankfort, 1587; Friedewald Castle, near Daaden, with its refined stone front of a few years earlier; the bold picturesque Rathhaus at Gandersheim, with its saddle-back tower; some curious old fronts from the same town; the singular arcaded hall of the university at Helmstedt, built by Paul Francke between 1593-1612, and some strangely ornate façades in masonry and wood from Hildesheim, with their suggestive mural elaboration. The octagonal tower of St. Nicholas Church at Leipsic rising above the tall slate-roofed apsidal gables of the building is strangely picturesque; and so is the broad, bold façade of the Rathhaus in the same town. The wooden gallery over the tower entry would not make a bad feature in an English new building of like kind. The great Renaissance house called the Schloss Leitzkau, erected towards the end of the 16th century, with its built-up gables and varied-shaped turrets or towers and bays, is well worthy of the three plates here devoted to its illustration, though in detail the work is too free to be followed. The ceedingly picturesque half-timber pump-house ar Muehlhausen, in the fertile country which tends along the banks of the Unstrut, figures xt; and then, in contrast to it, is the stone çade of the Rathhaus at Münden, in Hanover, a general sense reminding one of the gables ver Messrs. Daniel's china-shops in Wigmore-reet. George Grossmann was the designer one, and Mr. Ernest George the architect the other. Posen, in Prussia, the ancient seat the Polish dukes, is now a "handsome" odern town and a first-class fortress on the rontier of Russia. The peculiar Sclavonic-omanesque Rathhaus in the market-place of this ity is not unlike that at Breslau, and its 18th-entury central fleche-like tower is the tallest in e town. The arcades of the loggia arrange-ent on the three main stages of the façade are articularly good and effective. The fountain in e market-place at Rothenburg has often fur-ished the subject for a water-colour, with the riel over the statue of the Virgin at the corner f a house beyond. The portal of the Rathhaus t Wittenberg,' on the Elbe, has statuary over he pediment and figures on the first stage at the ngles. Wolfenbuettel, celebrated for its vast ibrary and collection of Bibles, has a fine church n the Renaissance style, dedicated to St. Mary, esigned by Paul Francke in 1608. The groined nterior is a very free composition, bold, original, and clever. Two views of it conclude this valu-able volume. The letterpress is alphabetically arranged, with plans and old engravings repro-duced as marginal cuts.

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* Denkmaeler Deutscher Renaissance. Herausgegeben von K. E. O. Fritsch (issued in twelve parts). Berlin: Ernst Wasmuth, 35, Markgrafenstrasse.

THE FONT, UFFORD CHURCH, SUFFOLK.

THIS double-page plate is reproduced from a beautiful water-colour drawing exhibited last summer at the Royal Academy by Mr. Charles Maundrell, and although necessarily the charm of colour is lost in our monochrome print, the general balance of light and shade in the original picture is very well rendered by Mr. Akerman's clever reproduction. Ufford Church font-cover is without doubt one of the finest in England, and it retains much of its original colour and gilding. It is hung from the roof by an iron chain, and when pushed up, the lower part telescopes over the upper stages of the spire. When the devastating crew sent by the Parliamentarians visited Ufford in 1644, to demolish all pictures and sculptures, laying bare the sanctuary, they were so far overcome by the exquisite character of the font-cover that their zeal gave way in favour of its retention, as we learn from their report, wherein they said it was "a glorious cover over the font like a Pope's triple crown, with a pelican on the top, pecking its breast, all gilt over with gold." We published full measured drawings of this cover in the BUILDING NEWS for May 18, 1888, the year they were exhibited at the Royal Academy by Mr. H. P. Adams.

PROPOSED CONVALESCENT HOME.

WE have received no particulars descriptive of this building, of which we print a perspective view. The plan shows the arrangement of the interior, with its angle-set day-room and wards at the ends of the main buildings. Colonel R. W. Edis, F.S.A., is the architect, and the drawing illustrated was hung at the Royal Academy Exhibition last summer.

THREE INTERIOR VIEWS OF WESTMINSTER ABBEY, DRAWN BY HERBERT RAILTON.

MR. W. J. LOFTIE's capital book on Westminster Abbey, which was originally issued in a folio form, has just been reprinted and published in an octavo volume* by Messrs. Seeley and Co., and thus this artistic and interesting work has been brought within the means of the many, besides rendering its pages more easy of reference for all. Among our plates will be found three specimen illustrations reproduced from the original etchings to a somewhat larger scale than they appear in the cuts of the octavo book; but they are sufficiently near in scale to afford our readers a good idea of the class of sketches with which the book is elaborated. The original drawings themselves have been on view in the Japanese Gallery, New Bond-street, during the past month, with some other examples of black and white by such artists as Sir Fredk. Leighton, P.R.A., Marcus Stone, R.A., Albert and Henry Moore, A.R.A.'s, Clara Montalba, and others who have been employed by Messrs. Seeley and Co. to illustrate "The Portfolio." Westminster Abbey has had, of course, many distinguished historians—not to mention, within the past thirty years, such antiquarians as Prof. Willis; Rev. Mackenzie Walcott, Dean Stanley, J. H. Parker, Wm. Burges, A.R.A., and Sir Gilbert Scott, R.A., whose "Gleanings from Westminster Abbey" are well known. Dean Bradley, too, has issued of late years a popular handbook. All these have added to our knowledge of the Great Collegiate Church of St. Peter at Westminster, and yet room has been left for Mr. Loftie's more fully illustrated and popular comprehensive summary of its historical records, and showing besides the existing condition of the fabric at the present time. Of the church of the Confessor nothing remains except a doorway high up on the southern face of the transept. The eastern apse is of the building of Henry III. The nave was nearly completed by his son, though Richard II. actually finished it. The chantry of Henry V. must have been upreared while Henry IV. was still a child. The chapel of Henry VII. was really built by Henry VIII., whom, as Mr. Loftie remarks, we habitually think of rather as an iconoclast than as a builder. To James I. are owing the last royal monuments ever set up in the church. Under Charles I. Inigo Jones built Ashburnham House, and Burlington designed the dormitories of the days of the first Hanoverian King. Wren built the north transept front, now pulled down, and one of his pupils the western towers under George II. Cottingham ranks as the first of the modern "restorers" who worked at the Abbey; but little of his time remains—the time when the coronation of George IV. and the novels of Sir Walter Scott helped so strongly to bring about the "Great Gothic Revival." Sir Gilbert Scott, who lies buried in the nave, rebuilt the Chapter House and fitted the choir and the altar, as we now see them, and erected the nave and choir pulpits. He also restored the north portals, and Mr. J. L. Pearson, R.A., the present architect to the Abbey, has quite recently completed the new north front in a way which deserves the warmest praise. Mr. Loftie helps us to realise the site of the abbey as it was a thousand years ago—a low, sandy hillock, called Thorn-Ey, from whence, looking northward and westward, are seen all that remains of the Great Middlesex Forest. The road rises to Tot Hill, which is a conspicuous landmark here, and goes straight on over the "Bulunga Fen" till it reaches another, "the road to Reading," which has just crossed the Tyburn at Cowford, where Brick-street is now in Piccadilly. Tyburn-lane reached the road to Reading at what we call Hyde Park Corner. From the reign of Edward the Confessor Westminster became the headquarters of the King's Government, and the Abbey and its church became the religious centre of the nation, where the highest ceremonials of our land have been performed. In this respect no other place can equal it in interest. At Westminster our kings have slept in peace, and all the varied changes wrought by time, and miscalled restoration, have not been able to obliterate all the charm of antiquity and historical association which cling about the ancient walls. The author holds that the Victorian work carried out in the repair of the fabric should have been more original in style and less based upon models belonging to bygone days, the time of Edward I. or Henry II. Surely he would not repeat at Westminster the Vandalism of a Grimthorpe as witnessed at St. Albans! Mr. Loftie is on safer ground when he turns to the strictly historical record of the fabric and of those who built and used it. In this he has gained no small help from the papers of Professor Middleton and Mr. J. T. Micklethwaite, architect. Westminster has always ranked as a show place. Pepys visited it two hundred years ago, and Sir Roger de Coverley's visit is described by Addison. Visitors from all lands and every sea, whatever else they miss, all go to Westminster, and as a souvenir of such an occasion the book we are now describing furnishes the best form of record which could well be mentioned. The drawings which we publish show the interior of the north transept, made before Mr. Pearson put in the new Rose window,* a general view of the choir from the organ gallery, and a view of the north aisle of the choir apse.

BRITISH ART-WORKERS AND MANUFACTURERS.

(SEE Biographical Sketches on page 4.)

ELECTRIC-LIGHT FITTINGS BY MESSRS. STRODE AND CO.

WE show in our issue of this week a few drawings of works now being executed by Strode and Co., of Osnaburgh-street, St. Paul's Churchyard, and Piccadilly. The bracket and electrolier on the left of the sheet are good specimens of wrought ironwork. The faceted lantern, which is in copper with bevelled glass, has a very effective appearance; it is to hang from the wrought-iron sign made for Heath's of Oxford-street. The wrought-iron desk screen is being made for a bank, and is fitted for both gas and electric-light. Bank fittings are a speciality of this firm. The electrolier in the centre of the sheet, of polished brass, is highly finished, and very artistic. The gates have been executed for Messrs. Ough and Son, for a building they have just erected at Stratford. The panel is a good example of fine ornamental hammered work.

LEGAL INTELLIGENCE.

EMPLOYERS' LIABILITY.—MONTGOMERIE V. JOHN M'KNIGHT AND CO., LIMITED.—In the Second Division of the Scottish High Court of Justice, before the Lord Justice Clerk and a jury, Daniel Montgomerie, Stankard's-row, Uphall, sued John M'Knight and Co., Limited, Binny Quarry, Uphall, for £500, or £78 under the Employers' Liability Act, for the death of his daughter Mary Jane, who entered the defenders' employment in Cardross Brick Works, near Uphall, on 25th May last, and was accidentally killed on 2nd June. After a two-days' trial the jury returned a verdict for the pursuer, and assessed the damages at £200.

IN RE R. LAING, OF DUNDEE.—A meeting of the creditors of Mr. Robert Laing, builder, High-street, Dundee, was held in Lamb's Hotel on Dec. 22nd. The statement of affairs showed liabilities amounting to £3,400, the assets being put down at £1,030, subject to preferable claims, or an apparent dividend of about 4s. 10d. per £1. An offer of 2s. 6d. per £1 was made, but after discussion the meeting adjourned for a week.

RE C. W. WARD.—The receiving order in this case was made on Dec. 3, the debtor trading as a builder and contractor at 150, Minories, under the style of C. W. Ward and Co. A summary of the accounts has now been issued, the liabilities being returned at £2,864, and the available assets at £5. An order for summary administration has been made.

WATER SUPPLY AND SANITARY MATTERS.

WATFORD.—Mr. S. J. Smith, C.E., Inspector of the Local Government Board, held a further inquiry on Thursday last with reference to the application of the Watford Union Rural Sanitary Authority for sanction to borrow £23,600 for the purposes of sewerage and sewage disposal for the contributory place of Bushey. The Hon. Sidney Holland, instructed by Messrs. Sedgwick, Turner, and Oddie, and Mr. Urban Smith, A.M.I.C.E., the engineer to the Sanitary Authority, supported the scheme. The chief matter before the inspector was as to a suggested combination between the contributory place of Bushey and the Local Board of Watford, for sewage disposal purposes, which had been favourably reported on by Mr. Urban Smith. The Local Government Inspector expressed himself as strongly in favour of such a combination; but as the members of the Local Board present still declined to agree to the proposal, the inspector intimated his intention of reporting at once upon the separate scheme.

A new workmen's club in High-street, Lyndhurst, was opened on Tuesday week. It is Elizabethan in style, and has been built by Mr. Ernest Gale of that town, from plans by Mr. J. H. Roberts, who acted as honorary architect.

The temporary hall, at Exeter, now being built for the purpose of a meeting which the Marquis of Salisbury will address, on the 19th inst., has been designed by Mr. Jerman, architect, of that city. It is octagonal in form, with an extreme length of 262ft., and a width of 220ft., and the height is 30ft. The roof is of wood, covered with felt, and will be crowned by lattice-work girders, resting on pitch-pine posts 11in. square. The building will be seated for 10,000 people, and will have thirteen exits, each 10ft. wide. The contract has been taken by Mr. Henry Phillips, of Exeter, and the cost will be about £1,200.

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* Westminster Abbey. By W. J. LOFTIE, B.A., F.S.A., with Illustrations by HERBERT RAILTON. New edition, revised. London: Seeley and Co., Limited, Essex-street, Strand. 1891.

* See BUILDING NEWS for June 5, 1891, for photograph of new front. Sir Christopher Wren's autograph drawing of it, dated 1719, will be found in our issue for October 26, 1888, and Sir Gilbert Scott's new portals were illustrated by us in the BUILDING NEWS for May 3, 1878.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. Passmore Edwards.

TERMS OF SUBSCRIPTION.

One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 0d. (or 6dols. 30c. gold). To France or Belgium, £1 6s. 0d. (or 33fr. 30c.) To India (viâ Brindisi), £1 10s. 4d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front Page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No front page or paragraph Advertisement inserted for less than 5s.

Situations.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is One Shilling for Twenty-four Words, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., L., LI., LIII., LIV., LVIII., LIX., and LX. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

Received.—H. B. and Co.—C. and Co.—H. C. W.—D. and C.—J. and Son.—G. B. and L.

"BUILDING NEWS" DESIGNING CLUB.

THIRD LIST OF SUBJECTS.

C.—A Parish Hall for a site in the middle of the roadway of a village street, with a trough for horses and a drinking fountain attached. The land available for building is a triangular piece 90ft. long, 30ft. wide at east end, and 55ft. wide at west end. Roadway both sides, north and south, running east and west. The main entrance to be at the east end. The fountain to be in the wall at the west end. The accommodation to comprise a hall for entertainments and parish meetings, with a small recessed stage at one end; a small retiring-room available for committee meetings, a w c. and small lavatory, and a gallery is to be provided at the entrance end of the Hall. Style suitable for stone walling, and stone slab slated roof; scale, 8ft. to the inch. Plans, 3 elevations, and a section with perspective view.

Drawings Received.—"Western," "Hubby," "Gobo," "Nimrod," "Pastime," "J" in a circle, "Sanitas," "Albyn," "Cotonopolitan," "Symbol," "Kentish Rag," "Black Prince," "Aryshire," "Black and White," "Sweet Auburn," "Firefly," "Pen," "Spider," "Red Lion," "Orient," "B" in a circle, "Norman," "The Idler," "Pendragon," "Hut," "Hales," "Forward," "Gradatim" (Stockport), "Ray," "Red Brick," "Ilex," "John Jones," "Gradatim" (Ipswich), "Tempus Fugit," "Punch," "Hardwick," "Hilarius," "The Useless One," "Wit," "Herbert," "Goblin Grey," "Tyro," "Yorkshire Tradition," "Terracotta" (no name and address), "Grandison," "Ich Dien" (no name and address), "Devil's Chimney," "Nodrah," "Forward," "Sunset," "Sector," "Ko Ko," "McGinty," "Love's Labour," "Jean."

* * *

Correspondence.

THE ARTY-CRAFTY ARCHITECT.

To the Editor of the Building News.

Sir,—The letter appearing in your last issue under this heading hardly deserved its title, being, in point of fact, a defence of the crafty but artless architect to whom the writer thinks the Architectural Association should alone give ear. As a member of this body by no means new to "bricks, mortar, and the builder," however, I failed to find in Mr. Jackson's paper anything calculated to injure the "receptive mind" of the student, or to call for the awful warning to parents and guardians that Mr. Woodward advocates. Such a letter could, I think, only be justified by a complete exposition of crass ignorance on the part of his opponents. Does this indeed exist? Are Mr. Norman Shaw and Mr. Jackson, for instance, so ignorant of the A B C of construction as to require "relegation to the rudiments of their business"? Their work does not show it, and Mr. Woodward's letter certainly does not prove it. Ignorance so well concealed is a covetable commodity.

It was not Mr. Jackson's paper, but Mr. Kerr's contribution to the discussion thereon, that struck me—an impartial observer of the controversy—as injurious—indeed, as cruel in the last degree; for it is cruel for Mr. Kerr to attempt to deprive the younger generation of that enthusiasm that he gives us to understand he himself possessed in his youth. Without it, perhaps, he had failed to invest his buildings with even that trifling modicum of art that he tells us the British public desires.

It is sad, but not altogether surprising, to learn that the late Mr. Sedding and all his works fall under Mr. Woodward's ban. Some few of us have seen a little to admire in them hitherto; but since they are not according to the gospel of Southampton-street, I suppose we must cry "Peccavi," and recant. Seriously, the A. A. having gone so far with the Institute in their new departure, is it not fair that the other side should have a hearing? Mr. Woodward's case must be weak indeed if it can only be served by the muzzling of his adversaries, and a stretching in his favour of parental authority. This last, too, he is most unlikely to obtain, for the public views the great architectural controversy with complete indifference, musing—"Strange that such difference should be, 'twixt Tweedledum and Tweedledee."—I am, &c.,

Alfred C. Houstone.

13, Furnival's Inn, E.C., Dec. 24, 1891.

MR. JACKSON AT THE ASSOCIATION.

Sir,—The address of Mr. Jackson at the Architectural Association is most remarkable. His advice to the young seems to be so misleading as to be most dangerous.

He recommends them to "shut their books, and, flying off to the workshops, learn how to design in a way that gives the workman no unnecessary trouble, makes the most economical and reasonable use of the materials," &c.

Should any student venture to put this advice into practice with the first building intrusted to his care, it would be likely to place him at such disadvantage at the outset of his career, that it might take him years to recover therefrom. The workman will readily advise how to take out the unnecessary tasks and unprofitable labour, and with these will be weeded out the art and the beauty. Why, in perhaps nine cases out of ten it is just this "unnecessary trouble" and "unprofitable labour" that give the beauty to the design. Why, Sir, the very advice here given to the student is that from which architecture has most severely suffered in the past, and the public have been most quick to learn—viz., to consult the workman direct, and to take his work with all the unnecessary labour and the unprofitable work left out.

But it was with reference to the examinations in architecture that I took up pen, and it is here that the advice given is so remarkable, especially when given by a M.A.

Mr. Jackson says: "They put before him a wrong motive. He learns, not in order to know, but to pass." Surely if Mr. Jackson admits that "he learns," he will not quibble as to the reason why. "He learns," says Mr. Jackson, and therein do all right-thinking men rejoice. Anything that forces a man to learn, need not be too inquisitively examined. It is surely the learning we require: the motive thereof we may well leave, if this be gained.

His next accusation against the examination is that it forbids the student to linger over some special bias or particular branch. Again, Mr. Editor, a distinct advantage, one would think. Most certainly anyone with a general knowledge over such a wide range as is covered by the Institute examinations is much better prepared for the special study of some particular branch than is one who has given all his time to one thing, and has never ventured to look abroad upon the pressing questions and varied knowledge awaiting him on every side.

At one moment Mr. J. calls the system of the examinations "a clog," the next minute he calls it "a cram." But a cram is the very opposite to a clog—it is an incentive, an urging forward. Yet Mr. Jackson admits that "In order to pass, the candidate must answer a certain number of questions on a wide range of subjects." And with this admission he practically admits the worth of the examinations and the extent of ground they cover.

One reason of accusation he finds in that the Institute examines, it does not teach. What of this? The teaching is obtained, though not from the Institute, in some other way. The teaching, which but for the examination would not be sought, is obtained, and much good thereby gained.

The remark that these examinations "will infallibly fail to keep out those who are unworthy, and will probably shut the door in face of some Heaven-descended genius whose originality you may fail to appreciate" is astonishing. What would the examiners of Oxford or Cambridge think of the plea of the undergraduate they had just ploughed that "They had failed to appreciate his originality."

Besides, Mr. Editor, it is not originality merely that is required. It is originality *only* when it is accompanied by knowledge that will be found of any service.

Mr. Jackson's allusion to the present members of the Institute is in bad taste as well as beside the mark. If, as he says, a good many would be found outside—if this be true, then does Mr. Jackson wish it to continue? The present members of the Institute never had the advantages of examination; and it is chiefly because of the lack of any real training in the past, or rather, because of the enormous difficulties of getting such training in the past, that the importance is now seen of placing these advantages in the way of the architectural students of to-day; and that this is needful alike for the students and for the public at large, who will be their clients.

Perhaps the most extraordinary statement is to come. Mr. Jackson says—and it is a remarkable statement—"The majority of candidates are, and must be, mediocrities; and you will have to admit them with their middling gifts, and to suit your standard to their capacities." No, Mr. Jackson; the day is over for that. We object decidedly to have a majority of architects who are "mediocrities," and to be content with their "middling gifts."

We will not suit our standard to such capacities. We purposely raise it above them. The architect of the future must not be a "mediocrity." He must be the best that can be. He must have the best and most efficient training; that training must not be confined to the student's "special bias"; it must be sufficiently wide to embrace all he needs to know, and all the knowledge the public have a right to demand; and that training must lead to examinations that shall give a knowledge of competency and the possession of conscious strength to those who pass.

J. W.

ARCHITECTURE OF THE RENAISSANCE.

Sir,—Permit me to point out to you that in your notice, under the heading of the third part of Messrs. Gotch and Brown's work, you are in error in stating that the two photographs representing Knole House are by Mr. Essenheigh Corke, and as these are two of the finest yet issued, you do some unintentional injustice to Mr. Charles Latham, of Balham, who has taken the whole of the photographs for this work, *including the two in question.*—I am, &c.,

B. T. Batsford, Publisher.

52, High Holborn, London, Dec. 29, 1891.

* * *

The pupils of Mr. T. J. Moss Flower, C.E., consulting sanitary engineer, Bristol, succeeded in gaining twenty-two and twelve successes respectively at London and Manchester examinations held for sanitary inspectors by the Sanitary Institute, December, 1891, all passing, with very few exceptions.

The Wesleyan chapel at Hawkshaw-lane, near Bury, erected from plans prepared by Mr. H. Leonard Hinnell (Proctor and Hinnell), civil engineer, architect, and surveyor, Bolton, has been opened. The chapel is stone built, being faced with Yorkshire parpoint, having Holcombe stone quoins and mullions, and it is capable of seating about 230 people. The contractor for the work has been Mr. Jas. Byrom, Woolfold, Bury.

Intercommunication.

QUESTIONS.

[10685.]—**Soils.**—Could anyone give me any information as to the respective weight that may be safely borne by different kinds of soil, and in what book I could find the same, especially what weight per square foot on good sand foundation?—LA TERRE.

[10686.]—**Bookkeeping.**—Would a correspondent kindly recommend a good system of bookkeeping for builder and contractor?—SEVEN YEARS' READER.

[10687.]—**Damp.**—I have several cases of 11in. hollow brick walling, put together in the usual way, with galvanised-iron ties, where the damp is carried through the wall by the brick headers adjoining the reveals of the windows. Can anyone recommend a preventive, or any solution that could be applied to the bricks to stop the suction and would not discolour them? The moisture dropping upon the lintel over the window is carried off by a small lead gutter in the cavity.—A. R. N.

Legal.

ABOUT TENDERS.

OF course, there are cases in which owners begin to build without any contract as to price, and when this is done they have to pay whatever a Court may ultimately decide is fair and reasonable, and upon a valuation of the work done, and the materials provided, which work can be and is measured up for that purpose. But the usual and safe course to pursue is to have estimates or tenders for the building to be erected sent in by the builders who like to make an offer about the job. The architect generally gets in the estimates or tenders as they may be advertised for, as they frequently are in large concerns. An invitation to tender for any building can be revoked at any time by the person so inviting tenders, and providing, of course, that this revocation takes place before there has been any acceptance on his part when an advertisement for tenders is thus withdrawn or revoked. There may be some hardship on the persons tendering, for there is no means by which they can recover any expenses they may have incurred in so doing. In fact, an announcement that tenders will be received is, in law, in the same position as a declaration that a public sale will be held at a particular place or upon a certain date. In such a case it has been decided that a person acting upon the advertisement, and incurring expenses in consequence, could not recover them from the auctioneer or anyone else, as the mere invitation to attend a sale did not amount to a contract or warranty that a sale would be held, and the same argument applies to an invitation to tender.

Then, again, it is clear law that there is no obligation on the part of the person inviting tenders for work to accept the lowest or any other tender. To invite tenders is, legally speaking, only one way of trying to find out if certain works can be carried out at a price which the owner or architect thinks is profitable or satisfactory. This mere proposal to others to say what they would do the work for cannot make any sort of contract enforcible against the party so proposing. It is usual to add a clause in such advertisements and invitations stating expressly that the building owner does not bind himself to accept the lowest or any other tender. This is done from motives of precaution; but in law it cannot be needed. It is true there is one case in which the Court appears to have considered that there might be a binding custom in a particular trade to accept the lowest tender. But this decision, when looked into, turns more upon the conduct of the parties and facts showing that the tender had been accepted than upon any such custom, and it certainly cannot be regarded as a general authority.

FRED WETHERFIELD, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

NOTE.—All questions for reply in this column must be headed "BUILDING NEWS," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

G. C. J.—LATERAL SUPPORT.—NEGLIGENT SHORING.—If you can prove that the damage to your house arose by reason of the excavation and defective shoring by your adjoining neighbour, he would be legally liable in damages for the actual injury done in consequence. You should call upon him to make it good, and had better give the same notice both to him and his builder.

Our Office Table.

MR. WILLIAM SMITH, of Aberdeen, architect of her Majesty's Castle of Balmoral, died on Thursday night in his 74th year from an attack of bronchitis. Mr. Smith was born in 1817, and was educated at Marischal College, Aberdeen, where he graduated M.A. After travelling in Greece and Italy for the purpose of perfecting himself in his profession, he returned to Aberdeen in 1842, and ten years later succeeded his father as city architect, an appointment which he held until his death. He erected many of the churches and public buildings in Aberdeen. When her Majesty and the Prince Consort determined upon erecting a new castle in the Highlands, Mr. Smith was chosen to design the building and to superintend its erection, and Balmoral was the result. Mr. Smith erected many other private mansions, schools, hospitals, &c., in various parts of Scotland. He married, in 1846, a daughter of the late Dr. Patrick Blaikie, of the Royal Navy, who predeceased him; one of his sons is Mr. Garden Smith, an Edinburgh artist.

THE Northumberland County Council, in addition to promoting classes for plumbers' apprentices at different local centres, with a view to their obtaining the certificate of Registration offered by the Worshipful Company of Plumbers in London, has appropriated £50 for the purpose of providing facilities early this year for a few practical men to pursue a course of training for three weeks at the College of Science. It is hoped that other county councils in the northern district will do the same, and at the annual general meeting of the district council for the North of England a resolution was carried to that effect. Another resolution urged the necessity for securing the greater sanitary efficiency of plumbers' work by an organised and efficient system of registration, which could only be secured by a council of competent jurisdiction and authority having Parliamentary powers.

THE prizes given by the Carpenters' Company were recently distributed by Mr. Henry Harben, L.C.C., the Master and many of the past masters of the Carpenters' Company, Dr. Henry Wace, and many of the professors being present. There were many members of the British Institute of Wood Carvers at work in wood-carving room. There were microscopes in Professor Grove's room, showing specimens of wood and stone, limelight views in the drawing-room of the various styles of architecture, with explanatory notes by Professor Banister Fletcher, a splendid collection of wood carving belonging to Mr. Rogers, and diagrams and instruments explained in the new electrical laboratory. The students' drawings were hung on the walls, and also photographs, drawings, architectural and constructional, in the reference museum and architectural corridor.

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Despite the facts that there are some 2,500 cesspools in Chichester, and that the inhabitants of 816 houses obtain their water from wells, the non-drainage party of the Town Council of that city, the *Brighton Advertiser* remarks, have, by a narrow majority given them at the last municipal election, decided to abandon the proposed drainage scheme, in favour of a system of cesspool cleansing in use at Bexley. The cost of the plant for the project adopted is not to exceed £200.

Mr. John Shillitoe, of Bury St. Edmund's, the head of a well-known firm of builders and contractors, died on Wednesday week. The son and grandson of builders, Mr. Shillitoe was born at Campsie, near Doncaster, in January, 1833, and was, therefore, in his 59th year.

The death is announced of Mr. William Wilkinson, head of the firm of Messrs. B. Cooke and Co., of Phœnix Wharf, Battersea. The deceased was well-known in the railway and contracting world. He was 67 years of age, and died at his residence, Aubrey House, Albert-road, S.W. He is succeeded in the business by his only son.

The Rotherham School Board have instructed their architect, Mr. H. L. Tacon, of 11, Westgate, Rotherham, to prepare plans for a new school to accommodate 700 children. The site has been approved by the Education Department.

It has been practically decided, with the active concurrence of the authorities at the British Museum, to establish a course of University Extension lectures in Greek art at the British Museum, primarily for artisans, and at popular prices.

MEETINGS FOR THE ENSUING WEEK.

MONDAY.—Surveyors' Institution. Discussion on "Party and Party-Fence Walls." 8 p.m.

TUESDAY.—Glasgow Architectural Association. "An Italian Tour," by C. R. M'Intosh. 8 p.m.

WEDNESDAY.—Civil and Mechanical Engineers' Society. "The Square Drilling Machine and its Uses," by Reginald Bolton, Vice president. Westminster Palace Hotel. 7 p.m.

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CHIPS.

At a meeting of the Stoke-on-Trent Rural Sanitary Authority, held on Wednesday week, nine applications were received for the office of surveyor to the authority. Mr. G. W. Bradford, of Hanley, was elected. The appointment is worth £50 a year.

A stained-glass window has been inserted in the parish church of Uttoxeter. The subject is "The Presentation of Christ in the Temple," and the work has been executed by Messrs. Ward and Hughes, of London.

St. Thomas's Church Schools, Stanningley, are about to be enlarged, from designs by Messrs. J. Kendall and J. H. Bakes, M.S.A., architects, Leeds and Idle.

Mr. Robert Stephenson, of the firm of Messrs. R. Stephenson and Co., engineers, of Newcastle-on-Tyne, who died suddenly at San Remo last week, was a son of Mr. George Robert Stephenson, and a grand-nephew of George Stephenson, the eminent engineer. He was in his 43rd year.

The extensive timber works and saw-mills known as Brakewell's Saw-Mills, Whalley-road, Clayton-le-Moors, near Accrington, belonging to Mr. R. Howson, were destroyed by fire on Saturday.

Helpringham Church, South Lincolnshire, which has been undergoing restoration in consequence of the collapse of its roof last year, was reopened on Tuesday by the Bishop of Lincoln.

A second theatre in Portsmouth, the Prince's, in Lake-road, Landport, was opened on Saturday afternoon. The building, which is from the design of Mr. F. Matcham, of London, will accommodate an audience of about 1,500.

◆

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TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

Clacton-on-Sea.—For building five pairs of villas for Mr. A. R. Chamberlain in Station-road. Messrs. Homer and Ridler, 35, Bucklersbury, E.G., architects:—

	£	s.	d.
Ellis and Turner (accepted)	£6,218	0	0

Bodmin.—For alterations to the Assizes Court cells, for the County Council. Mr. W. T. Martyn-Mear, of Bodmin, architect:—

Masonry: —Brown (accepted.)
Carpentry:—Shelley (accepted.)

Glasgow.—For the erection of a gasholder at the Temple Farm Gasworks, for the Glasgow Gas Commissioners:—

Laidlaw and Son, Glasgow (accepted).

(Tenders received ranged from £40,000 to £47,000. The gasholder will be the largest in Scotland.)

Cardiff.—For erection of additional buildings, for the Cardiff Tin Stamping and Enamel Co., Limited, East Moors. Mr. W. I. Grylls, 37, St. Mary-street, Cardiff, architect and surveyor. Quantities by the architect:—

	£	s.	d.
Strachan, J.	£2,784	0	0
Allan, J.	2,572	8	0
Hatherly, E. T., Bristol	2,557	0	0
Johnson Bros., Hereford & Cardiff	2,507	0	0
Powell and Mansfield	2,497	0	0
Williams and Thomas	2,490	0	0
Thomas and James	2,477	0	0
Gough, T.	2,369	10	0
Hopkins, J.	2,365	0	0
Roger, J. W.	2,350	0	0
Exors. of Gradwell, W., Newport	2,265	0	0
Ridley, T. D., Middlesbrough and Cardiff (accepted)	2,193	0	0
Harvey, E.	2,151	13	0

Rest of Cardiff.

Eccleshill, Yorks.—For the erection of a cloth warehouse at the Old Mill, Eccleshill, for Messrs. Smith and Hutton, cloth manufacturers. Messrs. Jowett Kendall and J. Harper Bakes, M.S.A., Calverley Chambers, Victoria-square, Leeds, architects. Quantities by the architects:—

(Accepted tenders.)

	£	s.	d.
Mason's work:—			
Thornton, J., and Son, Idle	£289	0	0
Joiner's work:—			
Bakes and Overend	146	0	0
Plumber and painter's work:—			
Norton, Lamby	34	0	0
Slater's work:—			
Thornton, T. and A.	23	18	6
Plasterer's work:—			
Taylor, A.	15	0	0

Total amount, £508 18s. 6d. Rest of Eccleshill.

Great Yarmouth.—For additions to Messrs. Arnold's premises, King-street. Messrs. Bottle and Olley, Great Yarmouth, architects. Quantities by architects:—

	£	s.	d.
Rand and Cooper	£1,297	15	0
Wiseman, C.	1,294	10	0
Beech, G. W.	1,282	0	0
Eastoe, R.	1,276	0	0
Davy, R.	1,259	17	0
Grimble and Watts	1,258	0	0
Leggett, J.	1,250	0	0
Flaxman, G. T.	1,242	0	0
Cooper, J. S.	1,231	0	0
Cufley, C. C. J.	1,230	0	0
Cork, W. (accepted)	1,216	0	0

All of Great Yarmouth.

Great Yarmouth.—For erection of pair of semi-detached houses, Wellesley-road. Messrs. Bottle and Olley, Great Yarmouth, architects. Quantities by architects:—

	£	s.	d.
Bray, J. F. W.	£1,888	0	0
Davey, R.	1,869	13	0
Cork, W.	1,848	0	0
Leggett, J.	1,795	0	0
Cooper, J. S.	1,784	0	0
Beech, G. W.	1,749	0	0
Batchelor, J.	1,667	0	0
Beckett, G. (accepted)	1,648	10	0

All of Great Yarmouth.

Kingsbridge.—For building residence, stables, and boundary walls at Kingsbridge, for Mr. C. F. Pawley. Mr. W. Grainger, architect:—

	£	s.	d.
Steer, J., Averton Gifford	£1,183	0	0
Pearce, E., Kingsbridge	1,060	0	0
Cranch, J., Salcombe	1,025	0	0
Rogers, J., Averton Gifford	830	0	0

Kingswear, S. Devon.—For the erection of a gardener's residence at The Beacon, Kingswear, for Col. St. John Daubeney. Messrs. E. Appleton and Son, Torquay, architects:—

Short, J. E. (accepted).

London.—For internal repairs and decorations to shop and premises, Cloth Fair, E.C. Mr. H. Riches, 3, Crooked-lane, King William-street, E.C., surveyor:—

Osborn, T., and Sons (accepted).

London.—For alterations to the Weaver's Arms, p.h., 1, Warley-street, Bethnal Green, E., for Mr. J. Hassell. Mr. W. Seckham Witherington, F.R.I.B.A., 79, Mark-lane, E.C., architect:—

	£	s.	d.
Larke and Son	£1,384	0	0
Kearley	1,366	0	0
Lascelles and Co.	1,280	0	0
Hood (accepted)	1,005	0	0

London.—For pulling down and rebuilding the Langton Arms, p.h., Norman-street, St. Luke's. Mr. R. Roberts, architect:—

	£	s.	d.
Cox, C., Hackney	£2,464	0	0
Outhwaite and Son	2,447	0	0
Ashby and Horner	2,447	0	0
Wood, F. and F. J.	2,418	0	0
Gladding, W., Mile End	2,377	0	0
Snewin Bros. and Co., Upper Clapton (accepted)	2,295	0	0

London.—For painting and repairs at the Queen's Head p.h., Wharf-road, City-road, for the Cannon Brewery Co. Messrs. F. Chambers and Son, architects:—

	£	s.	d.
Snewin Bros. and Co., Clapton (accepted)	£105	0	0

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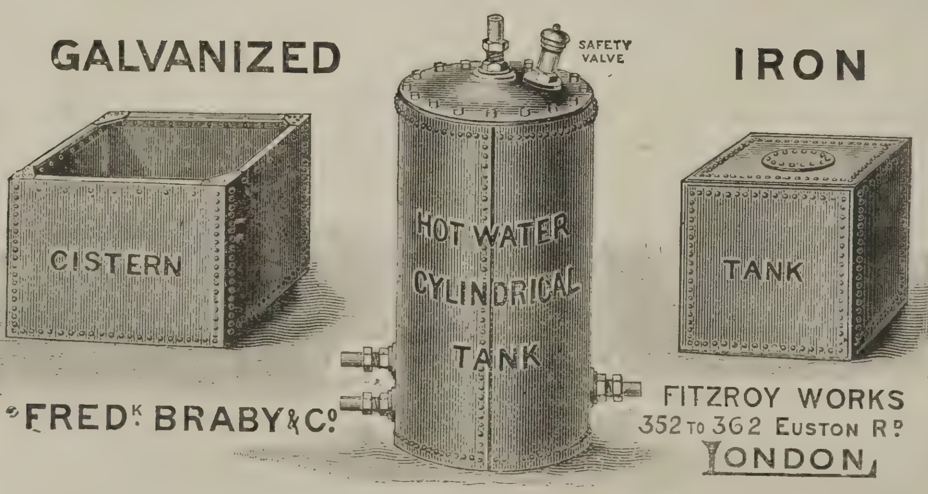

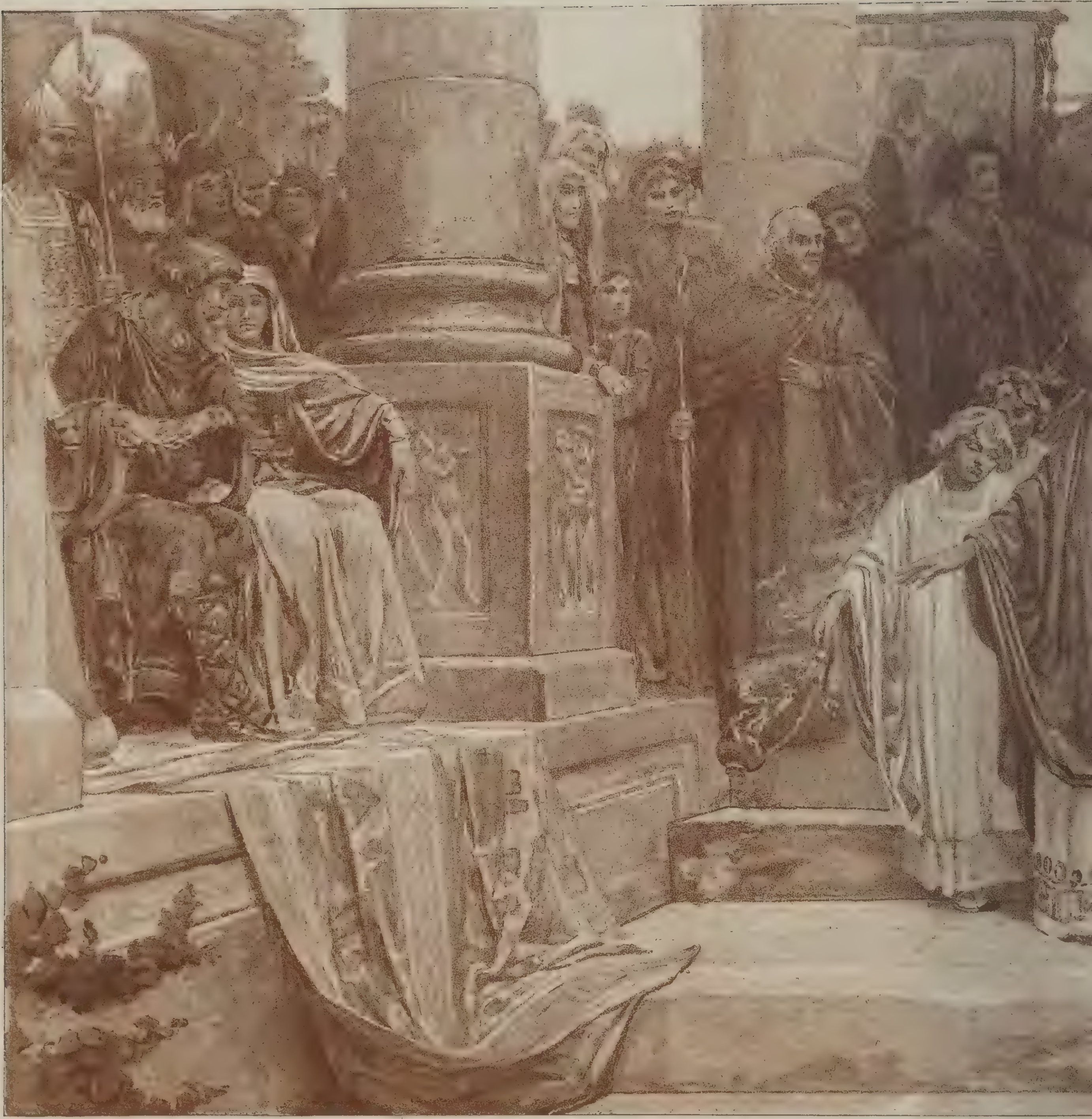

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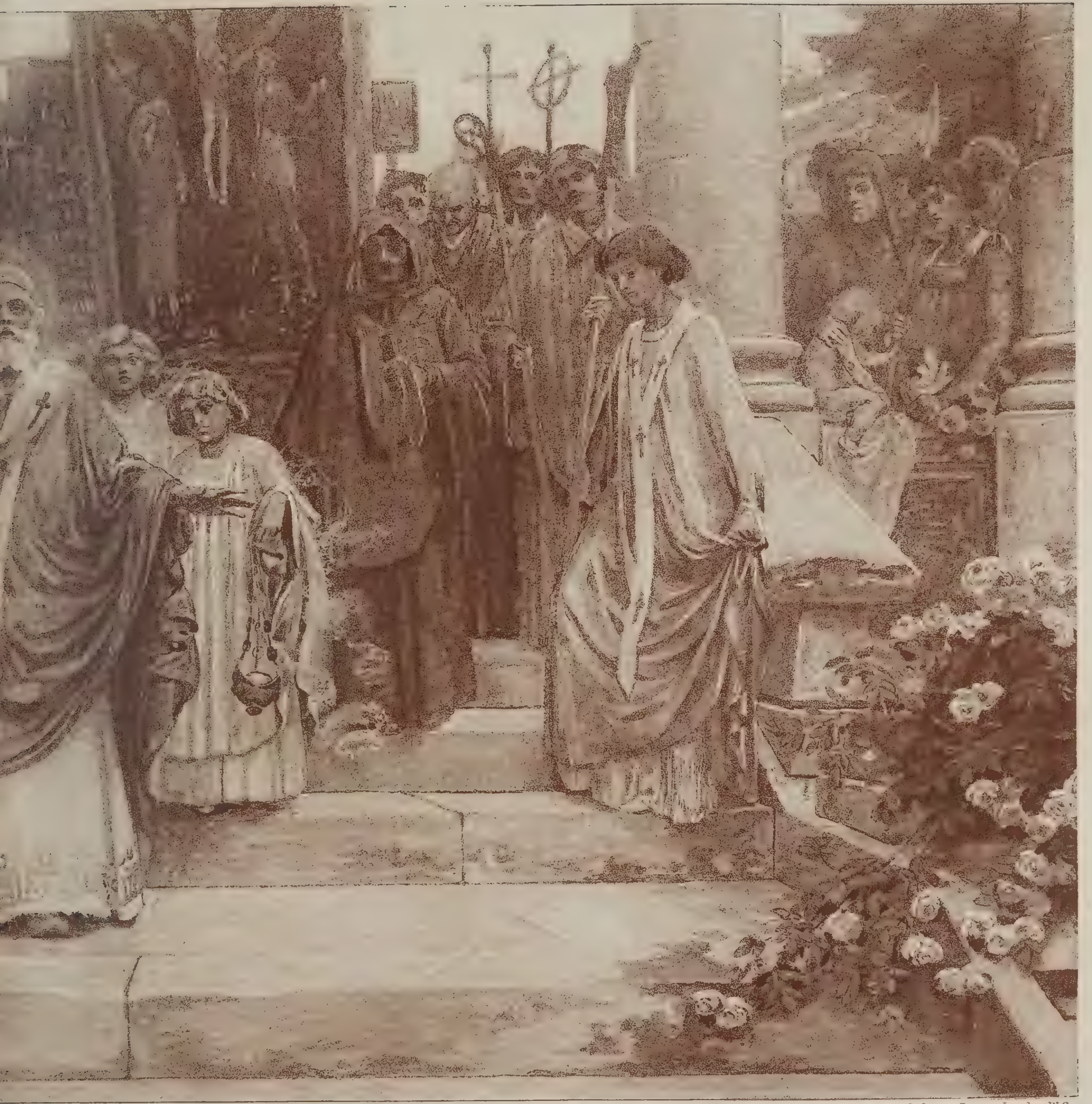

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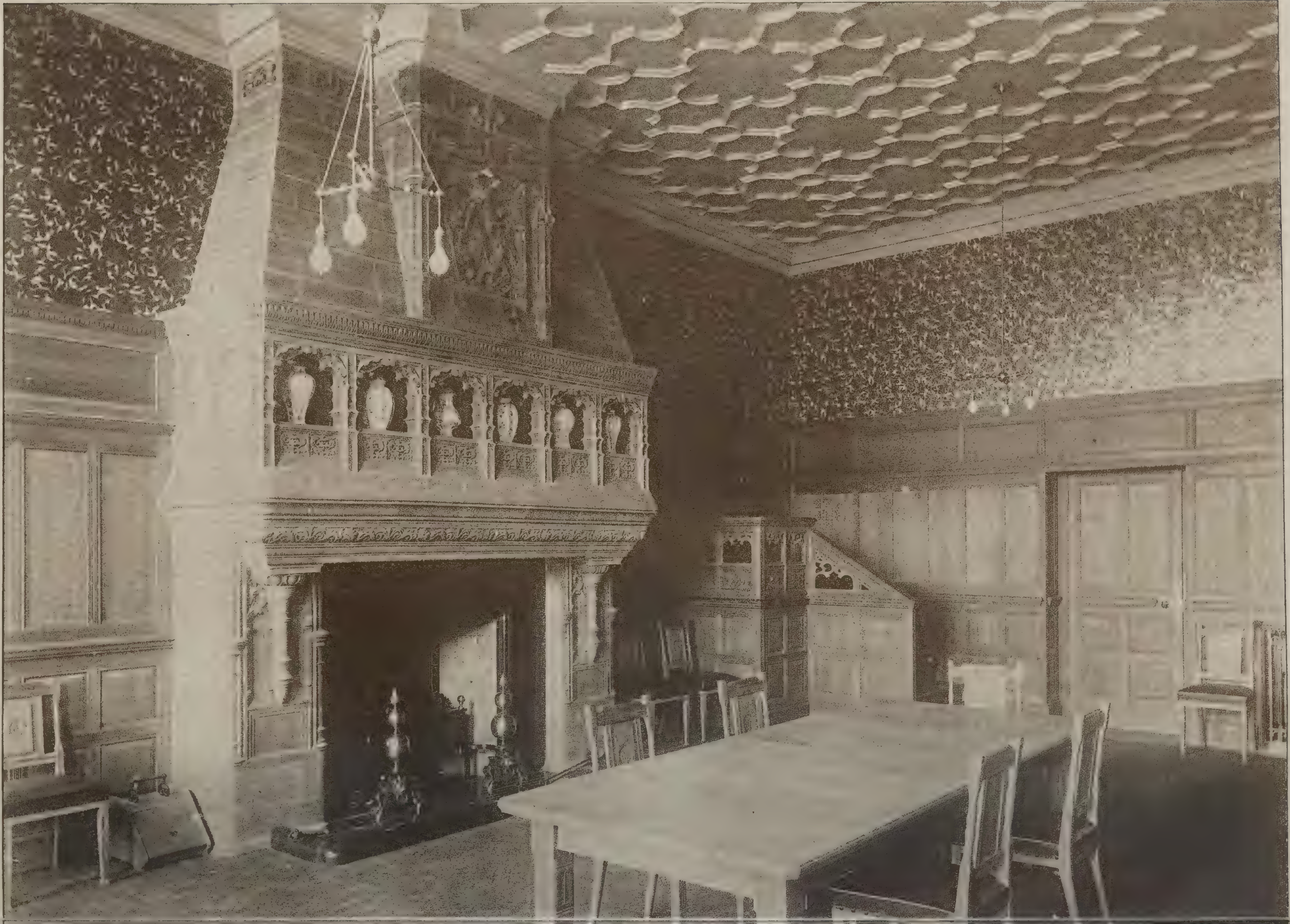

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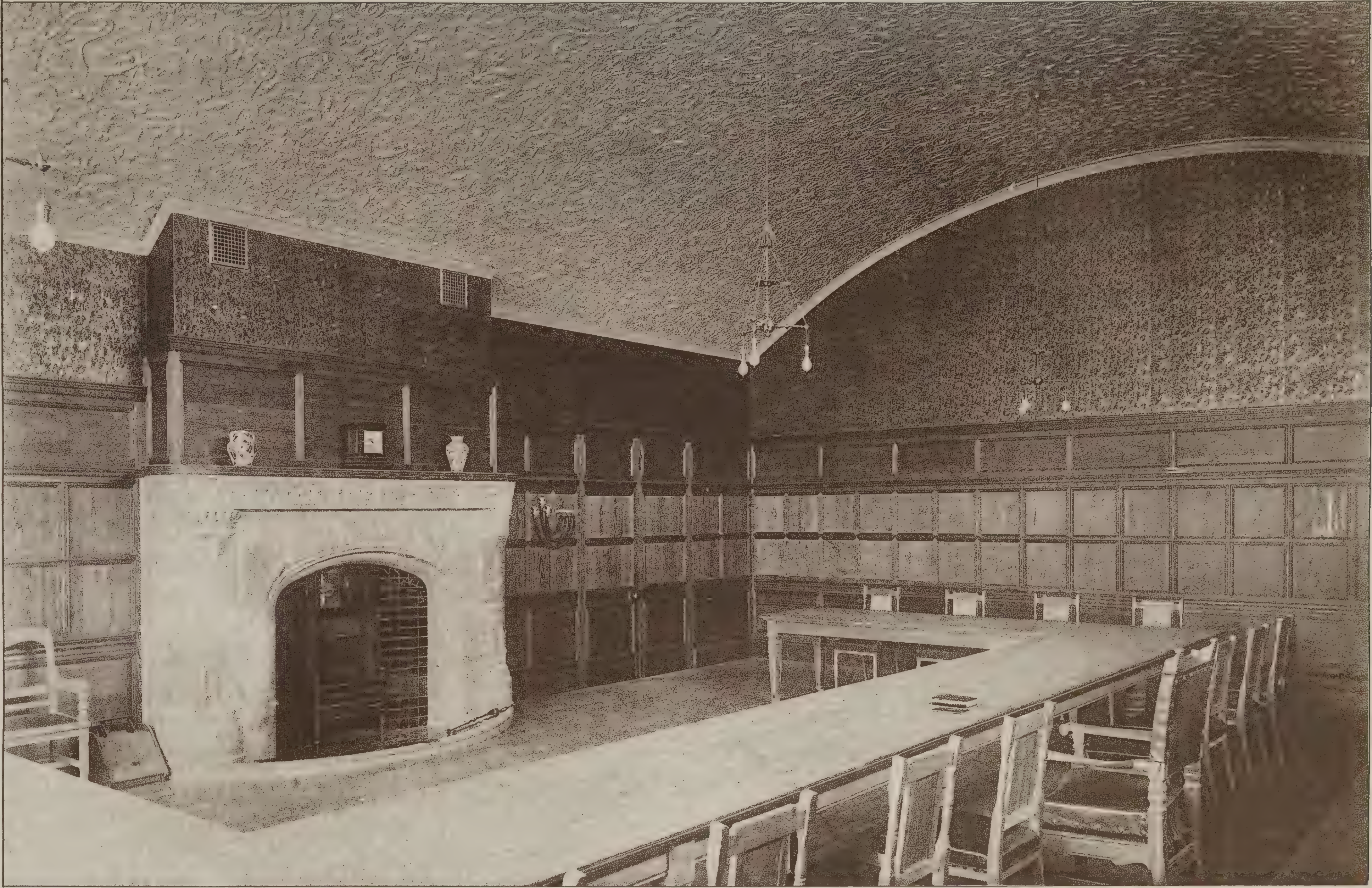

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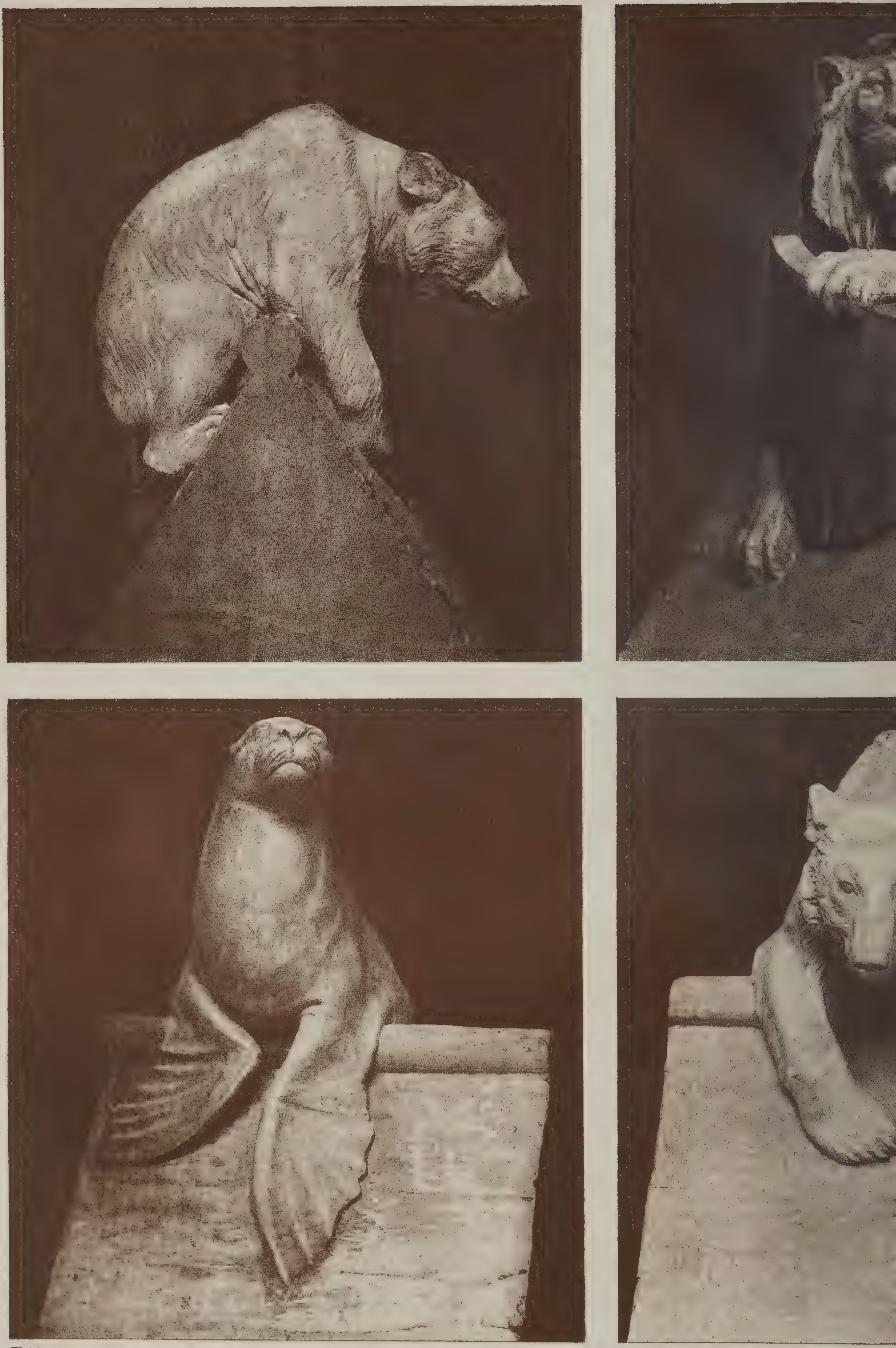

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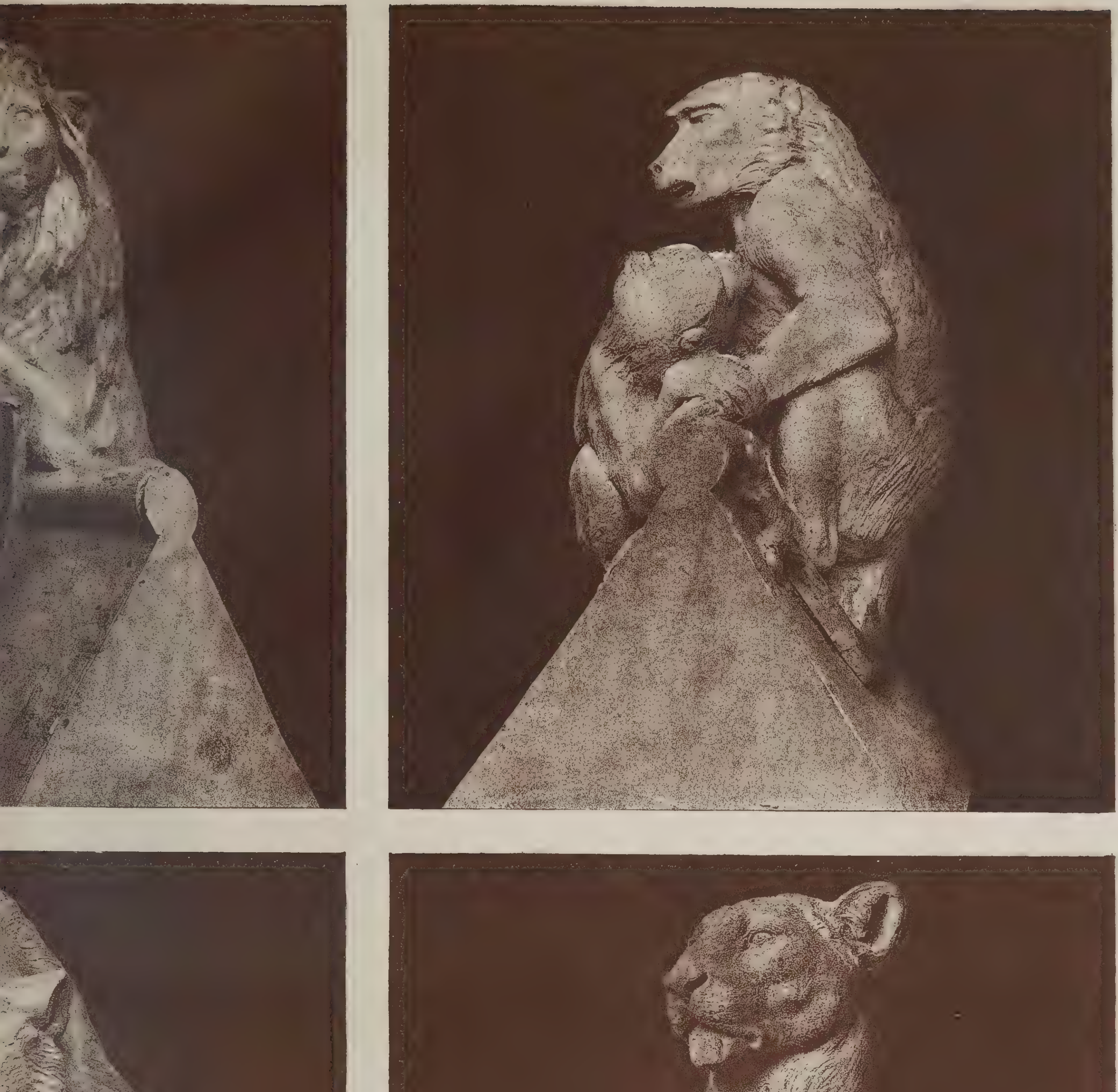

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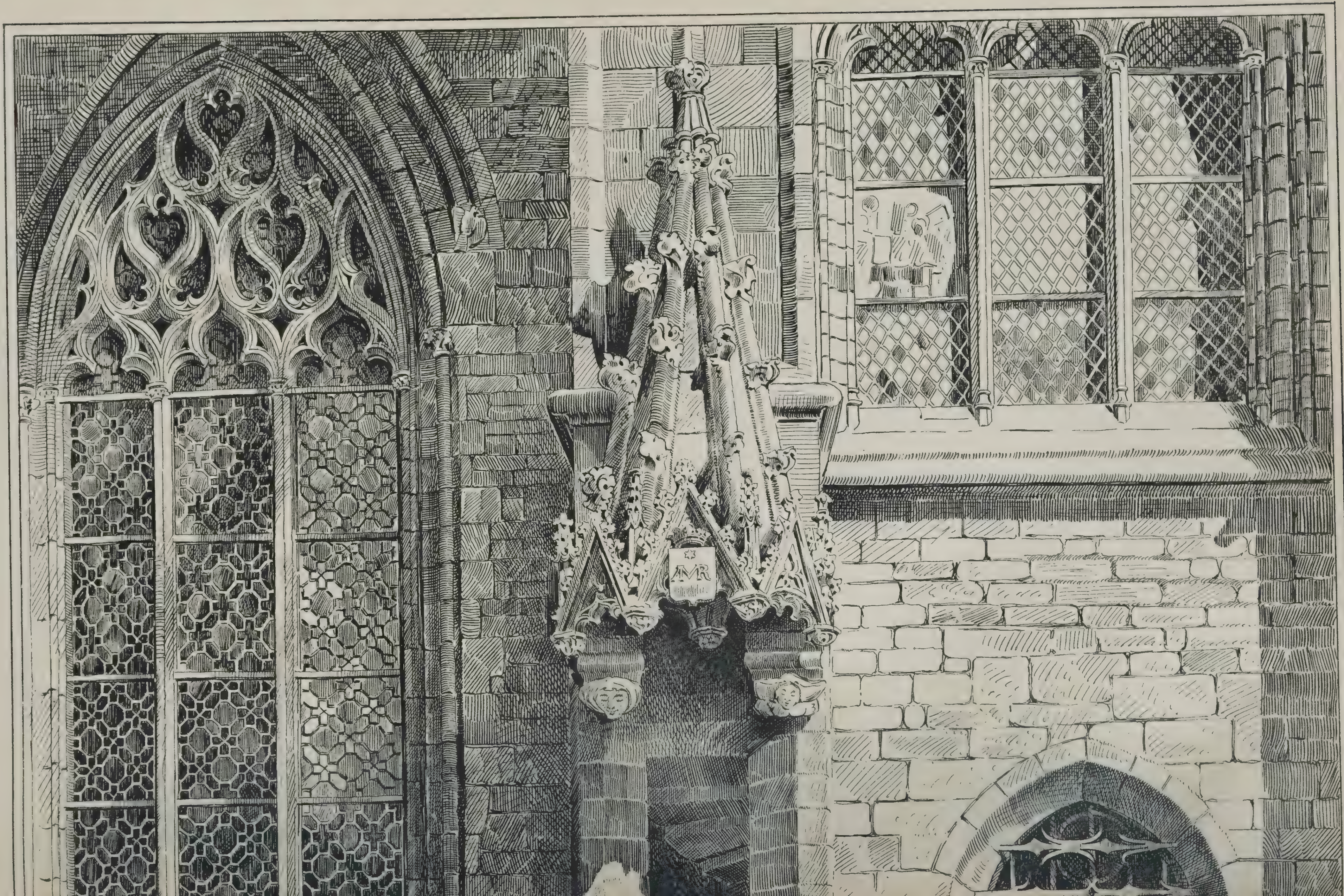
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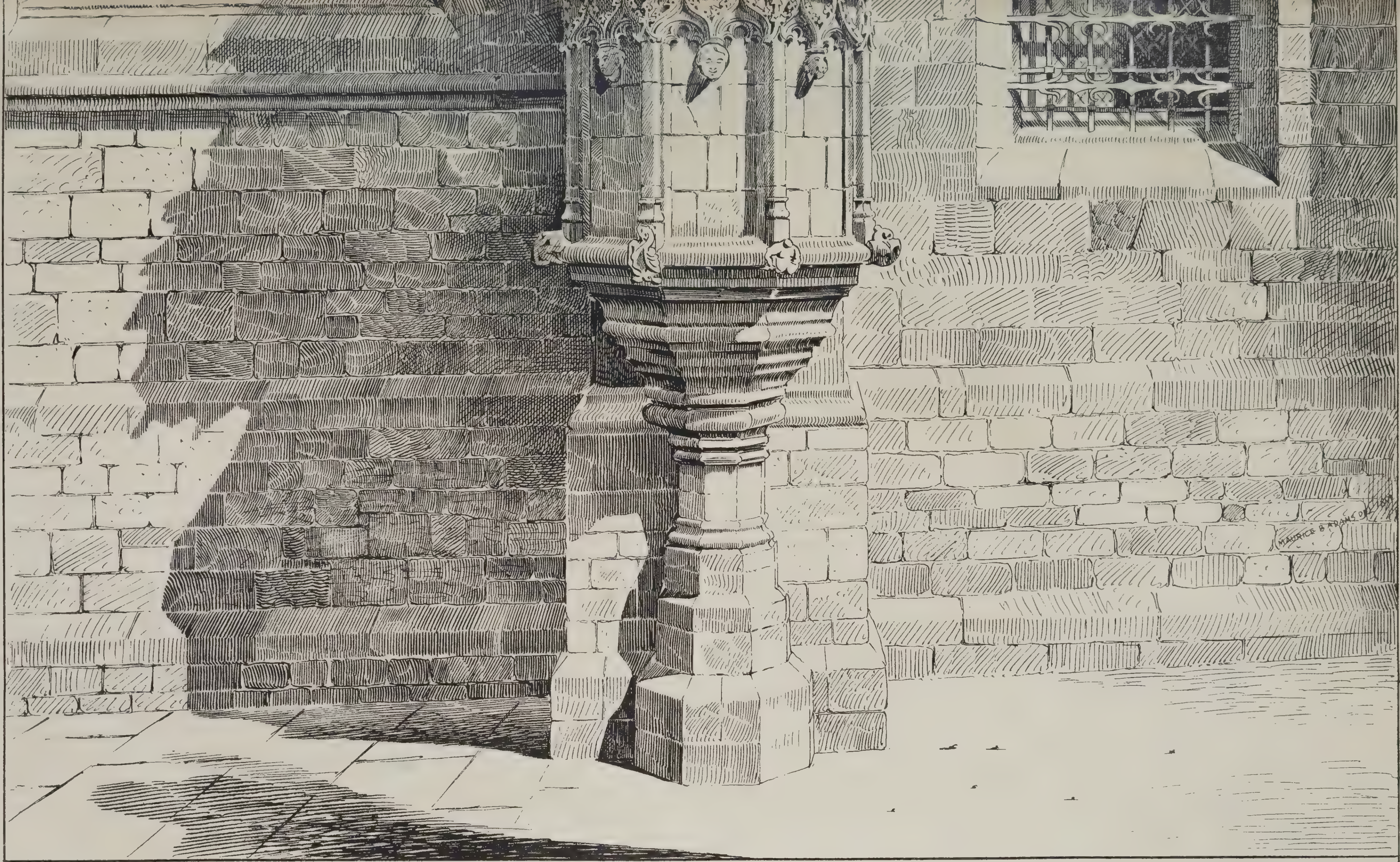

EXTERNAL PULPIT CHURCH OF NOTRE DAME VITRÉ DRAWN BY MAURICE B. ADAMS

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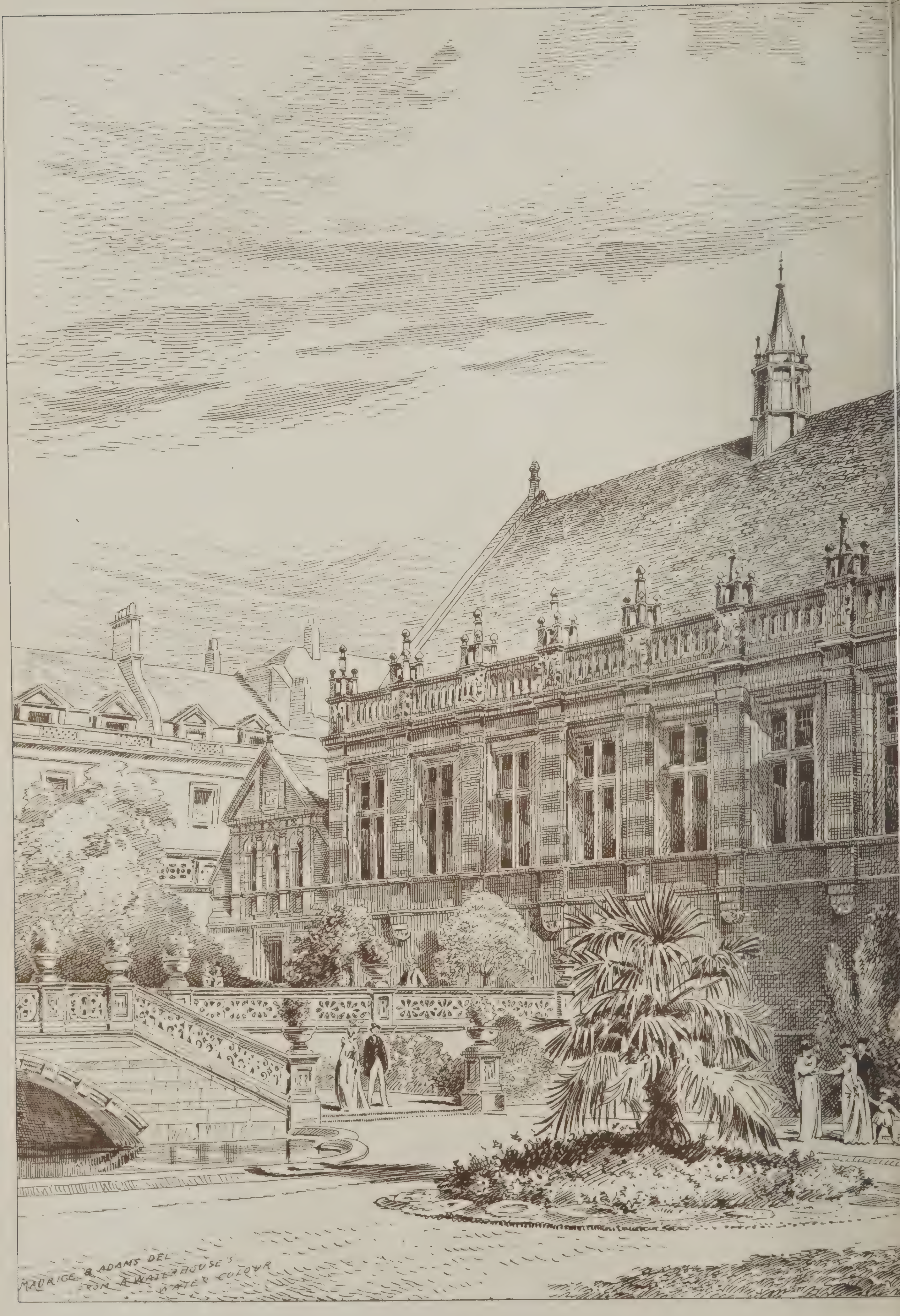
MAURICE B ADAMS DEL
FROM A WATERHOUSE'S WATER COLOUR

IN THE GARDEN OF THE H

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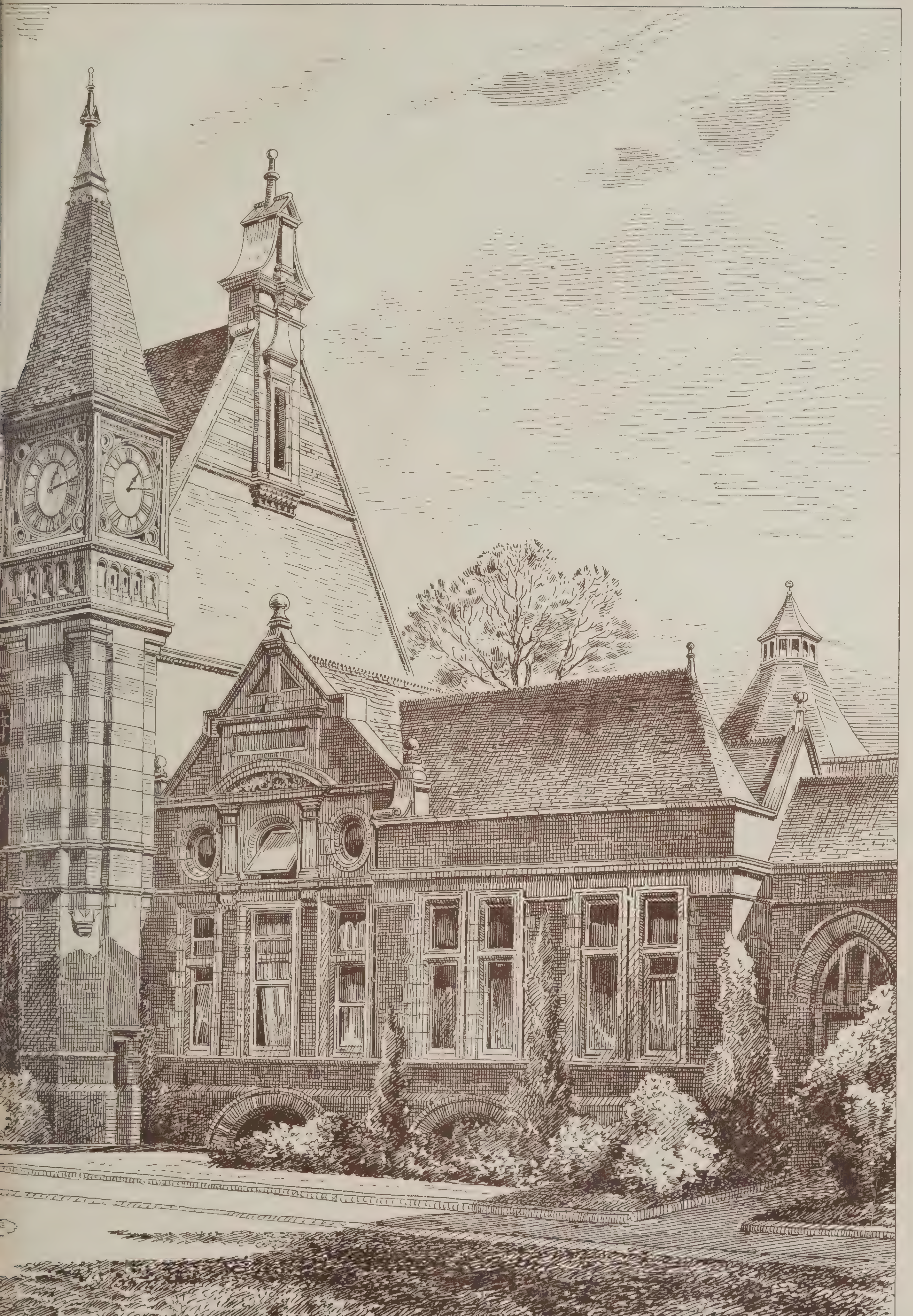

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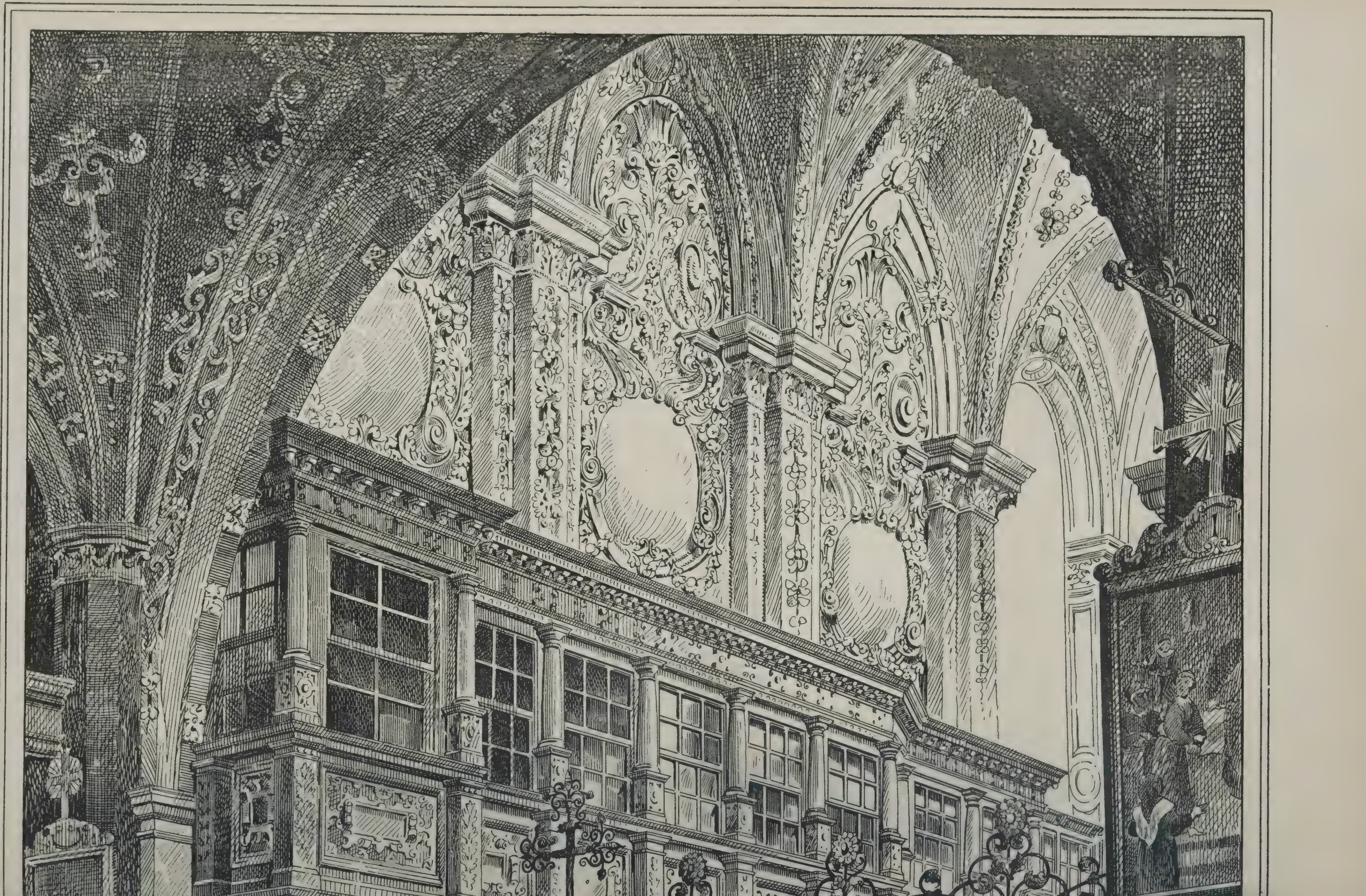
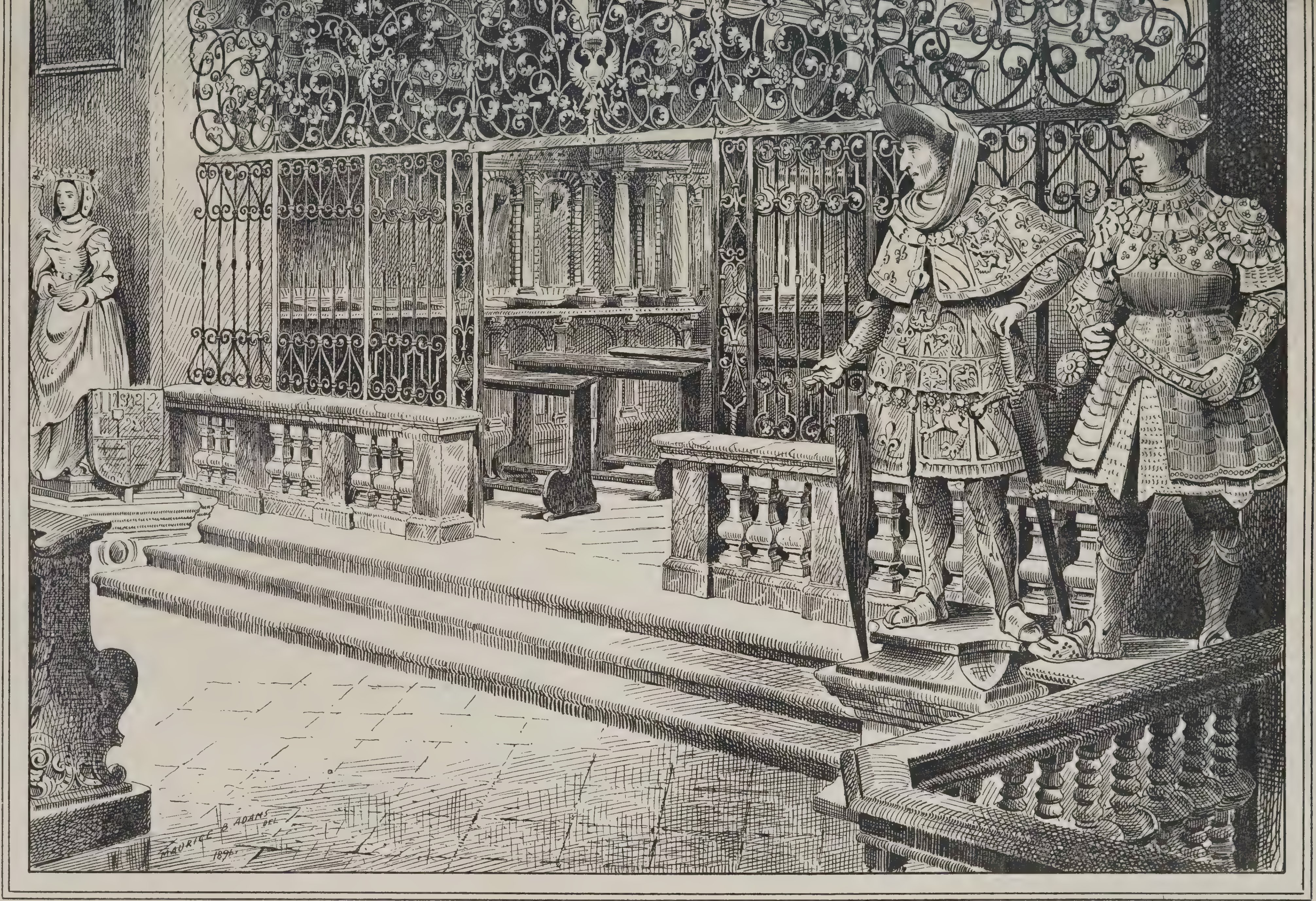
TEL MÉTROPOLE BRIGHTON

R.A., ARCHITECT.





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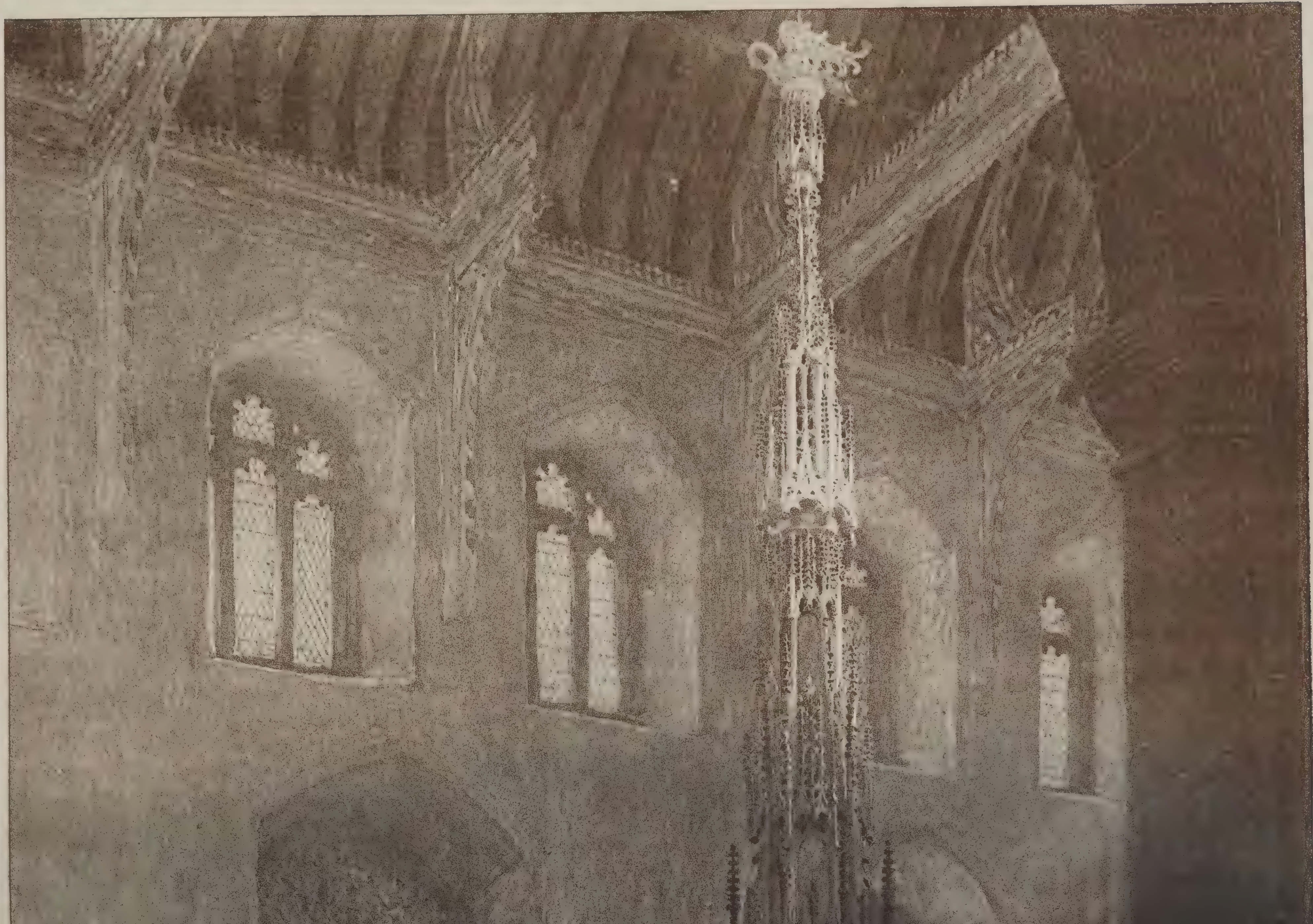
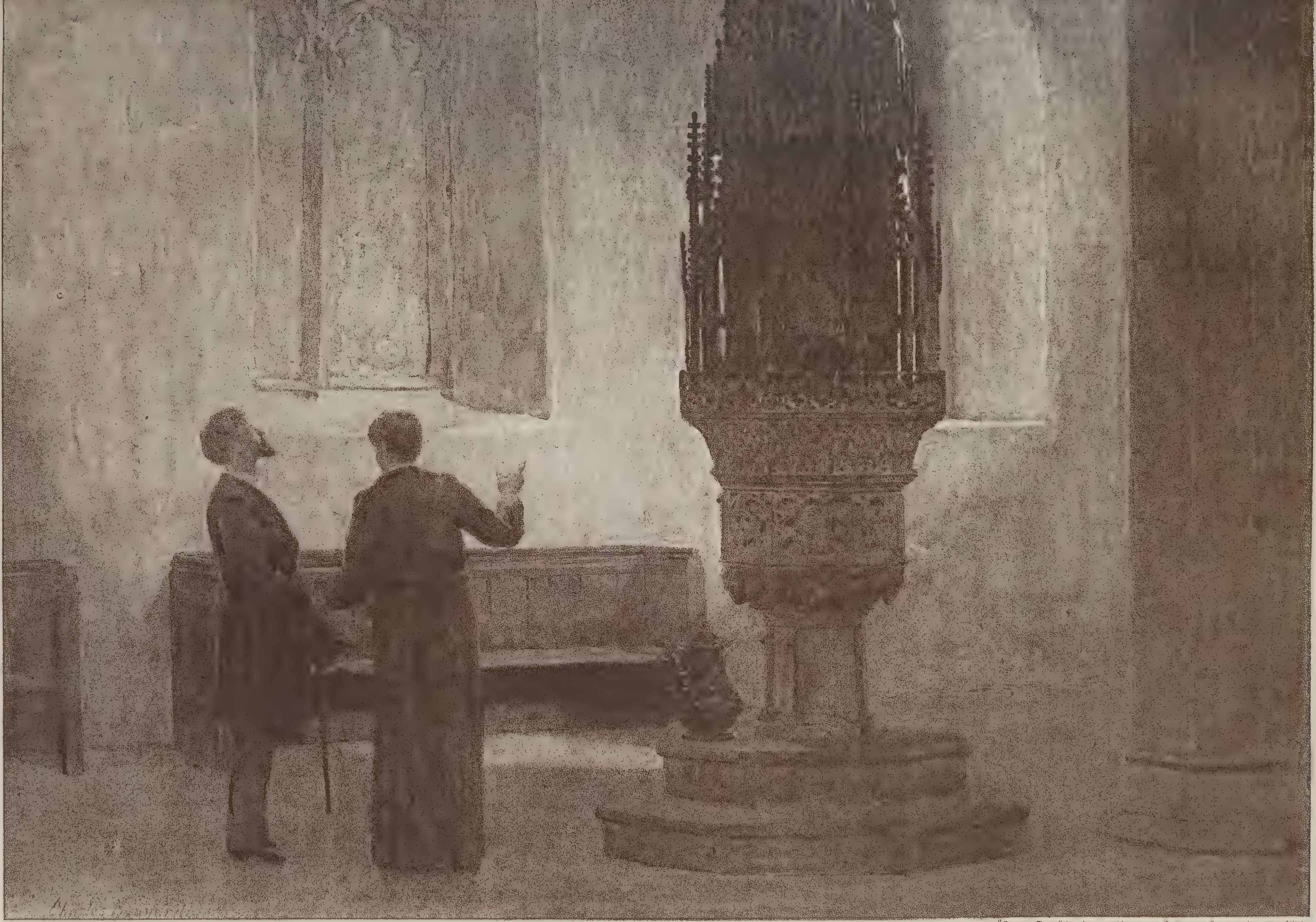
THE CHOIR AND CHANCEL SCREEN FRANCISCAN CH INNSBRUCK

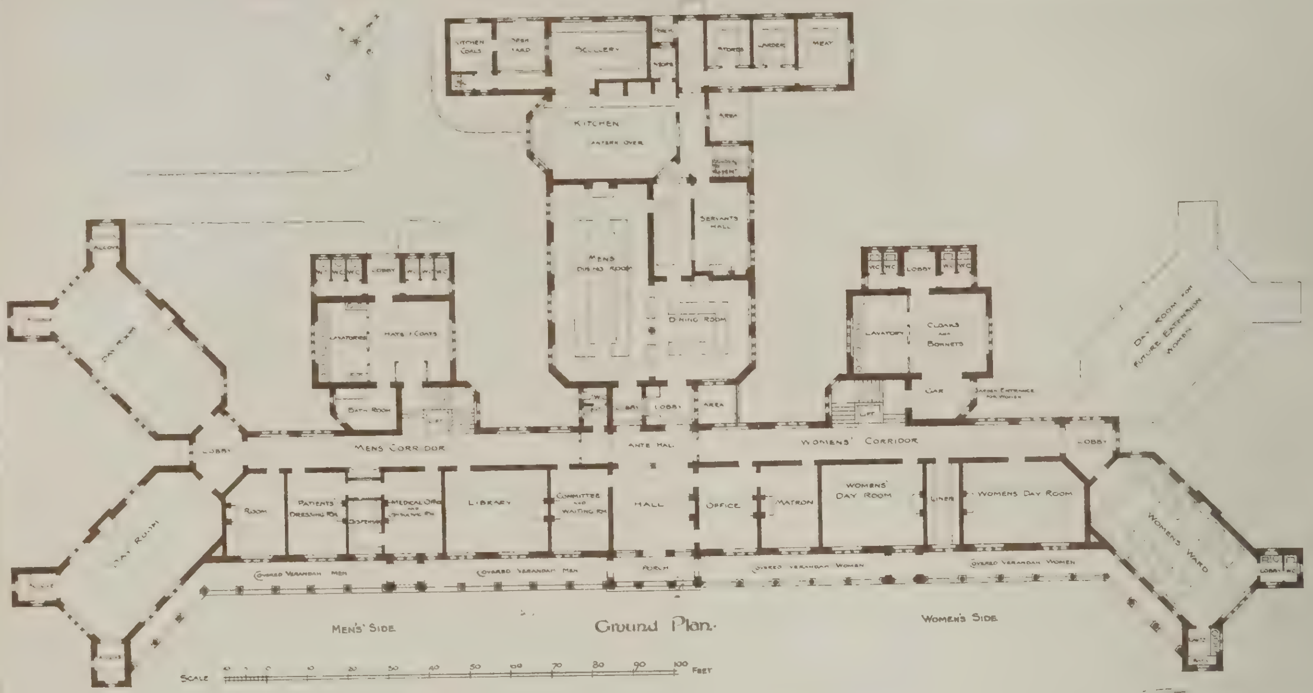
DRAWN BY MAURICE B. ADAMS F.R.I.B.A.



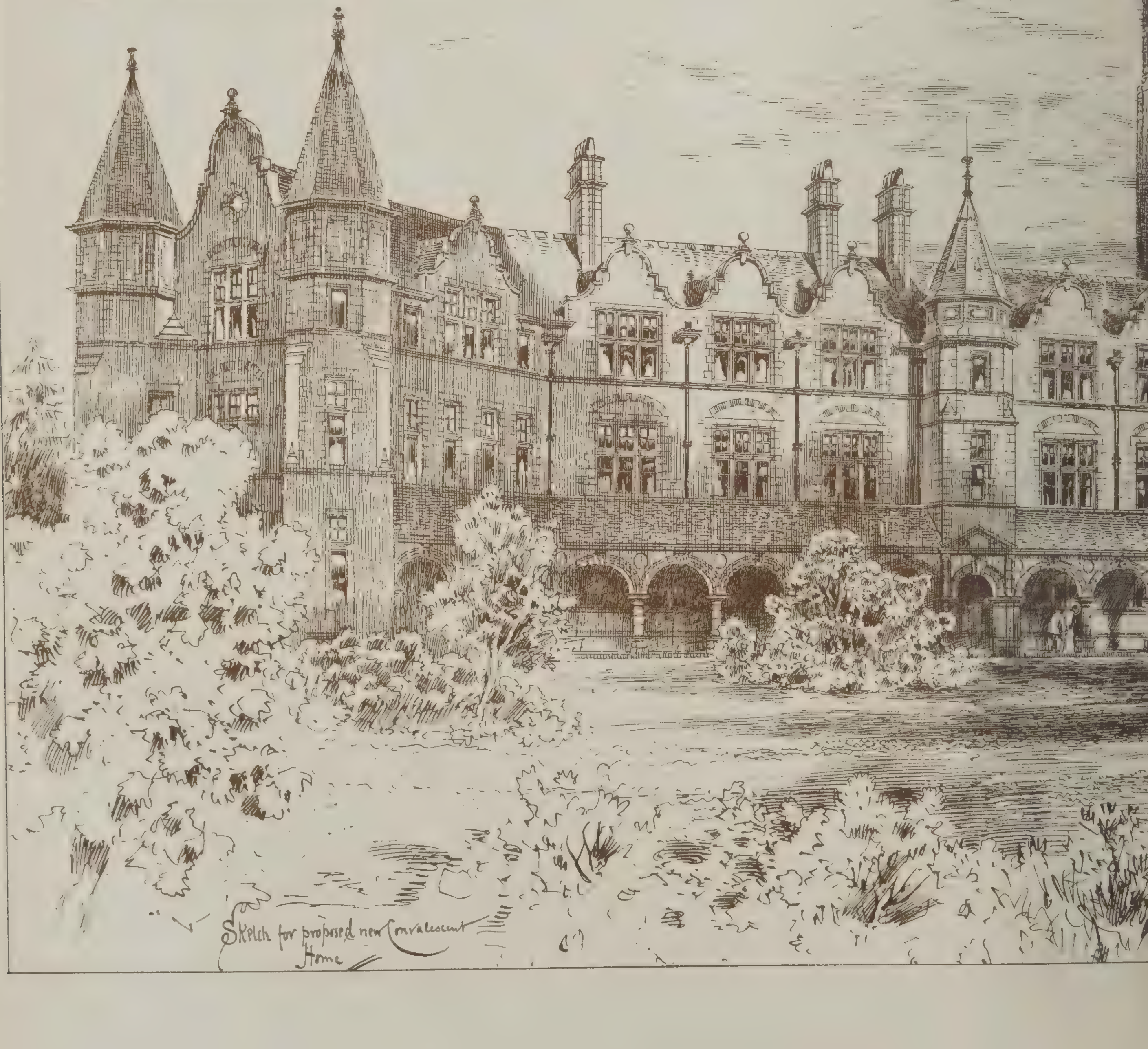


"PHOTO-TINT" by James Akerman 7 Queen Square London W.C.

FONT AND CANOPY AT UFFORD CHURCH SUFFOLK. FROM A WATER COLOUR DRAWING BY CHARLES MAUNDRELL.

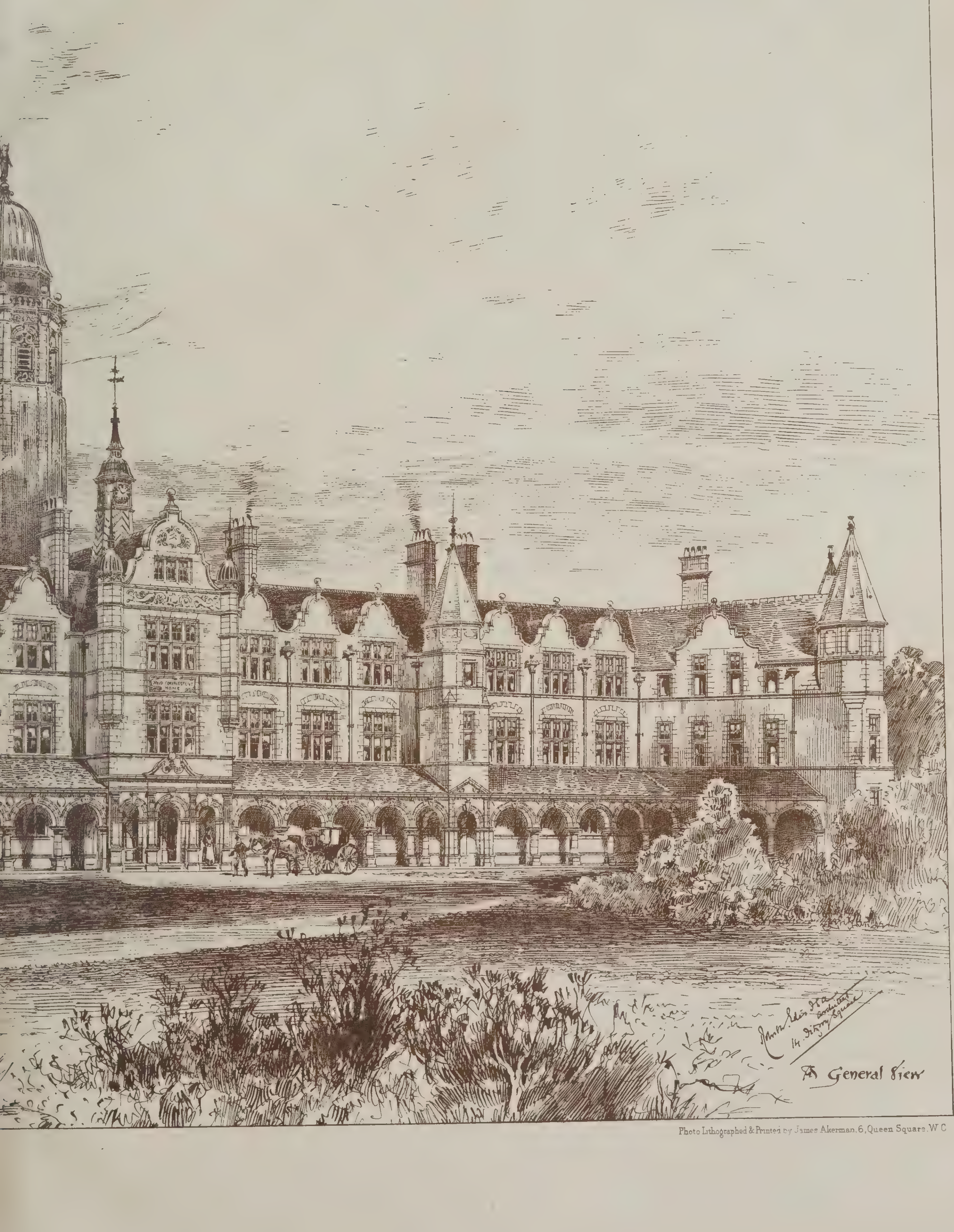


Ground Plan.



Sketch for proposed new Convalescent Home

PROPOSED CONVALESCENT HOME · R·W·EDIS·F·S·A·ARCHITECT·



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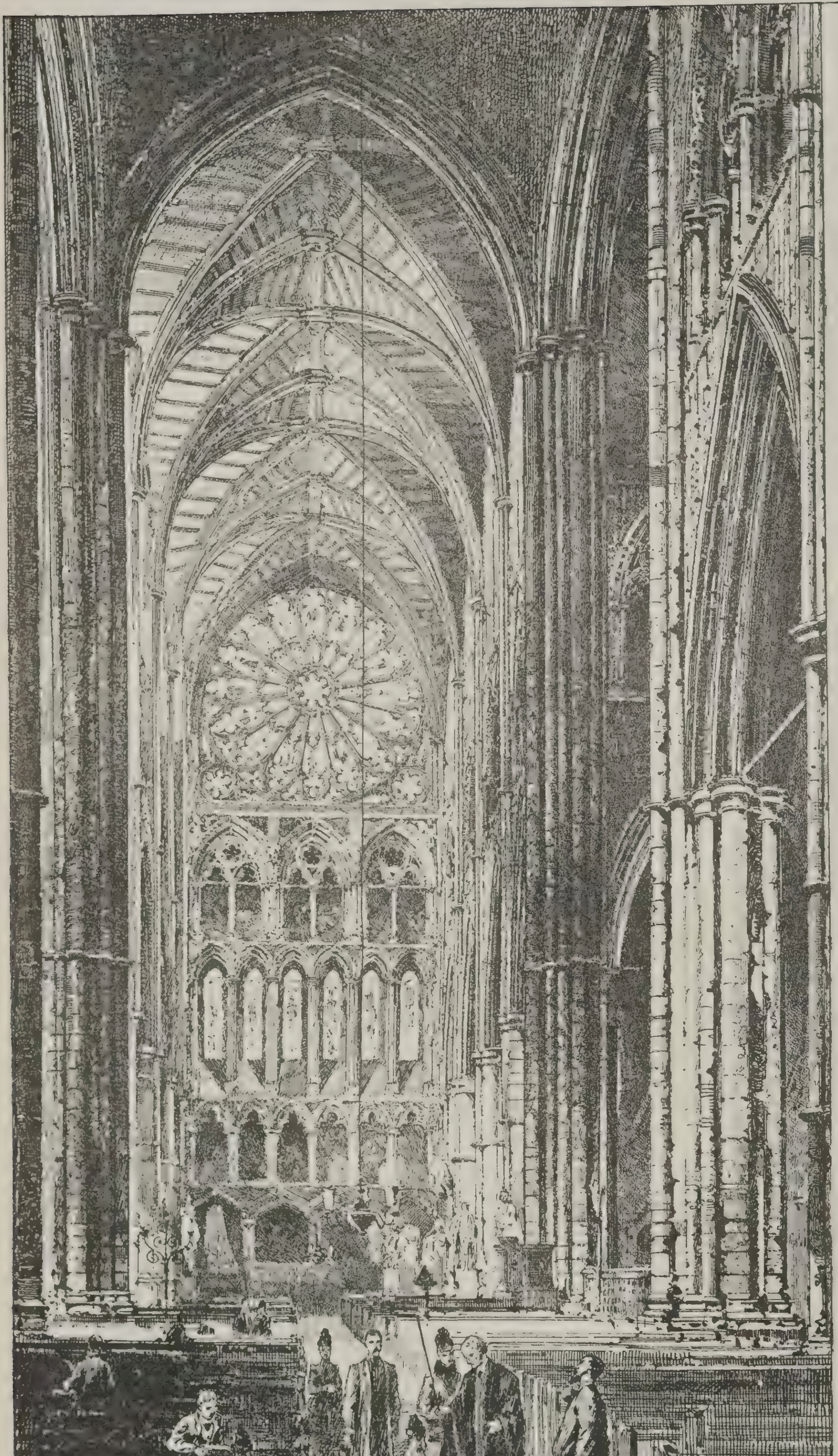

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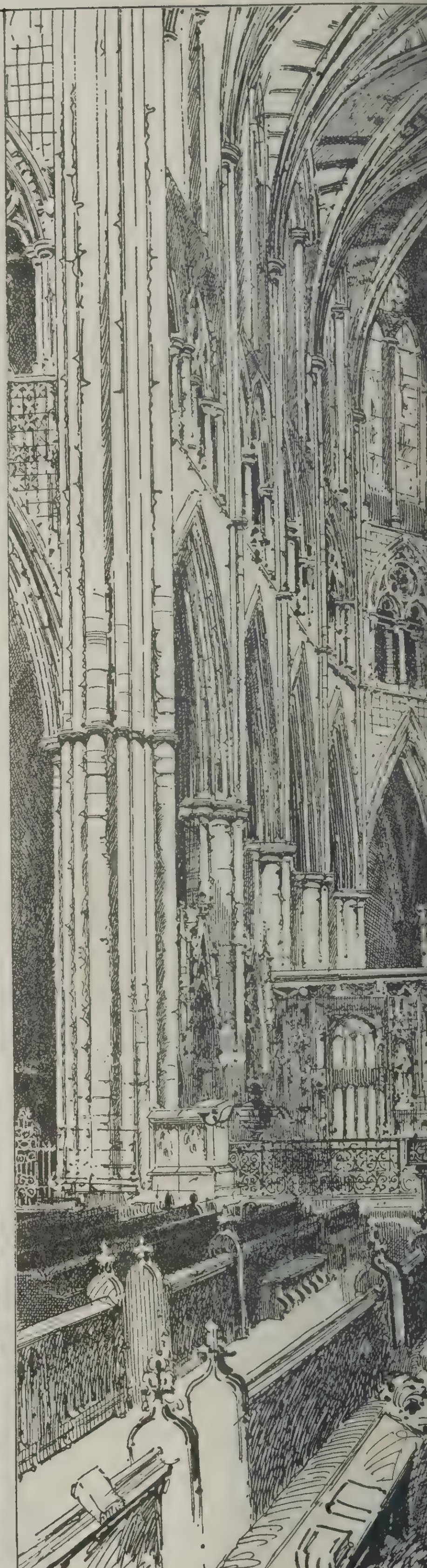

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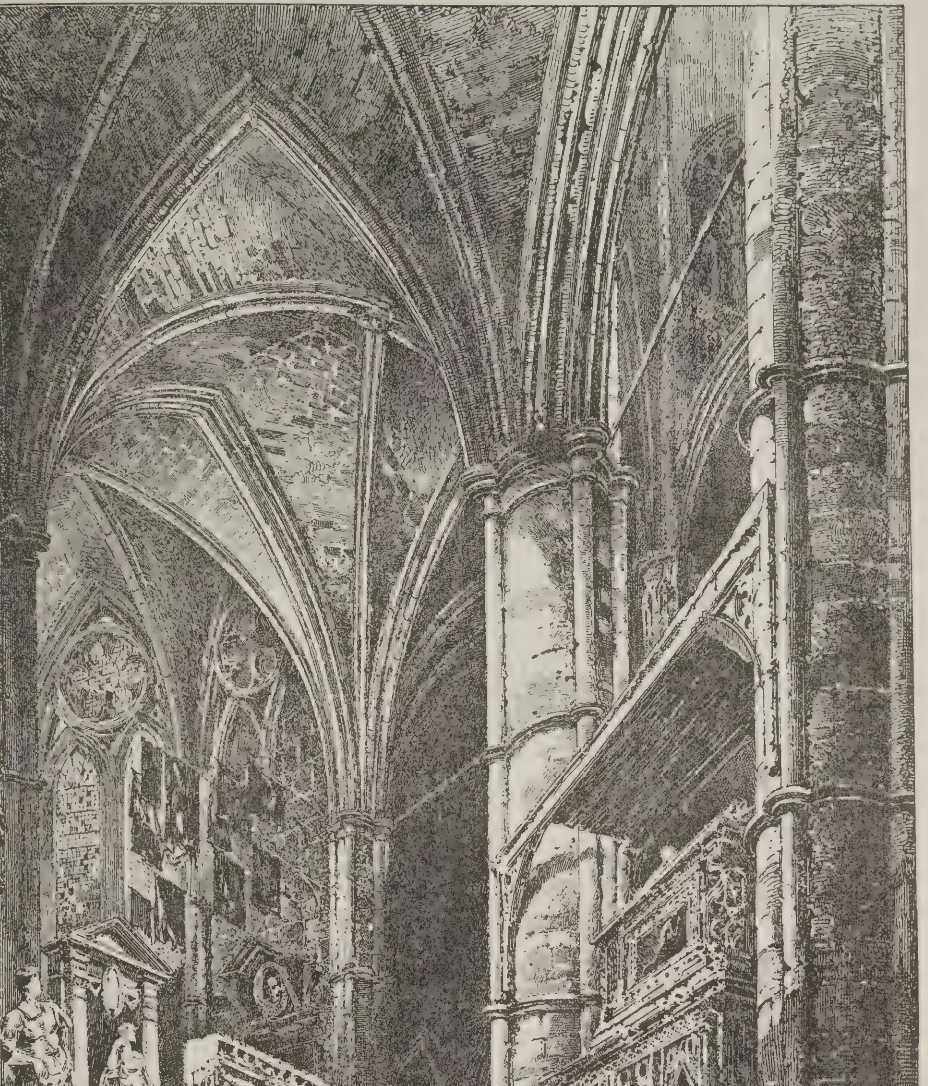

Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.C.

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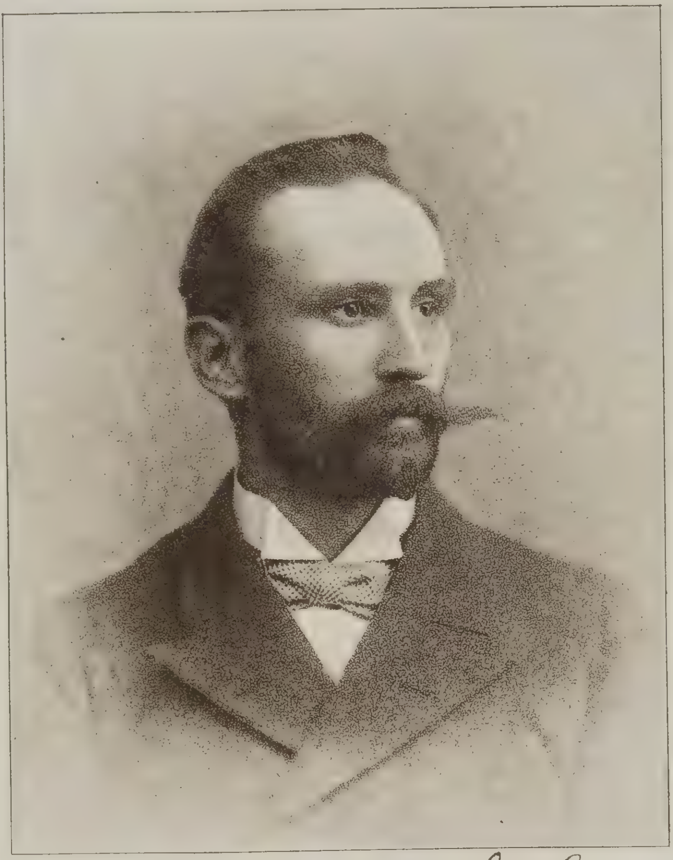
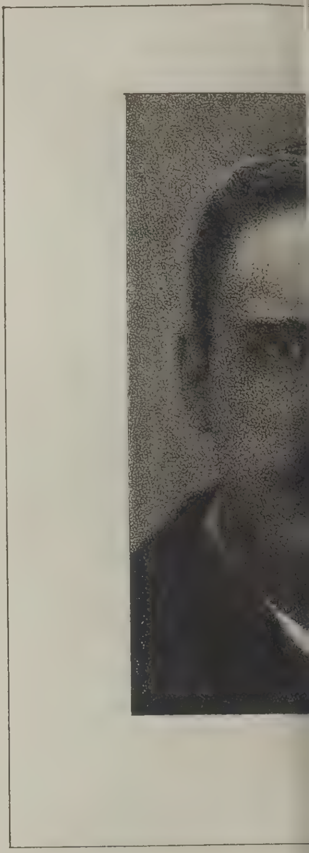
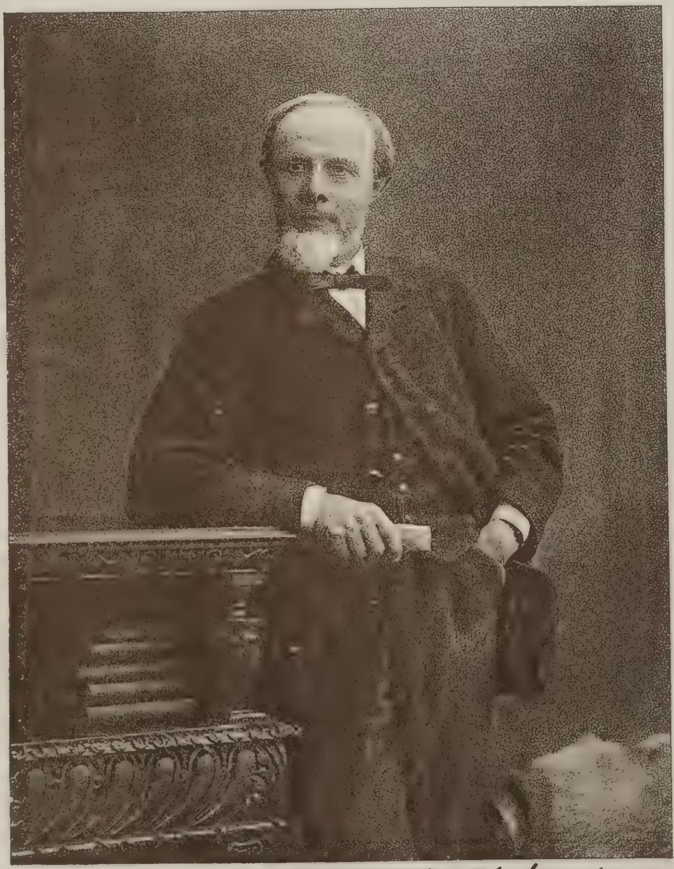


Sidney Goodman

MR SIDNEY GOODMAN (MESSRS GOODMAN HUGHES & CO)



MR M·J·ADAM



Joseph Constantine

MR JOSEPH CONSTANTINE (MESSRS J CONSTANTINE & SON)

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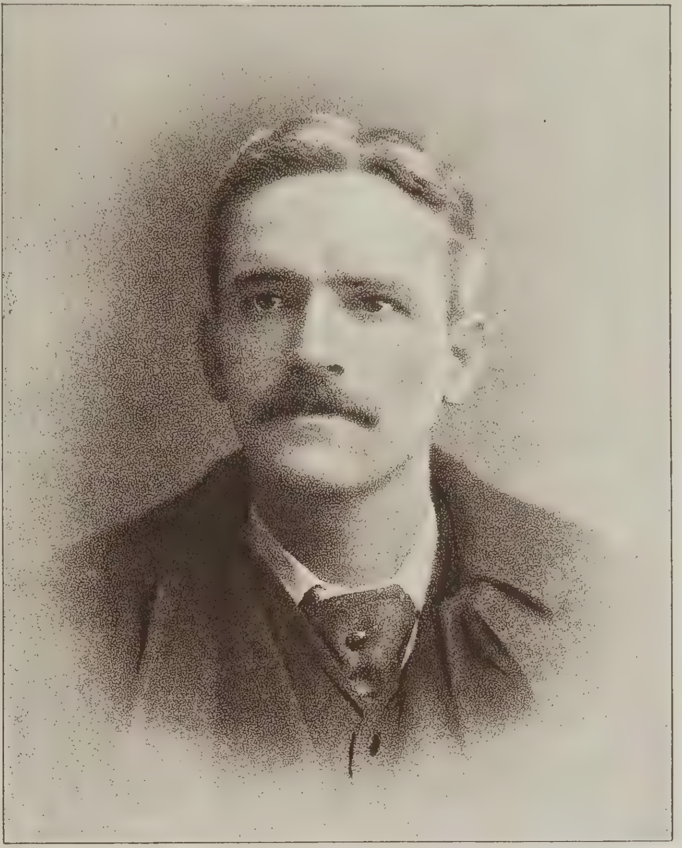
W Jas Adams

(MESSRS ADAMS & Co)

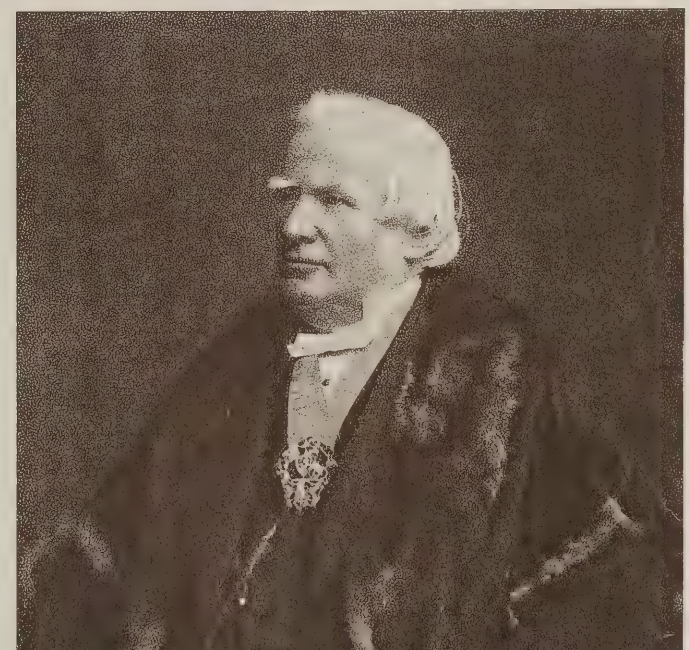


S H Adams

MR · S·H·ADAMS · (MESSRS ADAMS & Co)

William White

COMPOSITE · BLOCK · ROAD & PAVING · Co)



James Stiff

MR JAS · STIFF · (MESSRS J · STIFF & SONS)

"PHOTO-TINT," by James Akerman, 6, Queen Square, London, W.C.

H · MANUFACTURERS ·

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXII.—No. 1931.

FRIDAY, JANUARY 8, 1892.

LONDON BUILDING LAW (CONSOLIDATION) BILL AMENDMENTS.

IN our last issue we referred to the amendments suggested by the Building Act Committee to the Metropolitan Building Acts, and we think it will be of service to many of our Metropolitan readers if we give a brief *résumé* of those of special importance. A few weeks ago we examined the draft of the Consolidation Bill prepared by the Local Government Board, and noticed some of the sections of the old Act proposed to be repealed and the corresponding clauses of the Bill. This is the Bill which the Building Act Committee have had under their consideration. In December last, the Local Government Board wrote to the Building Act Committee, asking them to consider the Bill, and offer any amendments they might deem desirable. The suggestions now submitted by the Committee to the Local Government Board (yet to be confirmed by the Council) for embodiment in a Government Bill are the result. Several conferences between the Building Act Committee and the President of the Local Government Board will, no doubt, take place before these suggested amendments and any others are adopted. Time is therefore afforded for discussing the amendments, which will very considerably alter the law as to building in the Metropolis. The suggestions for a draft Bill made by the Institute of British Architects, of which we have given a partial *résumé*, are also worth attention.

The suggested amendments of the Building Act Committee begin with the rules as to "Recesses and Openings," section 2 of the Consolidation Bill. It is proposed in recesses made in party-walls that every recess should have an arch of at least two rings of brickwork of the full depth of recess on every story. The present clause merely says every recess is to be arched over. In the taking down or rebuilding of party-walls the amended clause will insure stability. After section 4 it is proposed to insert regulations to insure the strength of bressummers and flooring-joists—a very important amendment, and one which we have called attention to more than once. The old clause or rule with respect to bressummers merely says that "every bressummer shall have a bearing of 4in. at least at each end upon a pier of brick or stone, or upon a timber or iron story post"; the amended clause makes it read: "Every girder, beam, or bressummer, if of wood, &c." In addition to bearing upon any party-wall, the words, "or external wall, and, if necessary in the judgement of the district surveyor, shall have in addition such other story posts, iron columns, stanchions, or piers of brick and stone on a solid foundation under the same or corbels," are proposed to be inserted, thus meeting cases of building where the superstructure would be too lofty or heavy to be carried on piers of brick or stone, or story posts at the ends. After subsection 3 it is proposed also that the end of a timber not permitted to have a bearing on a party-wall may be carried on a corbel or templet of stone, iron, or vitrified stoneware tailed into the wall at least 9in., &c. The scantlings of joists proposed for domestic buildings are urgent. The minimum sizes are given for bearings up to 21ft. Thus a bearing of 11ft. is to have joists of 9½in. by 1in.; a bearing of 15ft., 10½in. by 2in.; of 17ft., 11½in. by 2in.; of 21ft., 13in. by 2in.; or an equivalent sectional area not less than 7in., 9in., 11in., or 12in. deep respectively. Trimmer joists are not to be less than ½in. thicker than the ordinary joist; joists are not to be more than 12in. apart, and to have a course of strutting if they exceed 10ft. up to 18ft., after that two courses.

To give easy access to roof in case of fire, a useful amendment is made to section 8. Every dwelling-house having a parapet is to be provided with (1) a dormer window or door on to roof, (2) a trapdoor furnished with a fixed ladder leading to roof, (3) or with proper means of access to roof. Several useful insertions of qualifying words and substitution of words are proposed after section 9, referring to rules as to chimneys and flues. A very desirable change is made in substituting the words "fire resisting" for "fireproof" in sub-clause (4) of section 9. Fire-resisting piping of stoneware is provided for the lining of flues. After section 9 rules are inserted for the construction of detached chimney shafts of factories. Briefly, the requirements are that they be carried up on brickwork and mortar of the best quality, and taper at the rate of at least 2½in. to 10ft.; that the thickness of the top of shaft 20ft. shall be at least 9in., and increased half a brick for every 20ft. measured downwards; that the cap, foundations, and footings shall be made to the surveyor's satisfaction.

Another amendment that will render low rooms impossible is the proposal to increase the minimum height of habitable rooms from 7ft. to 8ft. (sect. 12), and every such room is to have one or more windows opening directly into the external air, with a total superficies clear of sash frame of at least one-tenth of the floor area, a portion of which, at least 7ft. from floor, is to open. If the room is in the roof, and there is no external wall, it is to have a dormer window, at least one-twelfth of floor area. Every basement room floor is to have a ventilated air-space between ground and floor, except when it has wooden blocks on concrete. Another clause, 12*a*, provides ventilating skylight, or window, for every dwelling-house staircase. Section 15 (2) it is proposed to make it clear that no shop front shall project "on, or over, the public way." The construction of oriel windows in streets 40ft. wide is another point. It is suggested that in a street of not less than 40ft., projecting oriel windows, or turrets, may be constructed, provided that no part of the projection extends more than 3ft. from face of building, or more than 12in. over the public way; that no part of it is less than a certain number of feet above the footway, or is within a distance of 4ft. of the centre of the nearest party-wall, &c., and that it is built to the surveyor's satisfaction. Section 16 (*b*) it is provided that separate sets of chambers, tenanted by different persons, if contained in a building exceeding in area 25 squares, shall each be deemed to be a building, and the same to be separated by party-walls, or horizontally by fire-resisting arches and floors.

We now come to a very valuable amendment, the object of which is to provide a sufficient open space at the rear of small houses. The committee, at the suggestion of their architect and medical officer, propose that so much of the Model By-laws shall be adopted as will give a space of 20ft. between buildings in the rear, or 10ft. to each. It is proposed (section 18) that for every new domestic building an open space in the rear is to be provided of not less than 150sq.ft., free from every erection except a water-closet or receptacle for ashes; but these erections are not to exceed 9ft. in height. For other buildings the height is limited to 12ft. for such erections. This space is to extend the whole width of the building, and to be not less in any part than 10ft. A diagram is given to show the method of regulating these areas for dwellings. This is practically adopted in Liverpool—viz., a line is drawn from the rear boundary of plot towards the house at an angle of 45° with the horizon, and up to this line any buildings may be erected, provided that no part of them, except chimneys, dormers, gables, &c., pass above this inclined line. The oblique boundary-line of 45° is to be taken from a horizontal line level with the street in front of the said building. By this method of regulating space every building, whatever its height, will have an open space in the rear proportional to its size. The principle, while it does not necessarily interfere with an owner's rights, treats every house fairly. The angle, too, is that one which custom has sanctioned for ancient lights. We have now no rule. Houses can be built so close in the rear as to overshadow each other, and there is only a legal and expensive process applicable. The committee propose to treat existing buildings in this way: If a building is burnt and pulled down, the owner may (clause 11) rebuild it to the same dimensions (these having been recorded previously to pulling down), provided he makes an application to the surveyor for that object. Under existing law, an owner may pull down a low building and erect on its site one of 90ft.—a grossly unfair act towards his neighbours. This amendment is not to apply to towers and spires of public buildings. It is provided also that if the rear building is irregular, so that a doubt arises as to how the measurement is to be taken, the Council are to decide; also (7), in the case of a corner building abutting upon two streets, the Council may permit an erection not exceeding 15ft. upon so much of the rear space as may be thought fit, so as not to obstruct light and air to adjoining buildings; or (8) the Council may vary and allow modifications, provided that subsection (1) be complied with. Other subsections are inserted to which we need not refer.

As to height of buildings, while it is proposed that the Council can use their discretion, a limit of height of 75ft. is inserted for the 90ft. in the Consolidation Bill, exclusive of two stories in the roof, and of ornamental towers or features; it is also proposed to omit subsection (*c*) of clause 3, which permits any building in a continuous block to be carried up to a height equal to any other, if such height exceeds the prescribed limit. The rights of owners of adjoining grounds (Consolidation Bill, sections 50 to 63) are proposed to be simplified by clause 50*a*. Where the grounds of different owners adjoin, and the owner of one piece is about to build on the line of junction, certain provisions are proposed: the chief is that if the adjoining owner consents to the building owner erecting a wall on the line of junction, the wall is to be built half on the ground of each owner, and the expense shall be borne from time to time by the two owners, in proportion to the superficial content of which they respectively make use; but if he does not consent to the party-wall, the building owner shall not build the wall except as an external wall on his own ground. After section 77, 63*a* provides that nothing in the Act shall interfere with an easement of light in, or relating to, a party-wall, or affect any person's right to preserve or restore any light in any party-wall being pulled down and rebuilt. Another important amendment is the appointment by the Secretary of State of a special magistrate to deal with cases under the Act, and thus to provide for greater uniformity. A clause is also proposed after sect. 97, exempting sheds for bicycles, &c., and window cases from the provisions of Act. Such buildings are not to exceed in area 30sq.ft., and not to be more than 5ft. to the eaves, and distant not less than 5ft. from any other building. Several other structural provisions, as those referring to new churches and chapels (98*c*), requiring staircases supported and inclosed by brick walls, and staircases and corridors to be not less than 4ft. 6in. wide, are introduced, but of these, and other amending clauses respecting the definition of terms and rules for thickness of walls, we must speak hereafter.

OLD MASTERS AT THE ROYAL ACADEMY.

A VERY fine collection of pictures by the Old Masters and deceased British artists, including a very valuable series of water-colour sketches and drawings by J. M. W. Turner, John Sell Cotman, Daniel Cox, Copley Fielding, Old Crome, Peter de Wint, and William Hunt, are to be seen at Burlington House. Among the contributors are the Queen, who sends five paintings of the Old Masters from Buckingham Palace; the Earl of Dudley, Lady Wallace, Ralph Bankes, the Executors of the late E. H. Lawrence, Charles Morrison. In the first gallery we meet with works by British masters. Thomas Gainsborough is represented by several landscapes and portraits. The broad, bluish-toned landscape (4), a wooded and hilly scene, is full of rustic charm; the portrait of Mrs. Portman of Bryanstone, lent by Viscount Portman, one of the painter's best, is a full-length, seated figure of the lady in white, richly trimmed with lace—a superb but rather colourless portrait; that of Mrs. Billington, actress and singer, who first made her appearance at Covent Garden in 1785, is pleasing; the attitude leaning forward with arms resting on a cushion, attired in white open dress and blue sash. Other portraits of his are Nos. 24, 29, and 34. The portraits by Sir Joshua Reynolds include one of Miss Muse (8) lent by the Earl of Normanton, a rather prim-looking young lady in grey and pink, with lace front, and a low, flat pink-lined hat; and portraits of Josiah Wedgwood and his wife (21, 20). The eminent potter is painted half-length, with red coat and wig, and the wife in black, with powdered hair and white lace cap. The usual landscape or architectural background is substituted by brown and grey. Two very fine specimens of Richard Wilson, 1, "Apollo and the Seasons," a classic landscape with figures of the Seasons dancing in the foreground, and sunset effect; and the other, "Cader Idris" (7), a valley with mountain distance—a splendid example of Wilson's serene style—are worth attention. "Snowdon" (40) is rather hard. "The Village Festival," by Sir David Wilkie, is a finished sketch for picture at the National Gallery, dated 1809. The grouping and tone of the courtyard of inn, the dancing and movement and light, are equal to this master's work. The "Decollated Head of the Duke of Monmouth," by an unknown painter, lent by Mr. Seymour Haden, is a clever but unpleasing subject. The head lies on a low pillow with white drapery round it, the countenance placid. It is supposed to have been painted for Lady Henrietta Wentworth, Monmouth's mistress. Sir Henry Raeburn, R.A., is represented by a nice face of Mrs. Smith, in No. 5; George Morland by a work of splendid quality, "The Straw-yard" (13), the large tree, light and shade, and horses are admirable in tone; so is the landscape (16), and the "Sea-shore" (31), a stormy shore scene, in fine colour. The large picture by William John Müller, "Eel-Bucks at Goring" (11), said to have been painted in one day, is a landscape of much power, reminding us of the showery skies and glistening foliage in its flickering lights and vigorous handling of Constable. The coast scene by Richard P. Bonington (18) is clear in colour and decisive in the drawing of figures; a finely-luminous rough sea is by J. M. W. Turner, "The Whale Ship," with whale dying, and the ship in danger; also his "Queen Adelaide Disembarking at Southampton on her Return from Malta" (23), a grand picture of misty sunlight and brilliant craft. In both the stormy waves and the harbour scene we see Turner's power and poetic feeling. A clever head and expression is the portrait of William Hayley (25), by George Romney, whose pleasing and graceful portraits of the Countess of Derby (27) and the Hon. Charlotte Clive (36) are also hung here. Examples of John Crome, especially a fine woodland scene (28), with well-managed light through a cloudy sky—a Norwich scene—another of Yarmouth Beach (39) and the Harbour (42), exquisite in tone and drawing, and one or two by J. Sell Cotman (35), together with a fine warm landscape, "Sunny Thames" (32), by Frederick Walker, A.R.A., a view of the river's brink bathed in a sunlight glow, with a group of children on the bank—an unfinished but very admirable example of breadth and colour—are noteworthy.

Gallery II. is chiefly devoted to Dutch masters, examples of Teniers, Cuyp, Jan Steen, Ostade, Wouverman, Hobbema, Ruysdael, Both, Metsu, and others being hung. An Antoine Watteau heads the list. "L'Accordée du Village" is a delightful specimen of grouping of figures and colour. Following come a small charming and feeling landscape by Jacob van Ruysdael (45)—a delightful interior, with lady playing a guitar—a very dexterous study of crisp handling and chiaroscuro by Jan der Meer (46); a woodland by Jan Both; Godfried Schalcken (49), "Stolen Kisses," a clever study of candle-light effect and execution; an admirable example of Wouverman (51), "The Charlatan, or Country Fair," full of movement; an "Avenue" (53), by Albert Cuyp; and "A Christening Scene," by Jan Steen (56), the two last lent by Lady Wallace, the latter picture animated, full of humour and character. A large Cuyp (55), a landscape on a wooded knoll, with a riverside inn, shows this painter's powers as a colourist and delineator of atmosphere and stormy skies; a reputed Van Dyck from Lord Hylton's collection, representing the classical legend of the hero Rinaldo asleep with Armida leaning over him, entwining a flowery wreath round his head, is glowing and rich in colour. Other pictures include a fine view by Jan Van der Heyden (58), a low-toned landscape or woodland by Hobbema (67), another landscape by the same painter, in Lady Wallace's collection (71); a Francis Snyders—a very large interior or dining-room, into which a stag has rushed, making fine havoc of dishes and plates (69); a clever animal group by Hondecoeter (70); a landscape by Ruysdael, admirable in colour (72). A familiar subject by engravings is Van Dyck's large portrait subject of Dorothy, Countess of Leicester, and her sister, the Countess of Carlisle—three-quarter figures seated opposite each other in low-necked dresses of white and red, with jewelled armlets. A few pictures by David Teniers, from Mr. Morrison's collection, notably Nos. 82, 87; a clever Van Ostade, a tavern interior (80), full of life and character; two charmingly executed and finished subjects by Gabriel Metsu (91, 95), lent by Lady Wallace; a finely-painted Paul Potter—"Young Bull and Cow"—lent by the Queen; and a pleasing landscape by Wouverman (96) are irresistible subjects.

The large gallery is crowded with samples from various masters of the Italian, Flemish, and British schools. Sir Joshua Reynolds holds the end of the gallery. A portrait of the first Viscount Lifford, the judge of the Court of King's Bench, Lord Chancellor of Ireland, 1767, shows the chancellor in his robes, holding the purse; the same painter's familiar picture of Miss Bowles (102), a bright-eyed little girl clasping her dog, with landscape background, engraved by Cousins, in the Wallace collection. The large centre picture by Reynolds, "Death of Dido," lent by the Queen, is rich in colouring, if we cannot admire it as a composition. Two graceful specimens of portraiture are on each side, one of Mrs. Braddyll (107), a finely and delicately painted and handsome face, the half-figure in white dress and black mantle, and powdered hair, and the portrait of a girl seated under trees (106), a graceful and poetised presentment. Some splendid colour and stormy cloud painting, with amber-toned sea, meet us in Sir A. W. Callcott's fine sea-piece (101); a fine Morland is numbered 104, a grey-toned bay; a Claude-like Turner, "The Lake of Geneva" (108), with the Castle of Chillon in the middle distance; Reynolds's portrait of the Earl and Countess of Ely (109), a large corner picture. Examples of several Italian masters ars hung. The "Adoration of the Shepherds" (112), by Giorgione, is warm in colour, and crisply handled. The figure subject attributed to Titian, "Omnia Vanitas," has some good modelling and colour, and his "Triumph of Love" (115) is characteristic. Tintoretto is the reputed painter of 117, "Apollo and Marsyas," a composition of sufficient merit and vigour and colour to claim the authorship. A fine Claude (120) and a notable specimen of Andrea del Sarto's chiaroscuro and softness of shading is seen in his "Virgin and Child" (121), lent by Lady Wallace. Two large portraits of La Marchesa Grimaldi (125, 128), by Rubens; a fine example of Frank Holl's portraiture of "A Man" (124), lent by the Queen; a large, richly-coloured composition of "Cupids, Fruit, and Flowers," the latter arranged as a festoon above the cupids, by Rubens and Snyders (126) are to be seen at the further end of gallery. Turner's "Sea-piece" (131), a dark, cloudy painting, is not so characteristic as "View of Petworth House," in which there is some nice grouping and light (133)—both early pictures, belonging to Lord Leconfield, and to be contrasted with the more idealised picture of "Walton Bridges" (140), full of gradation of tone and light. Another great work is Constable's "Opening of Waterloo Bridge," lent by Sir C. Tennant, which is full of sparkling light and colour, added to three admirable portraits by Romney (132, 138, 141).

In the fourth gallery is an interesting collection of Early Italian and Flemish masters, two of them ascribed to Botticelli, a fine "Pieta" by Crivelli, and a Crucifixion ascribed to Raphael, both of them belonging to the Earl of Dudley. The "Virgin and Child with Saints" (161), the latter with embroidered copes, mitres, and croziers, also by the latter painter; and the "Celebration of High Mass," by Jan van Eyck (173), a highly-finished example of an interior, with rich carving of reredos and details, are also lent by the Earl of Dudley. Other examples are ascribed to Fra Angelico, Da Vinci, Signorelli (163), Mantegna (176), Giotto (178) (180), Perugino. Many of these old paintings are choice specimens of the earlier schools of religious art of the 13th, 14th, and 15th centuries.

In the water-colour gallery a series of very beautiful drawings are hung, representing Turner, chiefly sketches and studies from the earlier monochromes like Fonthill, dated 1800, to those charming visions of colour which we met in his Rhine sketches and vignettes, as in his "Sion" (52), and his Venetian sketches (53), "The Rialto" (54), "Grand Canal" (66). John Sell Cotman's series, including his "Trentham Church" (47), "Byland Abbey" (45), "House of St, Ouen, Rouen" (102), his fine drawing of tracery in south transept of Norwich (100), the composition of classical landscape (103), are highly characteristic and beautiful drawings, many of them in simple washes. A few free and masterly sketches by De Wint, of landscape, are conspicuous examples of breadth, such as his "Bolton Abbey" (82). David Cox is represented in four vigorously-handled landscapes on sugar paper; but the series of fourteen drawings by William Hunt will be much appreciated by an even larger number of picture admirers. We can only here refer to his study, "Meekness," a little girl steated on a bank with pitcher; his studies of boy-life, "Contented with Little" (87), a rosy, chubby little fellow sitting on a tub, eating a dumpling on a fork, or "Happy with More" (96). His still-life subjects are exquisite in finish and colour, as the groups of grapes and pears (88), bird's-nest (89), apples and berries (93), melons and grapes (97). In all, the same rich, splendid colour, texture, and homely, natural treatment devoid of all idealisation, are evident, which qualities endeared his work to Ruskin, who speaks of his grapes as the "vintage of Rubens."

THE CAMERA CLUB.

MR. J. PATTISON GIBSON has on view at the Camera Club a small collection of very superior landscape photographs, forming the eighth of the series of "One Man Photographic Exhibitions" held in connection with this society. The pictures are for the most part full-plate prints; but there are a few larger ones, such as the beautiful camera-scene called "Twilight," representing a river wending its rocky way through a well-wooded valley, and in the middle of the foreground a young girl is seated on a big, water-washed stone, contemplating the stream in the haze of the evening time, which is splendidly realised in the photograph, and showing, too, the relative values of the foliage in the distance, middle picture, and foreground. "The Thaw," a seasonable snow scene, "Loitering Lovers," and "The Road to the Mill" are capital prints. The view of a Northumbrian cottage, with its thatch-covered stone walls, arrested our attention. The living part is on the first floor, approached by an external stone staircase, the lower part of the building being used as a store. Lanercost Priory Church in ruins; Linold's Mill and Bamborough Castle, standing like Mont St. Michael on a promontory overlooking the sea, were the only other subjects of special interest to the architect.

PARTY AND PARTY-FENCE WALLS.

THE discussion on a paper under the above title, read at the Surveyors' Institution last month and reported in our columns, was resumed on Monday evening last, the President, Mr. R. C. Driver, being in the chair.

Mr. T. M. Rickman (Fellow) said that the difficulties which occurred on party-wall questions in the country arose from the absence of any Building Act in rural districts, while those which arose in London were in a great measure due, he thought, to the presence of such an Act. The common law rights in the separate sides of a party-wall were very confused and ill defined; but under the Building Act it was generally assumed that there was a joint ownership, and, moreover, party-walls in London were generally built as a whole and bonded together, while in the country it was a not very uncommon practice—although an extremely dangerous one—to build two separate and distinct half-brick walls close together to form the party-wall. When the earlier Building Acts of London, arising out of the Great Fire, were in force, the houses, although differing externally, were structurally very similar, and might easily be divided into three classes, each requiring walls of a certain thickness and strength. But now that styles were so varied and occupiers' needs so diverse, it was impossible to predict beforehand exactly what would be required for a building on any given site, and he thought than any amended Act should possess so much elasticity as would enable it to meet the requirements of the times, and not by its rigid enactments to become soon old-fashioned and unsuitable. A party-wall was the one part of a building which remained longer in existence than any other. The front and back walls might be altered many times for architectural effect, or for other reasons, but the party-walls outlived many such alterations. In the same way, the chancel arch of many old churches (which was essentially a party-wall) remained through many alterations and rebuildings of the nave on the one side, and the chancel on the other. This fact of the duration of such walls rendered it, he thought, the move imperative that their strength and structure should be carefully provided for and supervised. He thought it a shocking thing that in many modern houses the flues of the adjoining houses were arranged as to come within 4½in. of either side. A very fruitful source of fires in commonly-constructed houses was the running of stair-strings and plugs close to, or into, the flues of the neighbouring house, and the suggestion made by the committee of the R.I.B.A. appointed to consider the revision of Building Acts was that in no case should a flue, or recess, go nearer than 9in. to the face of the other side of the wall, or else that no flue should be made within less than 2¼in. of the centre of the party-wall, *i.e.*, the absolute centre, so that between all flues would be 4½in. of brickwork in the middle of the wall. He also thought that any revision of the Building Act with reference to party-walls should also deal with party-fence walls, which now seemed exempted from the provisions of the Act.

Mr. G. M. Freeman (Associate) said that the difficulties connected with party-wall cases were not so much questions of law as of facts, and under two sets of circumstances in particular this question was an important one. In the case of a large sale of buildings, perhaps forming several holdings, the property was often much intermixed, and as one purchaser might determine to pull down, and another to let stand, his purchased building, questions of party boundaries of the most complex description arose. It was certainly most desirable, and saved a vast amount of future trouble and expense, if to all deeds of conveyance a plan distinctly defining the boundaries was appended. When, as in the case quoted by Mr. Bedell, there was a wall which, so far as the ground story was concerned, separated a house from a public passage, and above that level formed the party-wall between the house and rooms of an adjacent house built over the passage, there arose a very difficult question of law. Whether the lower portion of the wall could be treated as an independent face wall in spite of the fact that the undoubted party-wall above depended on it for support, was just one of those questions which he hoped would, in any revision of the Building Acts, be met and set at rest. Then, again, when a three months' notice had been served by the building owner or the adjoining owner, was the former entitled to commence operations (strictly on his own side, and not interfering with the adjoining owner's enjoyment of the wall) at once, or must he wait until the expiration of the three months before he could even touch the party-wall?

Mr. J. D. Mathews said that, under the old Building Acts, which followed, and were the result of, the Great Fire of London, it was the custom to appoint two workmen—and subsequently five workmen—to decide whether a wall was, or was not, a dangerous one, and old records showed that this method was frequently adopted. But he could not help thinking that the present system of three surveyors was as simple and satisfactory, especially if the third surveyor was an architect as well, acquainted with construction as well as the legal rights of the case. He did not agree that any work should be done to one side of a wall before the expiration of the three months' notice, and he certainly thought that district surveyors should set their faces against the practice of condemning a wall where there were difficulties in giving notice. The wall should always, he thought, be treated as a whole, and not as if one half belonged to each owner.

Mr. T. M. Wheeler, Q.C., congratulated the author on his paper, and the Institution on the fact that its younger members were ready and able to come forward with such sound and practical papers on subjects of interest.

Mr. W. Allport considered that some limit should be fixed within which the building owner should commence operations after giving the three months' notice. He could find nothing of the sort in the Act, and it was quite conceivable that great hardship might be inflicted on the adjoining owner by his being kept in doubt as to what, if anything, was to be done. Then again, what was a "surveyor" under the Act? He knew of a case in which a builder's foreman had been appointed to act as surveyor for one of the parties, and another in which the building owner, being himself an architect and surveyor, had actually appointed himself. These cases were, he thought, not isolated ones, and he considered it most important that there should be some definite decision as to what was meant by a "surveyor" under the Act.

Mr. A. King said that although the building owner might sometimes be inconvenienced by not being able to commence work until the expiration of the party-wall notice, it was most essential that some such notice should protect the interests of the adjoining owner. An important point which was perhaps not so generally known as it ought to be, was contained in the decision on the case of "Fillingham v. Wood," in which Mr. Justice Chitty held that for the purposes of a party-wall notice, the adjoining owner was anyone who occupied any part of the adjoining premises on a longer term than from year to year, and that each must be served with a notice, and further said that when there are such tenants in a house, and the building owner is not in a position to find out who they are, a section of the Act provides that the usual notice is good if affixed prominently to the premises, and not directed to anybody. It was also contrary to the Act that the party-wall notice should be signed by the name of a firm—that of an individual being necessary. He thought that great hardship sometimes, as in a case he cited, arose from the ability of an adjoining owner, having but very little valuable interest in the wall, to impede the progress of important works.

Mr. Bedells having replied to the remarks on his paper, the meeting then adjourned.

CHIPS.

The partnership heretofore subsisting between Messrs. Calvert and Wright, of Nottingham, architects and surveyors, has been dissolved.

Miss Amelia B. Edwards, the well-known Egyptologist and novelist, has been accorded a pension on the Civil List. For the last twelve years Miss Edwards has devoted herself almost exclusively to archæological, and especially to Egyptian, subjects. The foundation, in 1883, of the Egypt Exploration Fund, was largely due to her efforts, and she has been for some years its honorary secretary. Egyptology was the subject of a very numerous course of lectures delivered by her in the winter of 1889-90 in the United States—a country in which, at the centenary celebration of Columbia College, she had already received an honorary degree.

Mr. Walter Emden, M.S.A., has been selected as the candidate of the Strand Conservative Association for the London County Council, in succession to Sir Augustus Harris, who does not seek re-election.

Mr. R. Fitch, of Norwich, has presented the whole of his local collection, including many seals, signet rings, and manuscripts, to the Norwich Museum, and has also offered to bear the cost of fitting up a room for the reception of the exhibits in the restored shell of Norwich Castle.

The work of constructing the Castle Hill Railway at Bridgnorth, one of Mr. Newnes's enterprises, is proceeding rapidly, the great cutting being now almost completed by Mr. Law, the contractor. The gradient is about one in one and a half. The buildings for the top and bottom stations, waiting-rooms, and depots are now being erected by Messrs. Bradney and Co., of Wolverhampton. Mr. G. Croydon Marks, of Birmingham, the engineer of the undertaking, expects to have the line completed and open for traffic shortly after Easter next.

On Saturday afternoon the new premises of the Broomhill Co-operative Society at Newcastle-on-Tyne were opened by Mr. Albert Grey. The building, which has cost about £2,600, has been designed by Messrs. Oliver and Leeson, architects, Newcastle, the contractor being Mr. D. M. Spence, of Amble. On the ground floor there are large fitted shops, and on the first floor there is a hall for public meetings, committee rooms, secretary's office, &c.

In the years 1874-5 St. John's Church, Coventry, was in the restorers' hands, the architect being the late Sir Gilbert Scott, and the builder Mr. T. Collins, of Tewkesbury. Recently it was discovered that two beams at the west end of the church, from which the font cover is suspended, were affected with dry rot. A meeting was called at the vestry on Saturday to consider the matter. The rector stated that both Mr. Collins and his foreman on the restoration had visited the church, and various reasons for the defect were suggested by them, the absence of proper ventilation being regarded as the most likely cause. In the end the wardens were requested to have a thorough examination made of the roof, and report to a future meeting.

CONTENTS.

London Building Law (Consolidation) Bill Amendments ... 55
Old Masters at the Royal Academy ... 56
The Camera Club ... 57
Party and Party-Fence Walls ... 57
Our Illustrations ... 58
Competitions ... 58
The BUILDING NEWS Directory ... 59
Wayside Notes ... 78
Notes from Edinburgh ... 79
Books Received ... 80
Building Intelligence ... 80
Intercommunication ... 81
Legal ... 81
Stained Glass ... 81
Legal Intelligence ... 81
Water Supply and Sanitary Matters ... 81
Our Office Table ... 82
Meetings for the Ensuing Week ... 82
Trade News ... 82
Tenders ... 83

ILLUSTRATIONS.

THE FIRST PREMIATED DESIGN FOR THE NEW MUNICIPAL BUILDINGS AT BATH.—ANIMALS FROM CARDIFF CASTLE.—THE BERMONDSEY SETTLEMENT.—SCREEN AT TEWKESBURY ABBEY.—THE DAIBUTSU AT KAMA-KURA, JAPAN.—"CROOKSBURY," FARNHAM.—DINING ROOM AT FARNMAM ROYAL.—ADDITIONS TO WESLEYAN SCHOOL, NEW WORTLEY.

Our Illustrations.

SELECTED DESIGN FOR BATH MUNICIPAL BUILDINGS.

THIS double-page plate represents the design chosen for execution in this recent competition, all the plans for which we described in our review a few weeks ago, when we illustrated one of the other premiated designs. Our illustration is from photographs taken in the exhibition room at Bath by special permission of the municipal authorities. Mr. J. M. Brydon, F.R.I.B.A., is the architect of the works.

ANIMALS FROM THE OUTER WALL, CARDIFF CASTLE: THE LATE WM. BURGES, A.R.A., ARCHITECT.

LAST week we gave a double-page plate illustrative of these sculptures by Mr. T. Nicholls. We now give three other photographs of some more or different views of the same groups. The descriptive note printed with the previous illustrations leaves nothing to be added here, as the beauty of the work speaks for itself.

THE BERMONDSEY SETTLEMENT.

THE Bermondsey Settlement, opened on Wednesday last by Sir John Lubbock, M.P., is planned to accommodate 20 residents and a warden, whose house is for the present omitted for want of funds. Each resident has a sitting and bed-room, the drawing-room, dining-hall, and library being used in common. The University men and others in residence will carry on the work of the settlement in the lecture-hall and class-rooms, which are approached independently of the residential portion of the buildings. In the basement is a well-appointed gymnasium, a workshop and a chemical laboratory being also provided. Situated in Farncombe-street, the site affords space for a tennis court in front and for a garden in the rear. The works, which are approaching completion, have been carried out by the Cooperative Builders, Limited, of Burton-road, Brixton, from the designs of Mr. E. Hoole, F.R.I.B.A., the architect of Toynbee Hall, to which in their purpose these buildings bear considerable resemblance.

NEW CHOIR SCREEN, TEWKESBURY ABBEY.

IT has long been felt that the interior of the abbey could not have the effect its original builders intended until a high screen was erected. This is now about to be done through the liberality of the Vicar Canon Robeson. The screen, which is to some extent founded on the external one now the northern enclosure of the choir, has been designed by Mr. J. Oldrid Scott, F.S.A., and is being executed by Mr. Collins, who has done so much in connection with the abbey. The work is approaching completion, and will be erected before next Easter. The cost will be about 700.

DAIBUTSU (GREAT BUDDHA) AT KAMA-KURA.

THIS famous bronze image of Buddha stands near the village of Hasemura, once a suburb of the ancient capital of Kama-Kura, and celebrated for its connection with Yaritomo, one of Japan's most famous heroes and first Shogun (circa A.D., 1185). Daibutsu was cast in the early part of the XIIIth century under the orders of Yaritomo, and was formerly under the roof of the temple of Shojo Senji; but the latter was destroyed by a tidal wave in 1404. The following are some of the dimensions of the image; Height, 50ft.; length of face, 8ft. 6in.; length of ear, 6ft. 6in.; width of nostrils, 2ft. 3in.; width of mouth, 3ft. 3in.; weight, about 450 tons. According to the Japanese, the image is composed of copper, tin, and gold. This latter quality attracted the notice of an American syndicate some years back, and an offer was made to purchase the image; but to the credit of the Japanese *bonzes* (or was it that the price offered was insufficient?) the proposal was rejected. The image is of a bluish bronze colour, is hollow, and is decorated inside after the manner of Japanese temples. Viewed from where the photograph was taken, the image has a most fascinating effect upon one, the head bent forward as if in silent thought gives to this extraordinary figure an appearance of divine majesty, probably unequalled by any other images of gods.—PAUL BEVAN.

"CROOKSBURY," NEAR FARNHAM, SURREY.

THIS house was built last year on the south side of Crooksbury Hill for Mr. A. W. Chapman. The materials used are red brick and tile-hanging; the timberwork is bricknogged. For the tile-hanging and roofs, old tiles have been used from off old buildings, unfortunately destroyed, in the neighbourhood. The forecourt is paved with ironstone, which is found on the site. A "tea-house" finishes the N.W. angle of this court, from which there is a magnificent view across Waverley. The illustration is taken from where this tea-house is. On the south side are terraced gardens, with brick retaining walls 13ft. high. The principal rooms have all a sunny aspect, and the house is well lighted throughout. The bedroom doors have oak latches with leather bobbins, as are seen in the old farmhouses in the neighbourhood. Mr. Edwin L. Lutyens, 16, Onslow-square, S.W., was the architect, and Messrs. Mitchell Bros, of Shalford, Surrey, were the contractors. The stables are built near the house, so as to compose with the house buildings generally.

THE DINING-ROOM, FARNHAM ROYAL.

AMONGST the various works which the late W. Eden Nesfield carried out at Farnham-Royal for Mr. H. Vallance, the subject of the accompanying illustration, viz., the Ingle-Nook in the Dining-Room, was one of the most successful; and apart from its undoubted merits as a composition, it derives additional interest as being an early attempt to break away from the formal and inartistic decoration of the Early Victorian period. Perhaps no one feature of Mr. Nesfield's work found at the time more imitators than this particular chimney piece. A low beam, elaborately moulded, stretches across the nook, which by a few simple arragements is made, as it ought to be, the centre of attraction in the apartment. Two substantial settles flanking the fireplace on either side, which can be cushioned as taste directs; plenty of shelving for the display of nick-nacks, a simple mantelpiece appropriately carved, a small window for a view, and a dog-grate, are the component parts within the recess; while over the opening outside, the main wall of the room is quaintly panelled and fitted with a long shelf on brackets, forming what is practically the over-mantel. This work was carried out by Mr. Jas. Forsyth, of Finchley New-road, N. We gave an illustration of the sideboard in the BUILDING NEWS for Oct. 16th last.

WESLEYAN SUNDAY SCHOOLS, NEW WORTLEY.

ADDITIONS to the above schools have been recently made, affording increased classroom accommodation and greater facilities for ingress and egress. The architect is Mr. T. Butler Wilson, of Leeds and Harrogate.

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Under the will of Mr. Richard Cooper, of Tulse Hill, Parliamentary agent, five pictures (by Cornelius Breze, Bout, and Beodwyns, Rykaert, Moucheron and Lingelbach, and the Venetian School) are to be offered to the trustees of the National Gallery, on condition that the inscription, "R. W. Cooper, Tulse Hill," is placed upon them, and that the picture by Moucheron and Lingelbach is hung in a strong light.

COMPETITIONS.

FARNWORTH, MANCHESTER.—In the competition for public baths for Farnworth, to be erected near the Market-place, the local board have selected the designs by Messrs. Booth and Chadwick, of Manchester.

HORSHAM.—The governors of the Horsham Grammar School being about to erect new school buildings and residences, eight architects of repute were nominated, from whom they have selected Mr. Arthur Vernon, of 26, Great George-street, Westminster, and High Wycombe, as their architect, to carry out the new buildings, which are to be commenced in the spring.

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CHIPS.

The new cottage hospital, Market Drayton, is being warmed and ventilated by means of Shorland's patent Manchester stoves, exhaust roof ventilators, and vertical inlet tubes, the same being supplied by Mr. E. H. Shorland, of Manchester.

A stained-glass window has just been placed in St. James's Congregational Church, Newcastle-on-Tyne, by Mrs. Scott, in memory of her late husband. The work has been executed by Messrs. Heaton, Butler, Bayne, and Co., of London. The subject, which is carried over three lights, divided by broad mullions, represents the incident in the Gospels of the meeting of Our Lord and Nathanael.

To meet the growing requirements of Amble, a field of eight acres has been acquired by Messrs. R. Carse and Son, builders, and a plan was laid before the Local Board last week for converting this land into building sites. The survey has been made and the streets have been planned by Mr. George Reavell, jun., architect and surveyor, Alnwick.

The northern section of the Liverpool Overhead Railway is now practically complete. Electricity will be employed as a motive power. The engineers to the railway are Sir Douglas Fox and Mr. J. H. Greathead. Messrs. Frank Fox and S. B. Cottrell represent the engineers on the work. Mr. J. W. Willans is the contractor, and Mr. Ferdinand Huddlestone is the contractor's engineer.

A Presbyterian church is about to be built on Fair Isle, midway between Orkney and Shetland Isles. It will be seated for 200 worshippers, and will have a porch, belfry, and vestry. Messrs. Sinclair and Hardie are the architects, and the cost is estimated at £600. The Lerwick Presbytery gave their sanction to the scheme at their last meeting.

The Hull public rooms, containing one of the largest halls and most extensive suite of rooms in the town, have been totally destroyed by fire, which originated in a cellar in which the heating apparatus is fixed. Heat was merely being kept up to prevent the pipes from freezing. The roof of the main building fell in, and a large balcony, capable of holding 600 persons, was destroyed. The side rooms were saved.

At the annual meeting of the council of the Liverpool Society of Painters in Water-Colours, recently held, the following officers were re-elected:—President, Hampson Jones; treasurer, R. Talbot Kelly. The treasurer's statement and secretary's report showed that the change from a close to an open exhibition had been beneficial, both from an artistic and business point of view.

A stained-glass window has just been placed in Penshurst Church, Kent. The subject illustrated is the miraculous draught of fishes, the group being carried through the three openings of which the window consists. The window is the design and work of Messrs. Joseph Bell and Sons, College-green, Bristol.

By the generosity of anonymous donors, the funds required for the widening of the new bridge at Dumfries have now been provided. This improvement of the bridge has long been felt necessary; but the town council has lacked the financial means for making the alteration. The only condition imposed by the donors is the limitation of the sum to be expended to £4,000; but it is believed that this will be ample. Plans for the alterations have been prepared by Mr. Barbour, of Dumfries, and after these have received the approval of Sir William Arrol, the work will be commenced forthwith.

Messrs. Grindley and Co., of Tunstall, exporters of white and decorated granite and semi-porcelain to the United States and Colonial markets, have left the Newfield Pottery, and commenced operations at a new manufactory in Woodland-street. The architect for the buildings has been Mr. A. R. Wood, and the contractor Mr. C. Cope, both of Tunstall, while the interior fittings have been carried out by the workmen of the firm, under the superintendence of Mr. E. Woollams, the manager. The works are capable of turning out from 145 to 150 crates of ware per week, and will find employment for about 600 hands.

THE BUILDING NEWS DIRECTORY.

At the request of many advertisers it has been determined to commence with 1892 the weekly publication of a BUILDING NEWS DIRECTORY, to which Architects may easily refer when in search of the makers and vendors of Architectural and Building Specialities.

The large Advertiser is, of course, to a considerable extent independent of such help. By his judicious iteration of the merits of his specialities he effectually impresses the mind of the constant reader with his claims to attention. But he will find it to his interest to avail himself of our new help to publicity; and besides, there are hundreds of Manufacturers who never advertise in the ordinary way, or who, if they do so, only advertise one or a few of the articles they make and supply, and who yet essentially need *constantly to remind Architects of their existence.*

It may be urged that the Trade Directories and Price Books to a certain degree supply this want; but when it is remembered how limited, comparatively, is their circulation, and how swamped the comparatively few that are wanted are for the most part amongst hundreds of thousands of other names and addresses in which Architects have no interest, and among which they are seldom likely to search for what they require, it will be seen at once how advantageous in a Journal like THE BUILDING NEWS will be the introduction of the feature we contemplate.

We propose, therefore, to devote space *in the body of the paper, immediately preceding and following the Illustrations*, and not among advertisements, or on the inside pages of the outer sheet, to a carefully-arranged *Directory of Makers and Vendors of Architectural Specialities and Builders' Appliances*, under generic and suggestive heads which will naturally suggest themselves to Architects and others in search of Advertisers' addresses.

It will be evident, of course, that many Manufacturers will desire to have more than one entry in the list, because they supply more than one speciality. For the majority possibly one entry will be ample, and that we undertake to make and to repeat weekly in every edition for the sum of ONE POUND PER ANNUM, payable strictly in advance, and expiring on the 31st of December in each year. We cannot undertake to charge for parts of years in connection with this matter, so that entries should at once be forwarded, accompanied by the necessary subscription, that they may appear throughout the whole of 1892.

Clients who may desire to have more than one entry under different heads can do so to any extent they please by payment of *One Pound each* for every additional entry.

All payments *must be made in advance*, as this feature is not introduced as a remunerative one to the Publisher in itself, and the small charge made will barely defray expenses, and will not allow of booking. Name and address must not exceed one line.

The following firms have already entered their names. We cannot keep the list open long, so those desirous of being included should *send in their instructions at once*, as when the allotted space is full no more names will be received this year.

ARCHITECTURAL DESIGNERS—
Finsbury Tracing and Drawing Office, 113, Pavement, E.C.

ARCHITECTURAL PHOTOGRAPHERS—
Bedford, Lemere, and Co., 147, Strand, London, W.C.

ARCHITECTURAL TERRACOTTA—
Gibbs and Canning, Ltd., Tamworth.

ARTISTS IN STAINED GLASS—
Bourne Swaine, 61, King Edward-road, Birmingham.

ASPHALTE—
Avelines Sicilian Asphalte. Joseph Bernays, 96, Newgate-street, E.C.

BATH STONE—
Bath Stone Firms, Limited, Bath.

BLINDS—
Williams, G. A., and Son, Queen's-road, Bayswater.

BOOKS—
B. T. Batsford (Professional), 52, High Holborn, London, W.C.

BRICKS—
Accrington Brick and Tile Co. (Facing Bricks, Plastic and Semi-Plastic), 8, St. James-street, Accrington.
Gibbs and Canning, Ltd. (White Glazed), Tamworth.
Heather Brick and Terracotta Co, near Ashby-de-la-Zouch.

BRICK AND TILE MACHINERY—
Clayton Howlett Co., Woodfield-road, Harrow-road, W.

BUILDING & QUANTITY SURVEYORS—
Flew, J., 11, Popplewell Chambers, Bradford.

BUILDING COMPOSITION—
White, W., Great Western Works, Abergavenny.

CASEMENTS AND WINDOWS—
Wragge, Geo. (Wrought Iron, Steel, and Gunmetal), Wardry Works, Chapel-street, Salford.

CEMENT MANUFACTURERS—
Rugby Portland Cement Co., Rugby.

CEILING DECORATIONS—
Heaton, J. Aldam, 26, Charlotte-street, Bedford-square, W.C.

CONCRETE—
Fambrini and Daniels, Excelsior Art Concrete Works, Lincoln.

CURTAIN BLINDS—
Heaton, J. Aldam, 26, Charlotte-street, Bedford-square, W.C.

DECORATORS—
Campbell, Smith, and Co., 75 and 78, Newman-street, London, W.
Lamb, J. (Specialist), 14, Marlbro'-road, Turnham Green.

DEVONSHIRE MARBLE—
Goad, J. and E., Phœnix Steam Marble Works, Plymouth. (See Brompton Oratory.)

ELECTRIC BELLS—
Gray, J. W., and Son, 113, Gracechurch-street, E.C.
Teale and Somers, Electricians, Leeds.

FANLIGHT OPENERS—
Osborn, David, High-street, Berkhamsted.

FIBROUS PLASTER—
Plastic Decoration and Papier Mache Co., ltd, 21, Wellington-street, Strand, London, W.C.

FIREPLACE—
Teale Fireplace Co. (Teale and Somers), Leeds.

FIREPROOF FLOORS—
Lindsay Neal, W. H., and Co., 15, North Wharf, Paddington.
Phœnix Fireproof Flooring Co., 9, Oxford-street, Manchester.

FIREWOOD SPLITTING & BUNDLING MACHINERY—
Glover, M., and Co., Patentees and Saw Mill Engineers, Leeds.

FURNITURE—
Foster and Cooper, 63, Long-row West, Nottingham.

GRANITE MERCHANTS—
Webb, Percy C., 41, Eastcheap, London, E.C.

HEATING APPARATUS—
Boyd, Jas., and Sons, Paisley.
Grundy, J, 30, Duncan-terrace, City-road, London, N.
Teale Fireplace Co. (Teale and Somers), Leeds.

HORTICULTURAL BUILDINGS—
Boyd, Jas., and Sons, Paisley.
Gloucester Railway and Carriage and Wagon Co., Gloucester.

HYDRAULIC RAMS—
Blake, John, Oxford-street Works, Accrington, Lancashire.

INTERIOR WOODWORK—
Foster and Cooper, 63, Long-row, Nottingham.

IRON AND STEEL GIRDERS—
Walmsley, B., Court Chambers, Mawdsley-street, Bolton.

JOINERY—
Elliott, Saml., Albert Joinery Mills, Newbury.
Gloucester Railway and Carriage and Wagon Co., Gloucester.

JOINER'S OILSTONES—
Whittle Hill Hone Co., Charley Forest, near Loughboro'.

LIGHTNING CONDUCTORS—
Gray, J. W., and Son, 113, Gracechurch-street, E.C.
Morris and Gold, Wardrobe Chambers, Queen Victoria-street, E C.
Teale and Somers, Leeds.

LIFTS AND CRANES—
Waygood, R, and Co., Falmouth-road, Gt. Dover-street, S.E.

LIME BURNERS—
Rugby Portland Cement Co., Rugby.

LOCKS—
Colledge and Bridgen, Wolverhampton.

MARBLE WORKERS—
Emley and Sons, ltd., Marble Works, Newcastle-on-Tyne.

PAPERHANGINGS—
Land, J. and H., 93, Cannon-street, E.C.

PASSENGER LIFTS—
Waygood, R., and Co., Falmouth-road, Gt. Dover-street, S.E.

PAVEMENT ROLLERS—
Gilchrist, Alex., 25, Eglinton-street, Glasgow.

PERSPECTIVES—
Finsbury Tracing and Drawing Office, 113, Pavement, E C.

PHOTO-LITHOGRAPHY—
Whiteman and Bass, 236, High Holborn, W.C.

PIPES—
Gibbs and Canning, Ltd. (Glazed Stoneware), Tamworth.

QUANTITY LITHOGRAPHERS—
Pettitt, T., and Co., 22 and 23, Frith-street, and 50, Old Compton-street, London, W.

RAIN WATER SEPARATORS—
Roberts, C. G., Haslemere, Surrey.

SANITARY APPLIANCES—
Gibbs and Canning, Ltd., Tamworth.

SINKS—
Gibbs and Canning, Ltd. (Cane-colour Glazed), Tamworth.

SPEAKING TUBES—
Gray, J. W., and Son, 113, Gracechurch-street, E.C.

SPECIAL ENGINEERING BRICKS—
Accrington Brick and Tile Co, 8, St. James-street, Accrington.

STAINED-GLASS—
Adam, Stephen, and Co. (formerly Adam and Small), Glasgow.
Camm, T. W, High-street, Smethwick, Birmingham.
Worrall, W, and Co., 75, Endell-street, London, W.C.

STEEPLE JACKS—
Morris and Gold, Wardrobe Chambers, Queen Victoria-street, E.C.

STONE—
Fielding, J. (Alton Stone, Red, White, and Mottled), Alton, Staffordshire.

STONE WORKING MACHINERY—
Powis Bale, M., and Co., Appold-street, London, E.C.

STOVES—
Teale Fireplace Co. (Teale and Somers), Leeds.

TELEPHONES—
Gray, J. W., and Son, 113, Gracechurch-street, E.C.
Teale and Somers, Leeds.

TERRA-COTTA—
Accrington Brick and Tile Co. (and Ornamental Brickwork). 8, St. James-street, Accrington.
Pulham, J., and Son, 50, Finsbury-square, and Broxbourne, Herts.
Thompson, Jabez, Northwich, Cheshire.

TILES—
Carter and Co. (Encaustic, Mosaic, and Faience), Poole, Dorset.

TRACINGS—
Finsbury Drawing and Photo-Copying Office, 113, Pavement, E.C.
Marshfield and Co. (Photo-copied), 5, Little Queen-street, Westminster, S.W.

VENTILATION—
Acme Ventilating and Heating Co., Liverpool and London.
Buchan, W. P., R.P., S.E, 21, Renfrew-street, Glasgow.
Gibbs, John, and Son, 27, South John-street, Liverpool.
Howorth, Jas, and Co., Victoria Works, Farnworth, Bolton.
Teale Fireplace Co. (Teale and Somers), Leeds.

WATER CLOSETS—
Bostel and Son, 73, Ebury-street, S.W.

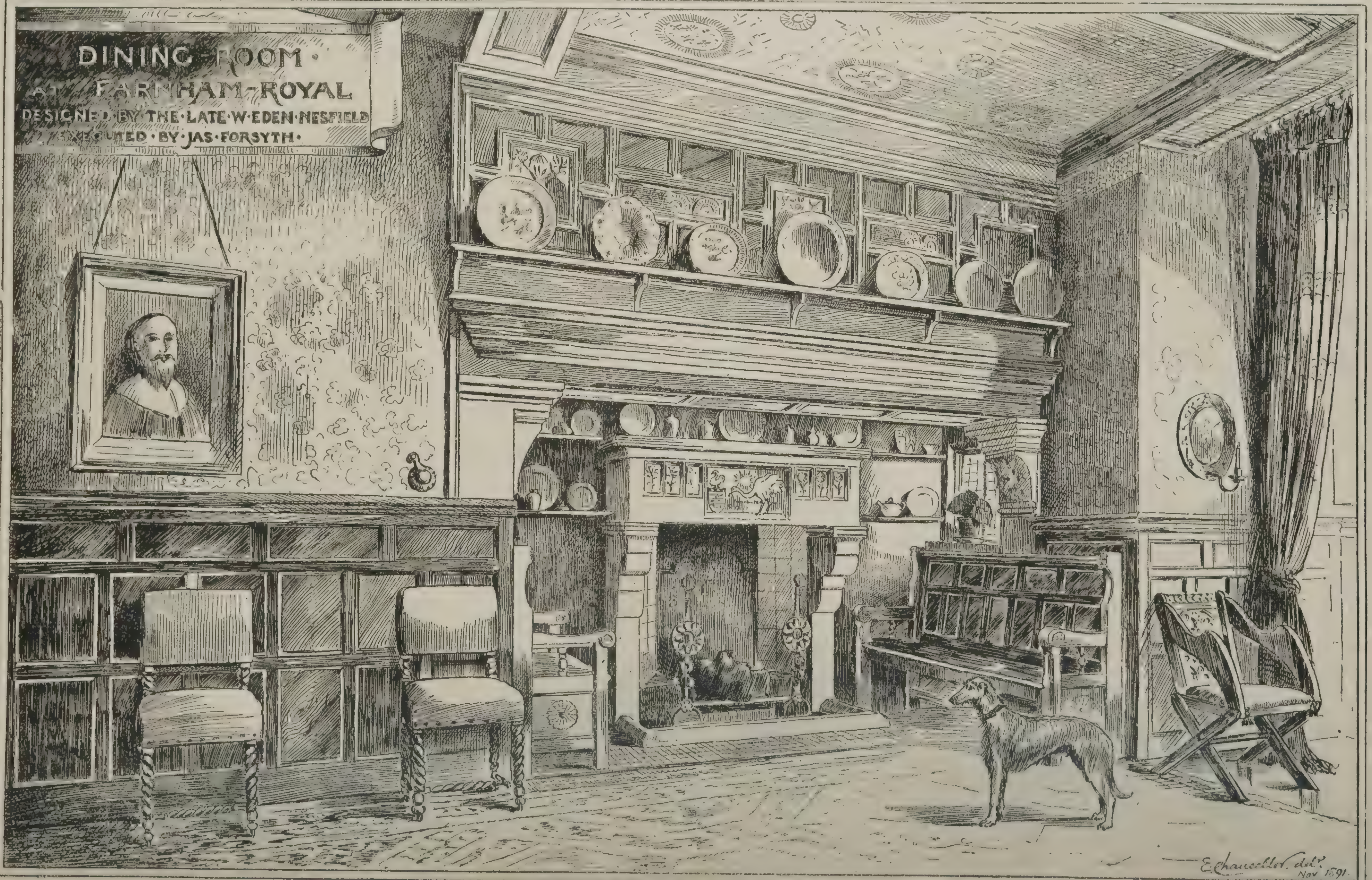
WOOD BLOCK FLOORING—
Gregory, T., and Co., Station Works, Clapham Junction, S.W
Lowe, Roger L., Worsley-road, Farnworth, Bolton.

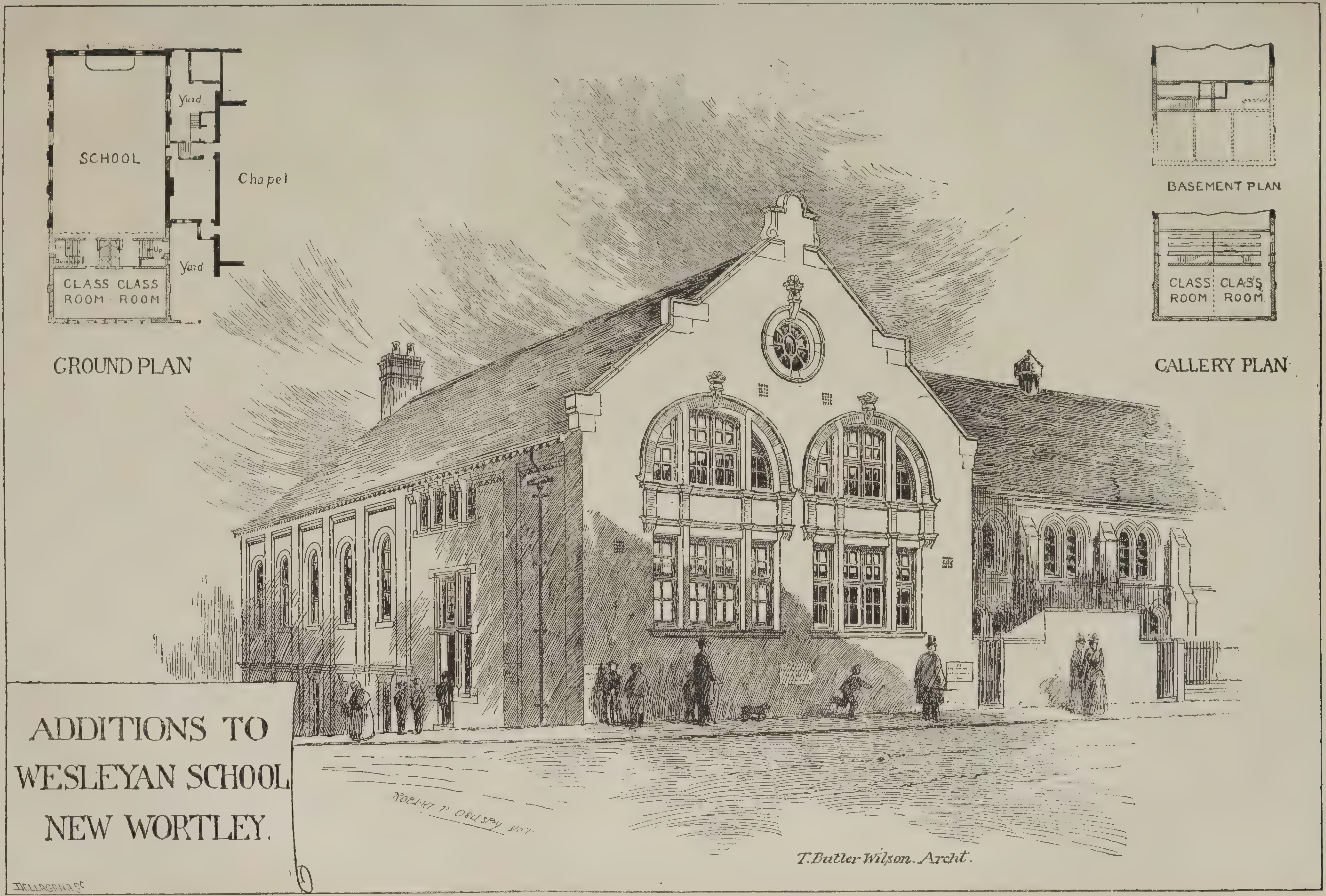
WOOD CHIMNEY PIECES—
Foster and Cooper, 63, Long-row, Nottingham.

WOOD-WORKING MACHINERY—
Butler, Sydney, Park Works, Langley-lane, Vauxhall, S.W
Reynolds, F. W., and Co., Acorn Works, Edward-street Blackfriars-road, S.E.

WROUGHT IRON GATES, GRILLES, &c.—
Teale and Somers, Leeds.
Worrall (Specialist), Byrom-street, Liverpool.

ZINC WORKERS—
Thomerson, Chas., 263 and 265, Hackney-road, N.E.


DINING-ROOM
AT FARNHAM-ROYAL
DESIGNED BY THE LATE W. EDEN NESFIELD
EXECUTED BY JAS. FORSYTH.
E. Chancellor, delt.
Nov 1891.



ADDITIONS TO
WESLEYAN SCHOOL
NEW WORTLEY.

T. Butler-Wilson. Archt.

WAYSIDE NOTES.

THE new laws relating to public health, that come into force with the beginning of the year, are certainly appearing upon the scene at an opportune moment. The last Registrar-General's report shows great mortality in London, and an unusually high metropolitan death-rate. Legislation will not do much for us in the way of hindering the ravages of natural death-causers, such as inclement weather, &c., but every effort at hygienic law-giving should do a little to lessen the number of cases of fevers and ailments referable to dirt and ignorance. We shall not benefit greatly from the fact that now it will be against the law for a dustman to receive from the householder the price of half-a-pint of ale; but some of the clauses in the new health by-laws should prove of practical advantage to the community. Under the up-to-date arrangements it will be easier for the "authorities" to "get at" the citizens who will not, without compulsion, put their houses in order. This should be a great thing, for the reason that in sanitary matters it is of importance to be able to deal with the individual. General instructions and commands, even if observed by the ninety-nine, are negatived in point of practical benefit, by the apathy or neglect of the one black sheep.

The most appropriate watchword of the sanitary reformer and hygeist would be "Prevention is better than cure." Wholly in harmony with this, then, is the contemporary conference at Venice — the *real* Venice — whereat is being argued and debated the various aspects of quarantine and the prevention of the importation of Eastern diseases to the Western world by way of the Suez Canal. It is perhaps fortunate that we are now, thanks to a half-century of growing reform—in the way of emptying of dustbins, trapping and ventilating drains, and the application of soap-and-water to the masses—in no such fear of a cholera epidemic as in years gone by. Still, it is always well to be on the safe side, and an effectual barrier of quarantine between these shores and the filth of the East would be a comfort in evil days. Of other countries one might speak differently. It is not unreasonable to express a belief that the Continent of Europe, as a whole, should look to the beam before it troubles about the mote. No amount of quarantine would ultimately prevent a disease finding its way and fastening upon places where every law of sanitary science is ignored. Let our Continental neighbours put their own houses in order, and remove the filth which is on their thresholds. Time, then, to consider the shortcomings of the stranger that is without the gate.

I see that Canon Benham recently granted the use of the vestry of St. Edmund King and Martyr, his church in Lombard-street, for the consideration of sanitary matters and *the appointment of a minister of health.* There is no doubt that an official of this nature would prove serviceable to the public. The age is ripe for such an appointment to be made. The Local Government Board is a wonderfully hard-working, useful institution; but it has so much to occupy it that it is becoming a question whether a separate "Minister of Health" with, say, a "National Department of Hygiene," could not be created with benefit. Duties could then be more concentrated in their several ways. The idea—no novel one, however—seems to deserve leisurely and serious consideration.

We have our Venice in London, and are rapidly acquiring a veritable Pompeii in England. The excavations at Silchester are, according to a long and interesting account in Saturday's *Times*, unfolding a plan of an extensive Roman city, with its baths, villas, *insulæ*, &c., as at Pompeii, the whole on a scale of completeness that, I believe, is unrivalled so far as concerns our own country. It does not follow that at Silchester are the most extensive remains of this description in England; but owing to difficulties of one kind and another that prevent the archæologist from following up traces of Roman occupation—now an unsympathetic landowner, and their inconvenient proximity to modern buildings, and at all times more or less (the former generally) want of funds—owing to difficulties of this kind, clues to further remains have not been so systematically and persistently followed up as at Silchester. All the more value, therefore, is to be placed on the things thereat accomplished. It seems that excavations are to be continued during the year, and that even as at present left, the site of the old city is worth a visit. By the time the whole place has been laid bare, it will evidently be worth a long and special journey, even for an ordinary antiquarian sightseer. Little more than a ground plan of the city appears to be left after the work of excavation, any masonry, &c., above the old ground level being fragmentary only; but no lack of interest will be felt from this circumstance. Some time ago, it will be remembered, there was an exhibition of fragments, tools, and miscellaneous articles found at Silchester, in the rooms of the Society of Antiquaries, Burlington House, and now another exhibition is on view which should be of greater interest even than the first.

Competing architects residing more than fifty miles from Penrith will have voted the game of sending in plans for the proposed new school scarcely "worth the candle." A select few, therefore, will be found to have entered this competition. Local architects take their benefit. It is not altogether an unreasonable demand—that the competitors shall have inspected the site —especially when the site is of a peculiar kind, and beset with a multitude of difficulties. Whilst boards and corporations continue to send out such miserably insufficient details of levels, &c., with the particulars of their competitions, they might just as well adopt the method of procedure of the Penrith School Board, and save a score of non-site-seeing competitors the trouble of competing in vain. The Penrith Board, however, cuts itself off from a number of outside competitors who would send good plans. This may, or may not, be their object. If the inaugurators of competitions want to get all the plans they can, and at the same time wish to avoid, as far as possible, the evils attending the non-seeing of sites, they should *prepare good plans and sections, with careful levels and concise notes* about their sites. Unless there is something very unusual or awkward about the site, such careful preparations will enable every intelligent architect to grasp the subject. Some of the particulars furnished to architects are disgracefully slovenly. A year or two ago I was shown a set of conditions prepared on "tea-paper," and periodically we get these carelessly drawn up particulars of competitions.

I was glad to see last week a letter in the *Standard* respecting the threatened encroachment on West Wickham Common, to which I recently referred. The communication was signed by Miss Octavia Hill, Mr. Samuel B. Berrington, and Mr. Robert Ritherdon, and describes the iron fence to which I alluded. The term I used was "Hayes Common," from a habit of regarding all the breezy commonlands of Hayes, Keston, and West Wickham as Hayes Common generally; but the signatories of the above-mentioned letter talk of West Wickham Common, which, I suppose, is the correct designation. Whatever may be the correct name of the place, the fact of its transcendent beauty remains, and the threatened danger still depends. Those who know the common will be glad to hear that sufficient interest has been roused to put in force the Metropolitan Commons Acts, and that the Board of Agriculture have ordered a preliminary inquiry to be held. The Bromley Footpaths and Commons Protection Society have been instrumental in advancing this matter, and need subscriptions on behalf of furthering the work, which, by all so disposed, may be sent to the Bromley Branch of the London and County Bank.

Springtime is the best to see this bit of Kentish common. There is then such breadth of effect—broad masses of light-green foliage and broad masses of ruddy brown, as contrast, in the carpet of dead beech-leaves. The steep hill, on which hang the immemorial oak-trees, turns to the setting sun, and is bathed in the warm evening glow wherever the thick canopy of leaves of beech and oak permits of the entry of the bright rays. A wealth of light-green bracken varies the rich tints of the old beech-leaves, across expanses of which the shadows of the dark, gnarled and knotted, twisted and blasted, oaks fall in cool purple tones. Above oak and beech mingle their youthful greenery, the brilliant spring foliage, heightened now and again by the dark head of some pine-tree, or eclipsed by the delicate tints of the fairy-like larch.

From the foot of this hill, a gentle ascent across a meadow path leads to West Wickham Church—well-beloved by painters, and deservedly so. Seated on a knoll, commanding views of the tree-tops of the neighbouring common and looking towards the sombre pinewoods on the Addington hills, forming one in a picture with the old red-brick mansion adjoining, ivy-clad and lichen-covered, the old building attracts us on first sight, and closer inspection raises it in our estimation, while we feel, intuitively, the attraction of the place, and have a bond of sympathy with the artist who so frequently labours to reproduce its beauty of effect.

GOTH.

CHIPS.

The Nineteenth Century Art Society have acquired the galleries adjoining the Conduit-street Galleries, and now known as the Maddox-street Galleries. These premises are now on the same level, and can be made to communicate, as they did formerly.

The Church of England cemetery-chapel at Bedford has just been filled with stained glass from the studio of Mr. H. J. Salisbury, St. Alban's, Herts. The east window, which is divided into three compartments, has representations of The Crucifixion, Resurrection, and Ascension of Our Lord. Figures of the patron saint of each church in the town have been introduced into the five side windows.

The picture of "The Blind Girl," by Sir J. Everett Millais, R.A., has been presented to Birmingham by Mr. William Kenrick, M.P., chairman of the local museum committee.

A debate took place at Nottingham Town Council on Monday on a motion for opening the Castle Museum and Art Gallery on Sundays. In support of the proposal, the experience of Birmingham and other large towns was quoted. The motion was rejected by forty-one votes to seven. Nine members remained neutral.

At a meeting of the Council of the Royal Society of Painter-Etchers, held on Friday last, the following were elected associates, viz.:—C. E. Baskett, E. W. Charlton, J. Knight, E. K. Martyn, and E. Piper.

A society is in course of formation for the encouragement of the study of Japanese art, science, and industries, of the commerce and finance, the social life, the literature, the language, history, and folk-lore of the Japanese. The society will hold periodical meetings for the reading of papers and for discussion, will create a library, and arrange temporary loan exhibitions. The first general meeting will be held towards the end of this month in the rooms of the Society of Arts.

The Preston Town Council have decided to memorialise the Local Government Board for power to borrow £32,500, the balance of £130,000, required for the purposes of the new sewage farm at Freckleton.

Good progress is being made with the harbour works at Torquay, in course of construction for the local board. The breakwater has now been carried out to a distance of 900ft. from the shore. Mr. Inglis is the acting engineer, and Messrs. Cochrane and Sons are the contractors.

The charming little New Year souvenirs sent out by Messrs. R. Boyle and Son, Limited, are admirable specimens of illuminated and coloured printing, and the handy combined pocket calendar and scale will find favour with thousands throughout the year.

The first portion of a large building estate situated at Sparkhill, a growingly important suburb of Birmingham, has now been completed. The builders were Messrs. Hughes and Son, of Sparkhill. At Edgbaston a number of villa residences of somewhat similar character to the preceding, but with much wider frontages, have also been completed. The builder was Mr. Edward Airey, of Gillott-road, Birmingham. At Llanelly, South Wales, a number of larger villas are in course of erection. The total cost will be about £9,000. The architect for these buildings is Mr. John Statham Davis, of 53, Newhall-street, Birmingham.

New science and art schools are about to be erected at High Wycombe, from the designs of Mr. Arthur Vernon, F.S.I., 26, Great George-street, Westminster.

A portrait of John Flaxman, painted in Rome in 1792 by Guy Head, an amateur artist, has been presented to the National Portrait Gallery by Mr. T. R. Williamson, of Manchester, who purchased it at the recent Crozier sale at Christie's.

NOTES FROM EDINBURGH.

THE year 1891 has been a busy one in all the building trades; wages have advanced, and the prospects of their continuing so are good. The Royal Infirmary, though supplemented in several ways by auxiliary departments since the building was erected, is inadequate to meet the ever-increasing demands for its services, and plans have been prepared for an addition to cost about £70,000. A new school has just been begun for South of Morningside suburb. The civic authorities appear to have made up their minds to erect a costly refuse destructor at Powderhall, and the Water of Leith scheme will probably have two years' work before it yet. The railways are making extensive alterations, and there will be the usual amount of private speculative building.

Much has been done within the year more or less important and interesting from an architectural point of view. Foremost among the largest edifices of the city, the Gallery of National Portraiture and Antiquarian and Historical Research is at length complete, having been formally opened during the past summer. It is the only building of its size (not ecclesiastical) designed in the best style of Decorated Gothic, and it makes an impression, also, in virtue of the very peculiar character of its design, there being probably no other of a similar character in the kingdom. The cathedral church of St. Mary has added a very richly decorated chapter-house to its equipment, modelled carefully on old examples, with its polished granite central pillar. The two western spires, now rather ungainly towers, remain to be built to complete the design, but no one as yet has come forward with any substantial offer of assistance.

The old Hall of the Castle, too, has been completed, but will not be open to the public till interior arrangements are made. The Argyle Tower is restored, and the new gateway and guard-house at the entrance have made an immense improvement in the appearance of the fortifications on the East.

Another important architectural feature added to the city is the Solicitors' Library, seen to great advantage from George IV. Bridge. The hall is ready to receive its library, and makes a very cheerful, well-lighted interior. Decoration for the windows has been provided by numerous medallion portraits of eminent lawyers in centre of the stained glass, executed by Messrs. Jas. Ballantine and Sons.

The Social Union is an organisation of voluntary effort which endeavours to improve the habits of the poorer classes by bringing home to their experience the practical advantages of artistic design, and a clean and comfortable environment. They have been persevering steadily in their line of welldoing for some years, and have recently completed the work of restoring the White Horse Inn, close and court, by fitting up the old and ruinous hostelry at the north end as a tenement with several good houses of one and two rooms a-piece. Externally the uilding is probably much as it was in the olden me: all that was characteristic in its appearance retained, and the roof is covered with Stafford re red tiles. The rough-cast is prettily tinted, woodwork in doors and barge-boards painted n, and the whole looks, very likely, better it ever did in its palmier days.

school building, one large school for the of the Sciennes is now nearly finished. It more fortunate in its site than any of ready built, as it stands far from any of owded thoroughfares, with extensive and frontages to the south, and good air and t on the other sides. The large playground in front, with concrete surface. The classooms are in two floors, arranged *en suite* north and south of a central space, which is occupied by the great staircase and accommodation for hats and cloaks and lavatories. On the south side the classrooms are three, the centre one having considerable projection over those at the side, and the same arrangement is carried out on the north side, only with two instead of a single room on either side of the large central classroom. The rooms are separated by sliding partitions, and are about 18ft. high, this height allowing for two floors for cloaks, &c. The staircase is well lighted, but the space for the conveniences mentioned is dark—a condition which will not be improved when the frames receive their garniture of hats and cloaks.

Over the central portion, attic drawing-class rooms in the roof are provided, with a smaller room behind for instructions in elementary chemistry or other subjects. The ground level to the north being very much lower, advantage is taken to provide a swimming-bath under the central part, so that this is one of the most completely equipped schools as yet erected. The cost of erection, of course, does not diminish, and may be from £12 to £14 per scholar.

There is no great expenditure on purely decorative detail in this building, and what it has might have been spared. It may safely be affirmed of this and some other recent city architecture, that the idea of going back to the 18th century for decorative detail has not produced anything very good, and nothing so good as work with the ordinary Classical or Scotch Baronial detail. Here the whole frontage is "decorated" with thin pilaster strips from ground lines to skew, stopped under gables with heavy cornice moulding, each pilaster having the inevitable bed-post finial atop, some with and some without a podium. But the whole elevation is excellent in itself, and with its lofty ceilings and range of tall windows needs no vertical emphasis by such surface ribbons. The finials are too many, where one might have sufficed for each gable, and only suggest obstruction to the proper function of the skew cope. All this surface decoration may be defined as architectural nonsense, since no rational account can be given of the meaning of these somewhat commonplace and popular details.

The classrooms, which are all graded, are heated from open fireplaces, in some cases supplemented by hot-water coils. The large central space is heated by pipes from three large boilers in the basement. The fresh air is admitted to the rooms by the usual inlets, formed in outside walls, and the foul air—led from openings near the ceiling by shafts to a chamber in the roof—is drawn off by a fan 4ft. in diameter, driven by an Otto gas-engine.

The Episcopalian Church of St. Paul's, in York-place, has now been provided with a suitable chancel, the mason-work being completed. This church was built when there were no choral services outside cathedral churches, and when preaching in a surplice was unknown. The sacrarium was provided in the easternmost bay of the nave, and organ and choir were placed in a west-end gallery, which was continued round the sides of the interior. The nave is one of eight bays, about 110ft. long, with lofty pillars, and wide and lofty aisles, designed in Perpendicular Gothic, with timber ceiling. Externally the extremities of nave and aisles had octagonal turrets with open parapet-work rising considerably above the roofs, and giving character to the whole. The east wall of nave with the two turrets and large window have been taken down, and rebuilt about 30ft. farther east, so that the unbroken line of the nave is now of portentous length, suggesting the need of something to make up for the absence of the old turrets, which had better have been retained.

The R.C. Church of St. Mary's has had the damage done by fire repaired, and a new aisle erected. There has been a good amount of work done within the year in the way of church extension. A chapel of ease has been erected for St. Michael's parish; and three churches, all in connection with the Free Church, are nearly completed. Of these, the one most interesting architecturally is the new Free Church for South Morningside, where all the three Presbyterian bodies have now erected places of worship. They are all in line, on successive stages of the slope towards the Braid Hills, and without leaving the thoroughfare anyone can compare the respective merits of the U.P. octagon in Queen Anne style at the foot of the hill; a little further on, the Early English Gothic in the large edifice of St. Matthew's E.C.; and, lastly, the Later Decorated Gothic of the Free Church. This edifice is designed with nave about 30ft. in width, with low and narrow passage aisles, in five bays, one at the south-east being extended to form an organ transept, with choir vestry attached. A hall is provided at the east end, but separated from the church by a roomy corridor, which gives access to a vestry also. Entrance to the church is got by a door in the tower, which is built on the north west of the nave, and which has a door leading to the vestibule opening upon the passages; over this vestibule an end gallery is erected. The church is not a very large one, and will hold 600 or 650. The nave arcade is low, raised on plain octagonal piers, 2ft. 6in. diameter, with low arches, and no impost or other mouldings, the octagon splay only being carried round the arching. This impairs the aspect of the arcade, which is generally an imposing feature; but it accords much better with the proportions of the low and narrow aisles, and gives a better clerestory. The bays are very wide, about 16ft., and in each two large clerestory windows are provided, which are lintelled, and have mullioned lights, with graceful tracery in the upper part of Late Decorated character. The ceiling is a plain painted wooden vault, with larger and subordinate moulded ribs, and rather heavy cornice, carried on very plain, strong corbels.

The exterior is the most satisfactory exposition of the style, and leaves nothing to be desired. The tower is massive and stately, 25ft. square, now built to its parapet, height 80ft. or so, and preparing to receive a spire 50ft. higher. There is very little purely decorative ornament about it, unless the massive buttressing may be considered such. The parapet has no projection, but a series of moulded panels, cusped, and good cornice moulding with grotesque heads and foliage bosses alternately in its line. There is the usual octagonal staircase turret on the north-west, which rises above the parapet. Next to the tower the clerestory is the most marked feature, from the large proportions and novelty of character displayed. The church and tower have red stone dressings, happily relieved with some Hailes grey stone in the surface rubble. The red stone of St. Matthew's does not improve with time, and is a dull and dingy red, where the stone has natural fracture, and only a little better where it is polished.

The Warrenden F. Church is a plain building, almost devoid of architectural detail, and a fair example of the old-fashioned galleried interior. It will accommodate probably a third more than the church above mentioned, while the cost will be little, if any, over a third of the expenditure upon either. The church at Parsons Green is not unlike the Braid F.C., having a nave about 30ft. wide, with narrow passage aisles of similar design; transepts and a tower at the N.E. angle. It has an entrance porch and corridor stretching across the west front, giving access to the aisle passages; but no gallery at this end. The proportions and grouping of the church and hall built at the east end are good, and the whole makes a conspicuous and picturesque addition to the street in which it is erected. It is built in the red stone formerly noted, and in Early English Lancet Gothic of a very plain description. The tower, probably 80ft. in height, looks well, though not a very large one. The parapet projects upon a corbel course, and is rather heavy looking. An octagonal timber spire, covered with red tiles, with a sort of curtain formed by varying angles of the tile roof, is placed on the square tower, but sits awkwardly thereon, having no apparent connection to satisfy the eye.

The fenestration is peculiar in so far as the size of the openings are concerned, and there seems to have been a desire to produce sensational contrasts, with not very pleasing result. The transept windows are very long, so long as to make their mullions forming the three lancets look weak for their work. Close beside them, the windows are mere pigeon-holes, with lintels and corbels. The clerestory windows, comprising each a double lancet, look rather more like tops of larger windows curtailed of their proportions. The most interesting and original of the series is the large west window. This is over the corridor, and has much width, and not much height. The ordinary method is to fill in with five or seven lancets, which is always pretty; but in this case an endeavour is made to combine with this the Geometric system, and a cinqfoliated circle and other tracery are added, which may be described as resulting in a very curious medley, the chief merit of such works of art—at least, in music—being incoherency.

The interior, as a whole, is excellent in its proportions, with a vaulted boarded ceiling of low pitch, which harmonises well with the low arcade, though rather heavily timbered. The arcade is similar to that of the Braid Hill Church, but with narrower bays and more slender piers. A rather heavy drip moulding is put upon the arches, which is not out of place when there is no impost mouldings. The east and is dead wall, giving a fine space for a fresco. The interior has its transept arching carried on a very lofty octagon pillar, complete with capital and base, making a very sensational and rather invidious contrast with its humble companions in the nave arcade, which are about a third of the height. The span of the transept is very moderate, and the pillar appears to be a very unnecessary obstruction, and looks as if it would go down like a ninepin with slight lateral concussion.

The R. S. Academy opens this week. It has obtained the new charter, and, under the guidance of its new and distinguished president, Sir George Reid, it hopes to inaugurate a course more successful than it has had of late years. The government of the society is placed on a more liberal basis. So far as architecture and architects are concerned, there is little or next to nothing done in the way of change, except that architects are to be nominated, and need make no application for the honour of being made Associates ; nor are they, like other artists, required to have exhibited their work.

A new society calling itself "The Society of Scottish Artists" has been recently formed, not in any spirit of hostility to the R.S.A., but as a means of advancing the interests of art and artists in ways not open to the older body, or beyond their power by limitations of the arrangements under their control.

The mortality of Edinburgh for 1891 will not show any improvement in the death-rate over the statistics of the preceding year. Lately—since November—the weekly rate has advanced from 14 to 37, 47, and 45 per thousand, owing to influenza and similar complaints.

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BOOKS RECEIVED.

Notes on Building Construction. Part IV.: Calculations for Building Structures. Course for Honours. (London: Longman, Green, and Co.)—This long-delayed volume of "Notes on Building Construction" has at last been published. The aim of the writer has been to "explain fully and clearly the simplest and best methods for calculating the proper forms and dimensions to be given to timber and iron beams, cantilevers, plate, box, and trussed girders, roofs, walls, arches, water-pipes, &c." In looking over a few of the chapters, such as that on "Beams," we find that the author has well explained and illustrated the external forces acting upon a loaded beam ; the effect of the reactions of supports ; the leverage at which they act, or the "bending moment," which term is explained in smaller type for more advanced students The rule and formula to find the bending moment are clear and simply stated, the use of complicated mathematics being avoided. The examples given are particularly useful. Thus a numerical example is given of finding the bending moment of a beam 20ft. bearing, having a weight of 100lb. 6ft. from one end. The segments of beam divided by weight are 6ft. and 14ft. = 20ft. Then $R_A = \frac{14}{20} \times 100 = 70$lb. $R_B = \frac{6}{20} \times 100 = 30$lb. Thus the bending moment at point of weight (*c*) is = $CB \times R_B$ = 14ft. × 30lb. = 420ft.-lb. ; $AC \times R_A$ = 6ft. × 70lb. = 420ft.-lb. The moment of beams supported or fixed in different ways is next discussed, and the notation and illustrations are very clear, the graphic solution of each case being given by the aid of clear diagrams. The student learning the mathematical principles for the first time will find this exposition a help to him. Next the moment of resistance is discussed, first by reasoning upon the action of the fibres of a beam under a load, and next by experiment. Very clear diagrams are given to show the effects of compressing the upper fibres and of tension on the lower half of beam, and these forces are proved geometrically to shorten the length of the upper fibres and to extend those below the neutral layer. The resistance to bending is next shown by geometrical reasoning and diagrams, and the important principle is enunciated that the bending moment = moment of resistance. The expression of the value of the latter is next discussed, and this investigation is printed in small but readable type. After this the general formula, moment of resistance $= r \frac{bd^2}{6}$ is given. The question is next determined by experiment and calculation. Shearing stress and graphical representation of same for beams variously loaded are next treated, followed by diagrams showing beams of uniform strength according to the generally accepted rules. Deflection and fixed beams are also fully discussed, and numerical examples worked out. Wrought-iron rolled beams and cast-iron girders follow. These chapters are very complete, and the formulæ for practical use are given, with examples worked out. A graphic method of finding the section of a cast-iron girder is given, also the mathematical method for calculation with a worked-out example on p. 104, which will be found of value. Tension and compression bars are considered, and the author has recourse to many recent authors, including Professor Fidler on compression bars and struts. Long struts are considered, the author giving several methods ; but Professor Fidler's is preferred, and his graphical representation given. Joints and connections and plate-girders are fully treated and illustrated, and many examples given. Braced and framed structures, Maxwell's diagrams, and the method of sections used in calculating their strength are applied to structures of braced and open web kind. The chapters on roofs and iron roofs, and the stability of brickwork and masonry, including brick piers and wind-pressure on chimneys, retaining walls, &c., are important additions to a work of this kind. Following is a full and carefully written chapter on the theory and strength of arches. The exposition of the means of finding the line of resistance in an arch by a graphic method is given. Hydraulics as applied to buildings, and the practical examples worked out will be found of much value. The volume will become not only a valuable textbook to the student, but a guide to the architect as well.——*Mechanical Engineer's Pocket-Book of Tables, Formulæ, Rules, and Data.* By G. D. Kinnear Clark, M.I.C.E. (London: Crosby Lockwood and Son.)—This is handsomely bound in leather gilt edges of a handy size for the pocket, and is chiefly compiled for the use of the mechanical engineer. A large number of tables have been calculated by the author to shorten the labour of mechanical men. The 640 pages include hundreds of formulæ and rules, these being arranged under distinct heads. The strength of materials, electrical, metals of market forms for construction, as well as rules and formulæ relating to the steam engine, hydraulic engineering, and other subjects usually inserted in handbooks, are fully dealt with, and the mathematical tables are very complete.——Following in the wake of the London Architectural Association, the kindred body formed in Sydney in March last has inaugurated its establishment by the publication of a periodical for intercommunication among its members. The *S.A.A. Notes* has now reached its sixth monthly issue ; but Nos. 1 to 5 were published in one cover. The editors are Mr. S. Hurst Seager, of Bridge-street, Sydney, President of the Association, and Mr. George J. Oakeshott, who will be remembered by many of our readers as a travelling student of, and active worker in, the L.A.A. a few years since, and who is now in the Government Architect's Office at Sydney. Mr. J. P. Power, of the same city, is the secretary. The rules and class arrangements closely follow those of the London Association prior to the inauguration of the Education Scheme.——*The Municipal and Sanitary Engineer's Handbook*, by H. Percy Boulnois, M.Inst.C.E., F.San.Inst., City Engineer, Liverpool, &c.: second edition, revised and enlarged (London: E. & F. N. Spoon). This is a new and revised edition of a work we spoke favourably of on its first appearance. Many changes have taken place since ; sanitary science and legislation have made rapid strides, which have rendered necessary a new edition. Mr. Boulnois has compassed these additions and brought his valuable text book up to date. We should again recommend every young as well as old borough surveyor and engineer to read carefully this book on the office and duties of a town surveyor. It deals with every branch of a surveyor's work—roadways of macadam, wood, and asphalte ; kerbway, street obstructions, new streets and buildings, sewage disposal and ventilation of sewers, dwellings, house drainage, markets, abbatoirs, and gives all statutory legislation.

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The tender of Messrs. Shillitoe and Sons has been accepted for the new Admiralty Offices, and it is expected that the work will be commenced during the next fortnight under the supervision of the architects, Messrs. Leeming and Leeming, of Westminster.

The Egyptian Government has decided to telegraph to Europe, to an English, a French, and a German engineer, inviting them to come to Cairo on February 5 as a commission for studying the projects for the drainage of the city. Their stay will be six weeks, and their remuneration £600.

Building Intelligence.

High Wycombe.—The High Wycombe Cottage Hospital has been recently enlarged, and endowed with a sum of about £2,800, granted by the trustees of the Earl of Beaconsfield Memorial Fund, from the surplus at their disposal. The new buildings consist of a large operation and convalescent room, bath room, heated linen-chamber, and other conveniences, costing, with an additional piece of land, about £800. The new buildings were opened by Mr. Coningsby Disraeli, the heir of the late Earl, on the 19th ult., and Mr. Disraeli was afterwards entertained to luncheon at the Town Hall, Wycombe. Mr. Arthur Vernon, F.S.I., of 26, Great George-street, Westminster, and High Wycombe, was the architect, he having been the architect also of the new buildings which were erected in 1875 ; and Mr. H. Flint, of High Wycombe, was the contractor.

Leeds.—New offices are in course of erection in Park-row and Basinghall-street, Leeds, for the Prudential Assurance Co., from plans by Mr. A. Waterhouse, R.A. The building covers a site of about 105ft. along Park-row by 109ft. from Park-row to Basinghall-street, and the estimated cost of erection is nearly £40,000. On the ground floor to right of entrance are public office (41ft. by 36ft.), manager's private room, waiting-rooms, lavatories, strong room, and a large office in the basement, with the usual storage rooms and heating chamber. On the left-hand side of the central entrance is an office, also 41ft. by 36ft., and at the rear is an art gallery 100ft. long and 18ft. high, with a high side aisle, and ample storage and lavatory accommodation. In the basement floor are eleven large strong-rooms, for the use of tenants. Above the roof of the art gallery the building is divided into two blocks, with an area between 20ft. wide and 104ft. long. Each block is provided with a large staircase, and they are connected by bridges. There will be 73 rooms to let, suitable for business chambers. The whole work is carried on under the supervision of Mr. William Bruce, clerk of works.

Osborne House, I.W.—Her Majesty has lately, a daily newspaper remarks, made an important addition to Osborne House. It consists of a new wing, corresponding externally with the Italian architecture of the Palace. A broad corridor connects the new building with the pavilion in which are situated the Queen's apartments. The principal feature of the extension is an Indian Room, which is not quite completed. A musicians' gallery has been erected at one end of this hall, which measures 30ft. by 60ft. The chamber is remarkable for the richness of its decoration, which is still in white, but hereafter the mouldings will be coloured. They have been executed under the superintendence of Ram Singh, Professor of Art at Lahore University, who, together with Mr. Mann, the builder, has been busy since March, 1890, in the adornment of the ceiling and walls. A beautiful dado, with a Sikh-work moulding, skirts the room. Between the pilasters there are diaper panels, surmounted by an ornate cornice, having a cove above it, in the Moorish style. Over one door a Hindoo idol appears. The materials used for the work have been *carton pierre*, fibrous plaster, and papier-maché.

West Smithfield.—The work of restoration at St. Bartholomew the Great is making steady progress under the direction and plans of Mr. Aston Webb. Since the south transept was opened in March, the triforium arches have been opened up, and the roof over the south triforium has been reconstructed, while that on the north side (occupied till quite recently by the boys' school of the parish) has been repaired. The Norman vaulting below both of these triforia, which has been long destroyed, has now been renewed throughout. The opening of the north triforium gives access by a spiral stone staircase to Prior Bolton's window. The old brick tower is to be retained after being strengthened by iron ties, and the copings reset and repoin throughout in cement. A stone porch w shortly be added. The pre-Reformation peal five bells has been turned, rehung, and set i ringing order. The north transept is to be taken in hand next.

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The Stockton town council, by twenty-one votes to six, decided on Tuesday to open the Free Library newsroom from 3 p.m. to 9 p.m. on Sundays.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. Passmore Edwards.

TERMS OF SUBSCRIPTION.

One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 0d. (or 6dols. 30c. gold). To France or Belgium, £1 6s. 0d. (or 33fr. 30c.) To India (viâ Brindisi), £1 10s. 4d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front Page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No front page or paragraph Advertisement inserted for less than 5s.

Situations.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is One Shilling for Twenty-four Words, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., L., LI., LIII., LIV., LVIII., LIX., and LX. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

Received.—J. S. and Co.—F. N. D.—Anglice.—T. M.—D. and S. Co.—P. T. (Bristol).

"BUILDING NEWS" DESIGNING CLUB.

T. H. Bishop, "Excelsior," E. J. Taylor, R. B. Burgen, and others.—(The site for the parish hall is exactly what we stated. The widest end is to be 55ft. wide, and the two sides are to be each 90ft. long inclining inwards at the same angle in straight lines towards the narrow end, which is to be 30ft. wide. This triangular plot in geometrical terms is really a trapezium—a quadrilateral figure, the two ends being parallel.)

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Intercommunication.

QUESTIONS.

[10688.]—**Testing Mortar.**—I want to know if any one could let me know how I could test mortar as to its strength, after it is made up? I am building some houses, and now that the frost and wet weather have set in, the mortar does not set the way it did two months ago, although it is the same; and the man over the job says the mortar is bad—too little lime in it, so I want to know how it could be tested, for he says some of it will have to come down, and it is contract.—A. D.

[10689.]—**Earth Closets.**—Would any correspondent having experience in fitting up earth-closets, &c., say what they would recommend as most suitable for a country school?—E. C.

[10690.]—**Grain.**—Can any of your correspondents give any information upon the theory or experience of the pressure, vertical or lateral, exerted by grain, stored on the American system in bins 10ft. to 12ft. square and 50ft. to 60ft. high, provided with copper bottoms?—T. M.

[10691.]—**Fascia.**—Will some reader kindly inform me the best way to secure a stone fascia to an iron girder supporting a brick shopfront, and how the soffit should be fixed? Also would a 5in. trussed partition be sufficient for external work, the said partition to carry one floor, and the roof of an ordinary dwelling-house, about, say, 20ft. span?—Excalibur.

[10692.]—**Temple of Minerva at Priene.**—In the intermediate exam., R.I.B.A., the student is required to give a short description of the buildings from which his drawings are taken. Could any reader furnish me with a few particulars as to the plan, &c. (whether hexastyle, &c.), of the temple of Minerva Polias at Priene? I have been through several books on Classic architecture which, while they give details of columns and mouldings, &c., do not give complete plan of the interior.—A Student.

[10693.]—**Paste.**—Will a correspondent kindly inform me how to make paste for stretching drawings? Is not size a good thing to mix with this paste?—Junior Draughtsman.

[10694.] — **Protractor.** — Will any reader kindly describe the construction and use of an instrument used largely by mining engineers, and thus constructed: The semicircle is divided like a common protractor by radii every 10° apart, and from their extremities on the circle perpendicular lines are drawn, forming sines of the angles formed by each of the radii. The centre has a number of concentric circles, and at the intersection of the radii and vertical lines are small circles round the perimeter.—P.

REPLIES.

[10686.] — **Bookkeeping.** — If "Seven Years' Reader" will write me, I can let him or any other reader have worked examples of a good system to suit contractor or jobbing builder.—F. J. W., Eastbourne House, Argyle-street, Ryde, I.W.

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Legal.

MORE ABOUT TENDERS.

As an invitation to tender may be revoked on the one side, so also can an actual tender be withdrawn on the other, at any time before acceptance, and provided it is not under seal. But if the tender has been accepted, then there is a contract, binding, and based upon a good consideration. The question as to when this acceptance is complete depends on the facts and documents of each case. It has happened that the acceptance of a builder's tender has been brought about by his paying the architect or surveyor a secret commission for that very purpose. The law looks upon this as bribery of an agent to the prejudice of his principal, and if discovered in time the employer can avoid the contract altogether, or he can, if he has gone on, recover by action both the bribe paid to his agent and damages for this wrongful act from the party bribing. Supposing a tender is accepted by an unauthorised agent, this acceptance will be void unless it has been ratified by the employer, at all events before the time from which the contract was to begin, when it will relate back to the date of such acceptance. Of course, in construing the meaning of a tender it must be read along with the invitation, for both documents have to be taken together to form the one written contract.

It has happened that competing builders and contractors have entered into an agreement not to tender, or to tender high, for certain work. This arrangement looks something like a "corner," or a "knock-out" at an auction, for the plan adopted is to let one of the combination get the job on his tender upon his agreement to buy materials of the others, or for some such similar consideration. In one case, in 1875, the Court of Chancery held that there was nothing illegal in such an agreement, on the ground that owners of commodities may arrange amongst themselves to sell at a certain price, leaving one of them to make any other profit he can. So an agreement between two or more persons not to tender or bid against each other has been held valid. But the great case of the *Mogul Steamship Copany*, lately decided in favour of this right of combination by the House of Lords, now comes in here, as elsewhere. As the result of that judgment it seems clear that all such combinations between traders not to tender or not to bid would be perfectly legal and valid so long as the arrangement was for *bonâ fide* business purposes, and had no malicious object, nor was directly aimed at injuring other persons.

Fred Wetherfield, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

Architect.—Mistakes in Quantities.—If the builder, as appears to be the case here, has paid the quantity surveyor's charges, and the quantities have not been supplied to him in the usual way, he will have a remedy by action against that surveyor for damage arising from mistakes in the quantities thus supplied him, and upon which he has relied in carrying out his work.

X. Y. Z.—Certificate.—The point in this case is whether the vendor or the purchaser of the leasehold house is to pay the surveyor's charges for his certificate as to completion of repairs. But as the vendor as lessee was bound by his covenant with the lessor to put the premises in thorough repair to the satisfaction of the surveyor, the doing so became part of his title to the property, and thus he must pay the charges.

STAINED GLASS.

Giggleswick.—Two stained-glass windows have been fixed in Giggleswick church, Yorks. The chancel window contains the subjects of the Crucifixion and Ascension, under canopies of a Late period. The west window of the north aisle has the subject of the Presentation in the Temple, in three lights, under canopies. They are memorials to members of the Hartley family, and were executed by Mr. T. W. Camm, "The Studio," Smethwick.

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LEGAL INTELLIGENCE.

Extras and Penalties.—Griffiths and Wood v. Rowlands.—The plaintiffs in this case, heard at Pontypridd County Court on Friday, were builders, and the defendant was a watchmaker at Ynysybwl. The claim was for £42, being the balance due on a building contract and extras thereon. The defendant counterclaimed for £73, for penalties for not completing the building in time, and in respect of alleged omissions from the contract. After a hearing extending over several hours, the judge came to the conclusion that the plaintiffs had established their claim in full. He held that the defendant could not recover any of the penalties, as the delay had arisen through his own fault in neglecting to supply the ironmongery. He awarded him, however, £19 on certain other items in his counterclaim, and directed judgment to be entered for the plaintiffs for £23, giving them all the costs of the action.

A Main Roads Arbitration.—A dispute between the Hampshire County Council and the Bournemouth Town Council respecting the cost of maintaining main roads through Bournemouth was decided a few days ago. The length of road was three and a half miles. The Town Council originally claimed £1,868, which was refused by the County Council on the ground that it was exorbitant. The County Council offered £1,400. This was refused by the Town Council on the advice of the borough surveyor, Mr. F. W. Lacey, by whom this claim was amended. The matter was ultimately referred to the arbitration of the Local Government Board, and in July last Mr. T. Codrington, M.I.C.E., attended at Bournemouth for that purpose. Besides Mr. F. W. Lacey, the borough surveyor, Mr. C. Jones, of Ealing, Mr. William Weaver, of Kensington, and Mr. J. Strachan, of Brentford, gave evidence for the Town Council; and Mr. Jas. Robinson, county surveyor for Hampshire, Mr. Fletcher, county surveyor of Dorsetshire, Mr. Thos. de Courcy Meade, of Hornsey, Mr. Robt. Phillips, county surveyor of Gloucestershire, and Mr. Chas. Tomes, borough surveyor of Eastbourne, for the County Council. The award has now been settled at £2,608, nearly £800 in excess of the original claim.

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WATER SUPPLY AND SANITARY MATTERS.

Hayes, Middlesex. — A Local Government Board inquiry was held on the 31st ult., with respect to the application of the Uxbridge Union Rural Sanitary Authority for the sanction of the Local Government Board to their borrowing £10,500 for the purposes of sewerage and sewage disposal for the parish of Hayes. Details were given in connection with the application, of which the inspector, Col. Ducat, R.E., took notes, and promised to report thereon in due course to the Local Government Board. The engineer to the scheme is Mr. Frederick Beesley, M.I.C.E., of Westminster. The system proposed for dealing with the sewage is that known as the International Purification Co.'s process.

West Ham.—At the town hall, Stratford, on Tuesday, Colonel J. Ord Hasted, R.E., one of the inspectors of the Local Government Board, held a public inquiry as to the application of the West Ham Corporation for power to borrow £92,334 for various purposes of public improvement. Mr. F. E. Hilleary, the town clerk, and Mr. Lewis Angell, the borough engineer, represented the corporation. The applications included £24,234 for sewerage works and street improvements; £26,000 for the purchase and laying out of a public pleasure ground for South West Ham, having an area of nearly 19 acres; and £16,000 for the erection of two free public libraries—one in the Barking-road and one at Stratford—this amount being required for the erection and fitting (apart from books) of these libraries. Power was also sought to borrow £23,000 for the erection of a public hall and municipal buildings at Barking-road, and £2,000 for an organ in the town-hall at Stratford.

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A new convalescent hospital has been erected at Swanley, Kent, and special attention has been paid to the ventilation, which is carried out on the Boyle system, the latest improved form of the self-acting air-pump ventilator being adopted for the extraction of the vitiated air.

Our Office Table.

The first of the lectures to students at the Royal Academy for the present session was delivered on Monday evening last by Mr. J. E. Hodgson, R.A., Professor of Painting at the Academy, who gave No. 1 of a course of six lectures on "Ancient and Modern Painters: their Technique." The second of the series was given last night (Thursday), and the course will be continued on Monday and Thursday evenings during the next fortnight. The lectures on sculpture will be delivered by Mr. A. S. Murray, Keeper of the Greek and Roman Antiquities in the British Museum, on February 15th, 18th, and 22nd, the subject being "Archaic compared with Archaistic Sculpture." Professor George Aitchison, A.R.A., will take up a course of six lectures on "Saracenic and Turkish Architecture," the dates fixed for these being Jan. 25th and 28th, and Feb. 1st, 4th, 8th, and 11th. Professor J. Henry Middleton, of Cambridge, will continue his lectures on "Michael Angelo" from last year's course on Feb. 26th and March 4th and 7th.

M. Antoine Nicolas Bailly, formerly architect of the city of Paris, has only survived his successor about a month, having died on Friday night at the age of 81 years. The Hôtel de Ville, which was destroyed by the Communists in 1871, has been restored and rebuilt under the direction of M. Bailly, who likewise designed the Tribunal of Commerce and many other public buildings in Paris. He also restored the Cathedral of Bourges. He was a member of the Institut de France, and had been an hon. corresponding member of the R.I.B.A. since 1867.

Mr. J. Dawson Watson, R.W.S., R.C.A., died on Sunday, at his residence at Conway, aged 60 years. He was a pupil of Alexander Davis Cooper, and a student of the Royal Academy. He exhibited his first picture, "The Wounded Cavalier," at the Royal Institution, Manchester, in 1851. He exhibited at the Royal Academy for the first time in 1853, "An Artist's Studio," his subsequent principal works being, "Thinking it Out," "The Poisoned Cup," "The Student," "The Parting," "Saved," "Black to Move," and "Women's Work." Since 1860 he had contributed wood-drawings to most of the illustrated books, papers, and magazines. Of his drawings hung at the Society of Water-Colour Painters, the principal were "The Duet," "Book-Lore," "Carrying in the Peacock," and "The Stolen Marriage." Mr. Watson leaves a widow and three children.

Dr. B. W. Richardson, F.R.S., in his annual address as president of the Sanitary Inspectors' Association, delivered at Carpenters' Hall on Saturday evening, congratulated the members on having obtained incorporation, and recommended them to form a thoroughly organised school, in which inspectors could obtain instruction in at least six subjects—viz., physiology, natural history, chemistry as it concerned sanitation, and natural, theoretical, and moral hygiene. He pointed out that vital statistics showed a reduction of late years in the number of deaths from zymotic diseases and from consumption. But diseases of the nervous system and cancer had increased, and suicide was certainly increasing.

We have on our desk the new price list of the original Wolston's Torbay paints, manufactured by the Torbay and Dart Paint Company, Ltd., of 23, Great George-street, Westminster, and of Dartmouth and Brixham, Torbay. These paints have been very largely used by the Office of Works, Admiralty, War, and Colonial Departments, as well as by the London County Council and the railway companies. The merits of the Torbay paints for exterior painting of wood and iron, particularly the brown and red paints, are fully recognised. The reds, manufactured from oxide of iron finely ground, are used for ironwork, girders, bridges, for which uses the Torbay reds are very admirably adapted, as they protect iron and resist intense heat. A very large percentage (92·30) is composed of peroxide of iron. The price list gives not only the names of the colours ground in oil paste and mixed ready for use, but sample colours of various shades, so that any desired tint can be specified. The prices are moderate, and special quotations are given for large quantities. The celebrated Torbay brown is only 30s. per cwt. ground in oil, and 4s. gallon, ready mixed. Some very delicate shades of stone colour, greys, greens, blues, and reds are to be obtained, admirably adapted for internal decoration and wall painting.

One of the most useful and business-like looking diaries for the new year is that issued by Messrs. Hayward Bros. and Eckstein, of 187, Union-street, Southwark, the well-known makers of the patent semi-prism pavement lights, which are such ubiquitous objects in our footways. Now more than ever is the daylight in dark places necessary which this admirable invention insures, when gas is going up to ruinous figures per thousand, and growing more like the gleam of a rushlight with the appearance of every fog. The diary is handily interleaved with blotting-paper, and there is scarcely a page which does not carry memoranda and statistics of daily use to architects, besides opportune reminders of the numerous branches in which Messrs. Hayward Bros. and Eckstein are *facile princeps*. A useful diary like this, we should say, stands far more chance of being preserved throughout the year than the best possible catalogue or price list. This is all three in one.

MEETINGS FOR THE ENSUING WEEK.

Monday. — Liverpool Architectural Society special meeting. 8 p.m.

Tuesday.—Society of Arts. "The Laos States of Upper Siam," by Ernest Satow, C.M.G. 4.30 p.m.

Society of Architects. "Baths and Bath-houses," by R Owen Allsop. St. James's Hall, Piccadilly. 8 p.m.

Sheffield Society of Architects and Surveyors. 8 p.m.

Wednesday.—Society of Arts. "Three States of Matter: Solid, Liquid, and Gaseous," by Professor John M. Thomson, sec. C.S. 7 p.m.

Thursday. — Edinburgh Architectural Association. "Heriot's Hospital and Co-temporary Work," by Hippolyte J. Blanc. 8 p.m.

CHIPS.

The Royal Institute of British Architects has voted the sum of £300, spread over three years, towards the general fund of the Architectural Association's new educational scheme.

The late Mr. Thomas Nunn Debenham, of the firm of Debenham, Tewson, and Co., 80, Cheapside, surveyor, who died in Egypt on Nov. 12 last, aged 54 years, left personalty valued at £28,319.

The death of Mr. Shepton, builder and contractor, took place at his residence, Dumfries-place, Cardiff, on Friday, from bronchitis, at the age of 60 years. Mr. Shepton had been in business in Cardiff as a builder and contractor for 30 years, and had carried out several important public works, including the Government Post Office, the restoration of the parish church of St. John the Baptist, the building of St. Saviour's and St. German's Churches, Splotlands, and some of the most important business premises in Cardiff.

Prince Victor of Hohenlohe, who died a week ago, was better known in the artistic world as Count Gleichen, under which title he had often exhibited at the Academy and Grosvenor Gallery. His chief works included a group called "The Deluge," an ideal figure for his mother's grave, a statue of Admiral Sir George Seymour; a colossal statue of Alfred the Great, in Sicilian marble, unveiled at Wantage by the Prince of Wales in 1877; and many statuettes and busts of the members of the Royal family.

Mr. William Naylor, of the borough engineers' staff, Wolverhampton, has been appointed chief engineering inspector to the River Ribble joint committee at a salary of £250 a year.

A new cottage hospital for Ledbury, built at a cost of £3,000, solely borne by Mr. M. Biddulph, M.P., was opened last week. Mr. Hudson, of Malvern, was the architect, and Mr. George Hill, of Ledbury, the contractor. The style is Elizabethan.

In the case of Henry Bowman, of York, builder, an order has been made in the local Bankruptcy Court suspending the discharge for two years; and in that of John Frederick Wetherall, of Wimbledon, builder, trading with J. Munday as J. Munday and Co., builders, a like order of suspension of discharge for two years has been made.

On Sunday evening Mr. Geo. Nelson Haden, senior partner in the firm of Messrs. Haden and Sons, engineers, died at his residence in Polebarn-lane, Trowbridge, from the effects of an attack of influenza. For many years the deceased, who was 74 years of age, took a prominent interest in public matters, and occupied a seat on the local board, in addition to being an alderman on the County Council.

Trade News.

WAGES MOVEMENTS.

Productive Co-operation in the Building Trade. — A public meeting, convened by the Builders' Co-operative Society, Limited, was recently held in the St. Martin's Tavern, Pratt-street, Camden Town. The object was to make known the aims and objects of the society, and to enrol members. Mr. H. Aston, secretary of the society, explained that the society was to be managed on similar lines to the Amalgamated Union of Carpenters and Joiners. The society had been duly registered, and already about 150 shares had been taken up. Their capital was invested in freehold land. Mr. Vivian, from the Labour Association, gave out that the object of the society was to carry out the trade of building in all its grades. They hoped to have branches, before long, in all parts of London, in which all the members of the building trade, bricklayers, plasterers, &c., could take an active part. Those branches would elect their council by a delegate from each lodge. The society otherwise would be managed by an executive of nine, elected by the members themselves, two of that number retiring after six months. The society intended to purchase ground in a neighbourhood where a large number of those employed in the building trade resided. All profits would be divided between the worker and tenant.

The workshops of Mr. S. Salt, builder, of Turners-road, Limehouse, were burnt out on Wednesday.

By the death this week of Mr. Charles Heisch, the office of Gas Examiner to the Corporation of London, which he had held since 1869, becomes vacant. It is the gift of the Court of Common Council. The gross salary is £855, but after payment of assistants and rent of office, the net emolument amounts to £425.

The discontent which had been smouldering for some time among the members of the Society of Stoneworkers at the port of St. Sampson's, Guernsey, has broken out afresh this week. The present grievance consists in the Society refusing consent to the merchants appointing the cargo-trimmers, which they have hitherto done.

At the monthly meeting of the Liverpool City Council on Friday, £15,250 was voted for the Insanitary Property and Artisans' Dwellings Committee. The chairman of the committee stated that £20,000 more would be required during the year to carry on the policy of the committee.

Thirteen pictures by Dutch masters of the 17th century have just been added to the National Gallery by purchase from the collection of Herr Habich, of Cassels. The price paid was £2,800.

On Sunday the nave of the parish church of Kettering was used for the first time after restoration, which has cost £4,000. The screen has been removed from the arch tower, the galleries have been taken down, and oak seats have replaced the straight-backed pews. There remains £2,500 to be raised before the restoration is completed.

A dispute between the Hampshire County Council and the Bournemouth Town Council respecting the cost of maintaining the main roads through Bournemouth was decided on Friday. The length of road is 3½ miles. The town council originally claimed £1,868, which was refused by the county council, on the ground that it was exorbitant. The county council offered £1,400, which was refused. The Local Government Board have now decided that the county council must pay £2,608.

Mr. William Putney, of Chalkpit House, Dorking, and a member of the firm of Messrs. Putney Brothers, builders and contractors, died on Thursday morning in last week. He was very well known in the town, and had for many years carried on a large contractor's business with his brothers, Messrs. James and John Putney. He leaves a widow, but no family.

Mr. E. H. Shorland, of Manchester, has just supplied his patent Manchester grates to the workhouse, York.

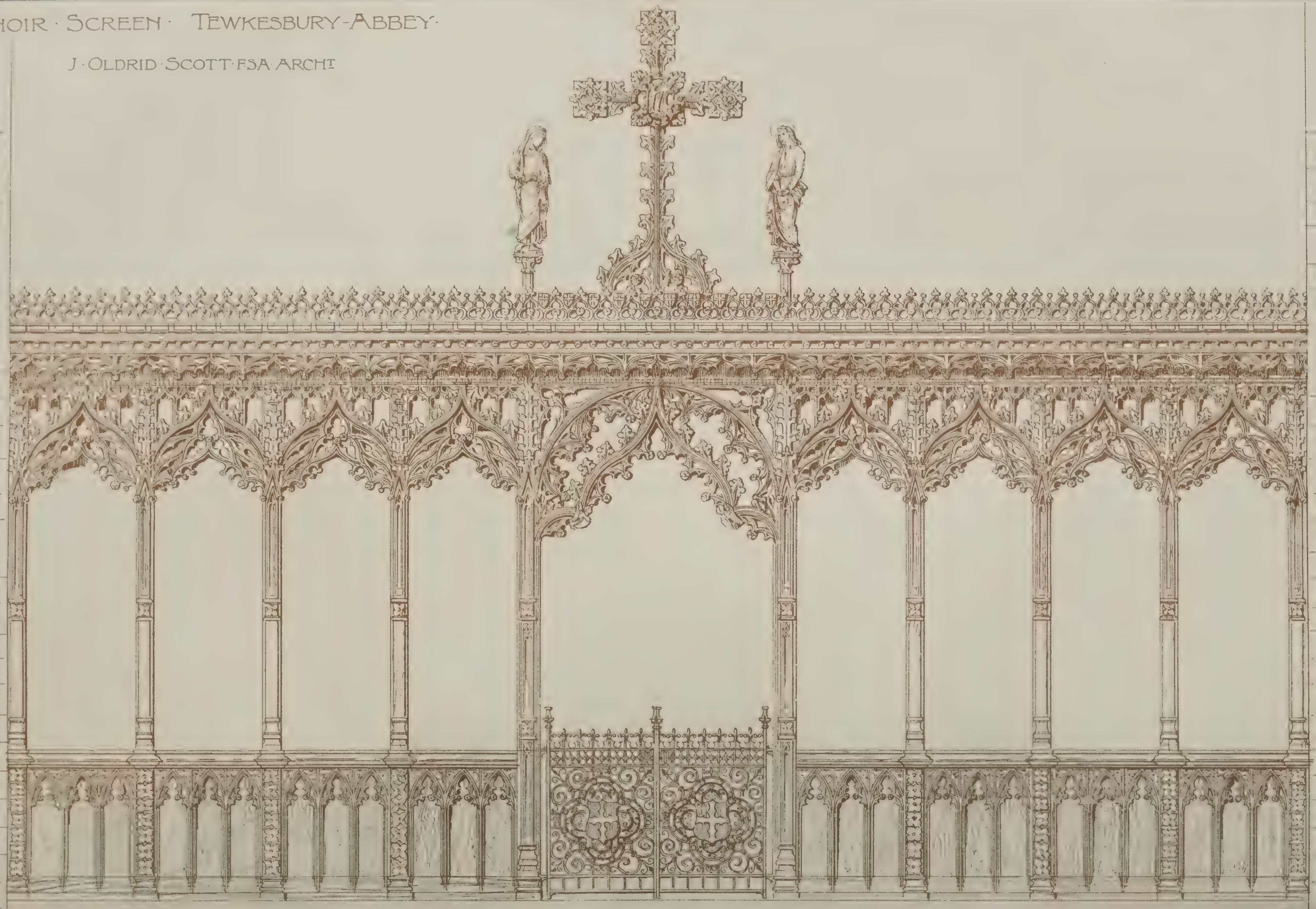
The death occurred on Friday of Mr. R. Fenwick Boyd, of Brentwood, Essex, eldest son of the late Mr. E. F. Boyd, of Leamside, Durham, who succeeded his father as consulting engineer to the Ecclesiastical Commissioners. Mr. Boyd was 39 years of age.

A new stained-glass window in the south clerestory of the nave of Manchester Cathedral, given as a memorial of the late Mr. James Hatton, has been formally unveiled this week.

The personal estate of the late Mr. Alfred Henry Haggis, of Heathfield, Thornton-heath, Croydon, Deputy Chairman of the London County Council, who died on the 24th November last, has been sworn of the value of £8,979 by the executors, his sons, sawmill proprietors.

CHOIR · SCREEN · TEWKESBURY-ABBEY·

J·OLDRID·SCOTT·FSA·ARCHT



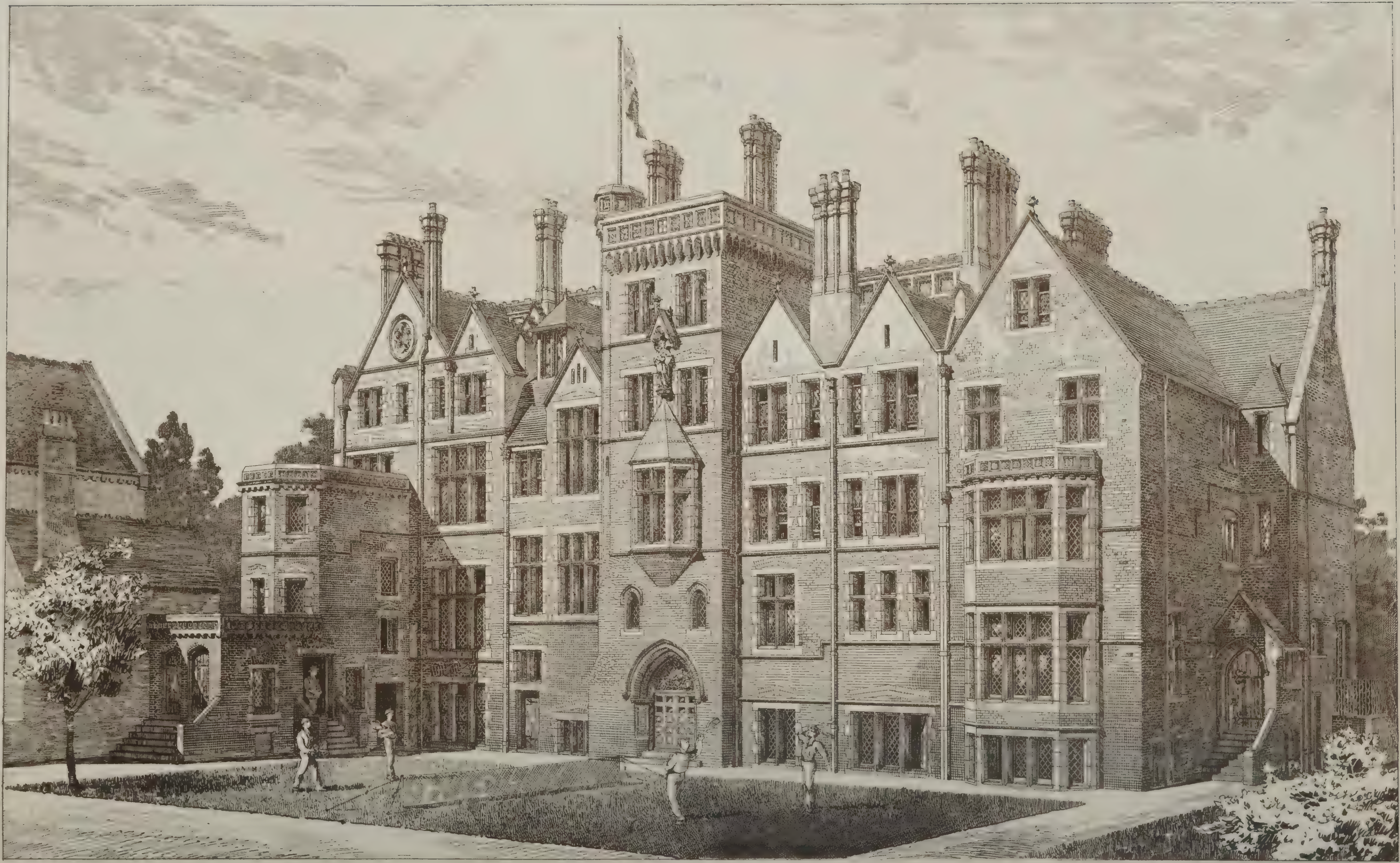
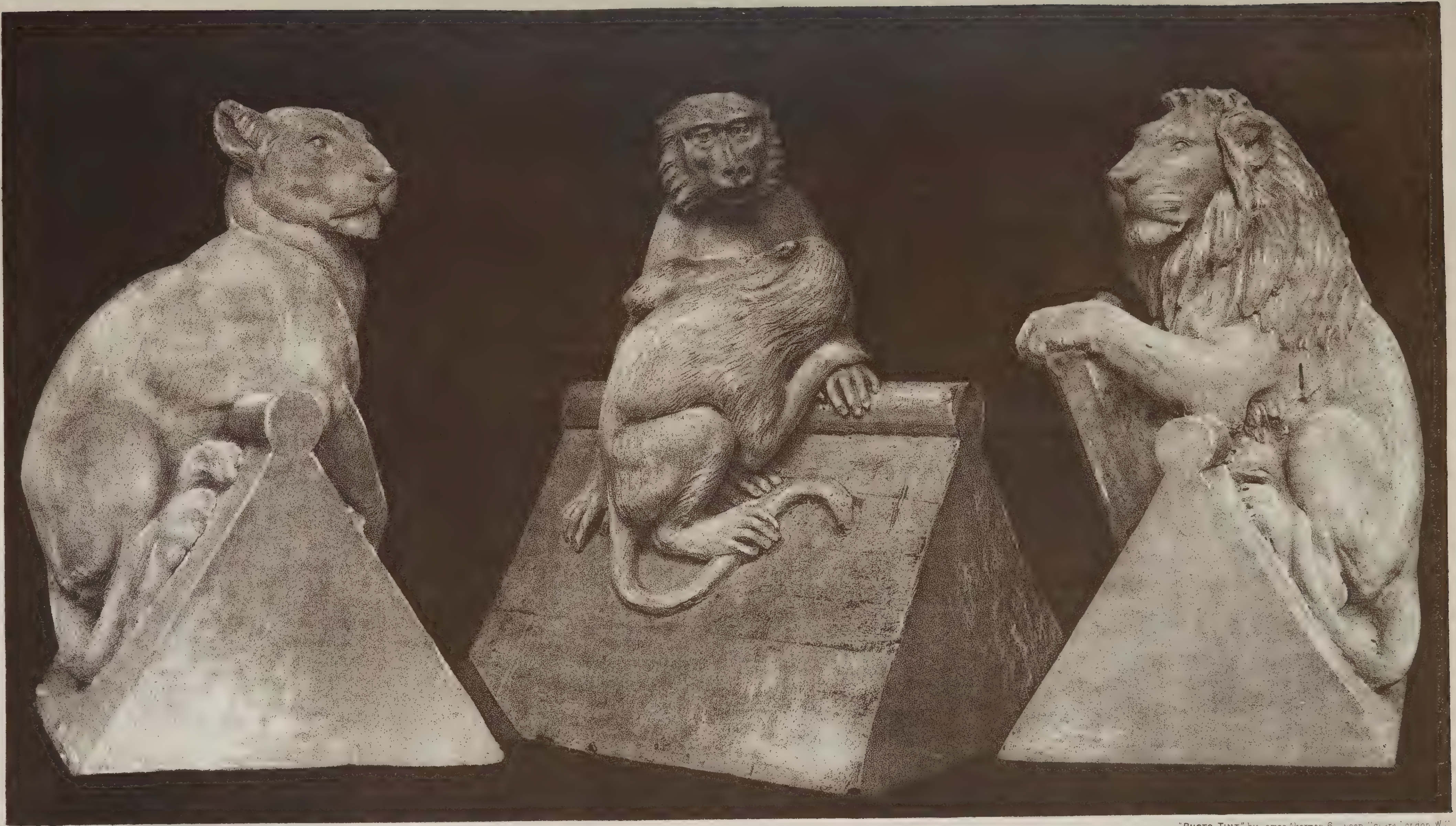


Photo Lithographed & Printed by James Akerman, 6 Queen Square W.C.

BERMONDSEY SETTLEMENT. ELIJAH HOOLE, F.R.I.B.A. ARCHT



T·NICHOLLS · SCULPTOR·1891·

"PHOTO-TINT," by James Akerman 6 Queen Square London W.C.

ANIMALS·FROM·THE·OUTER·WALL· CARDIFF·CASTLE·

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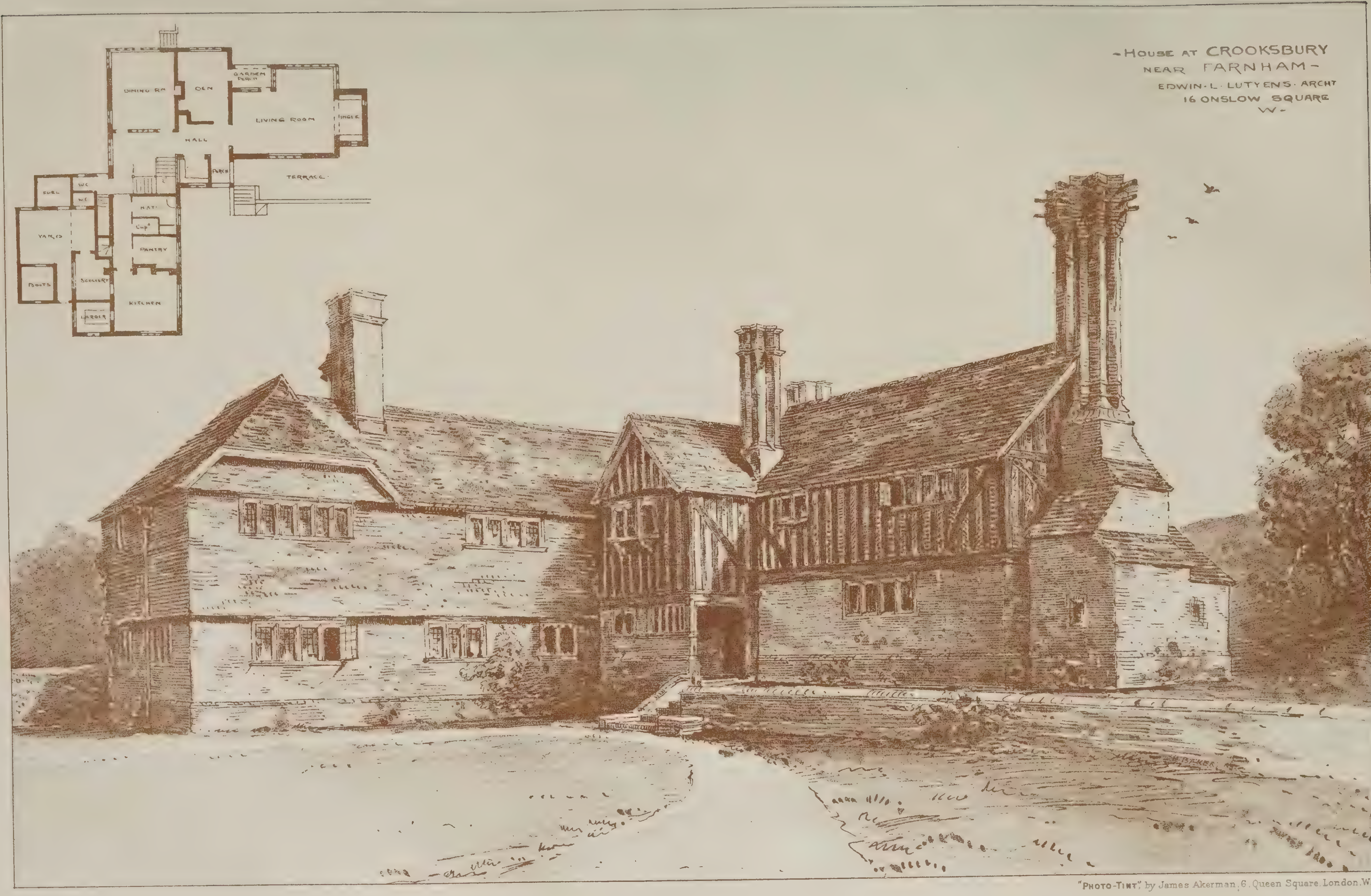

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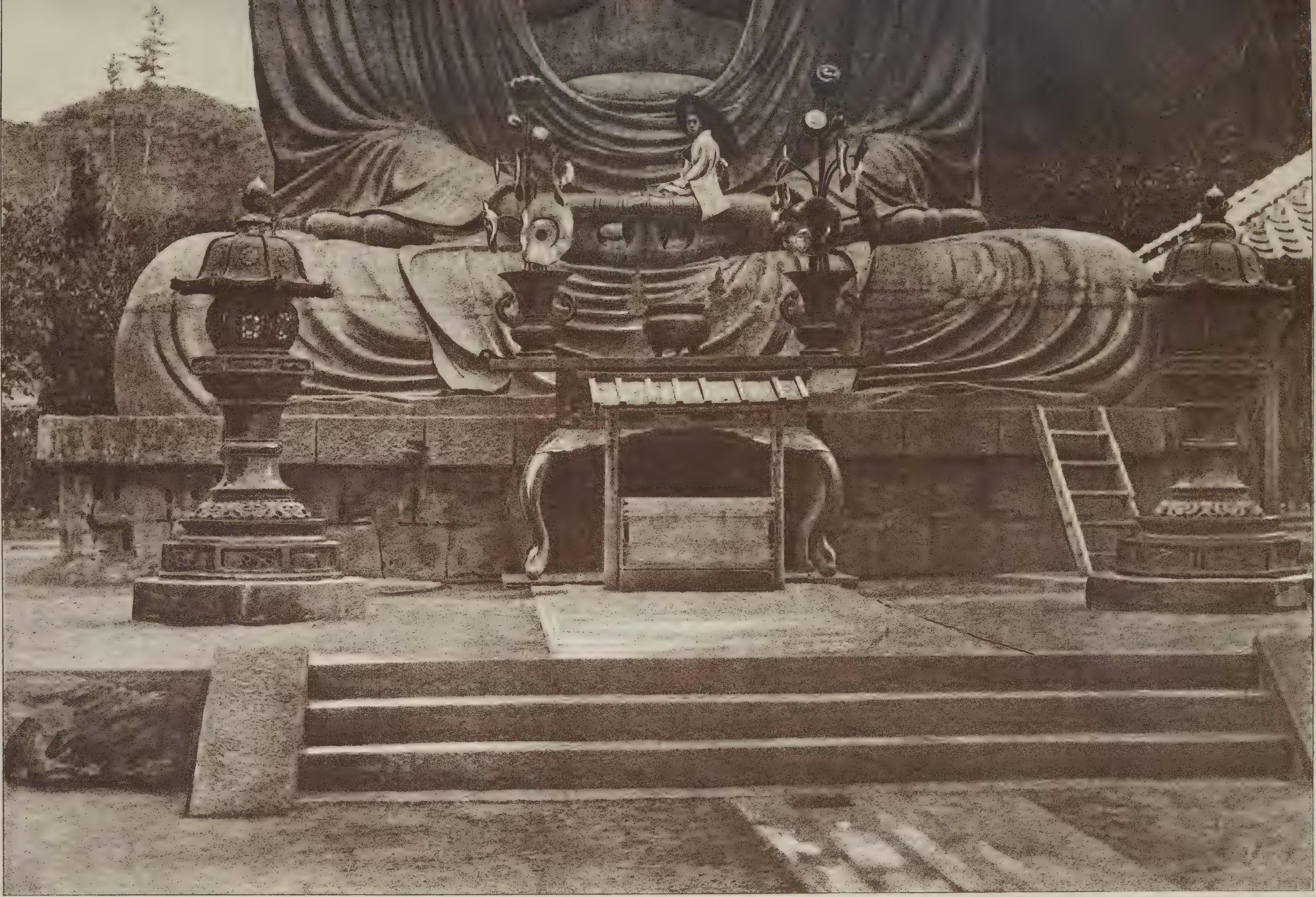
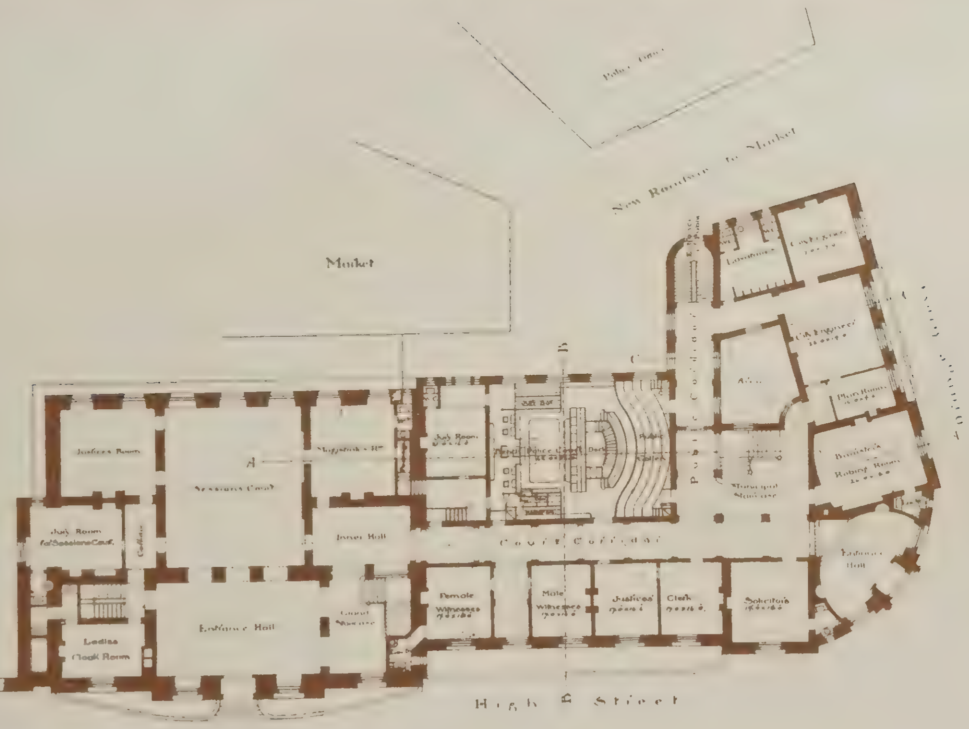
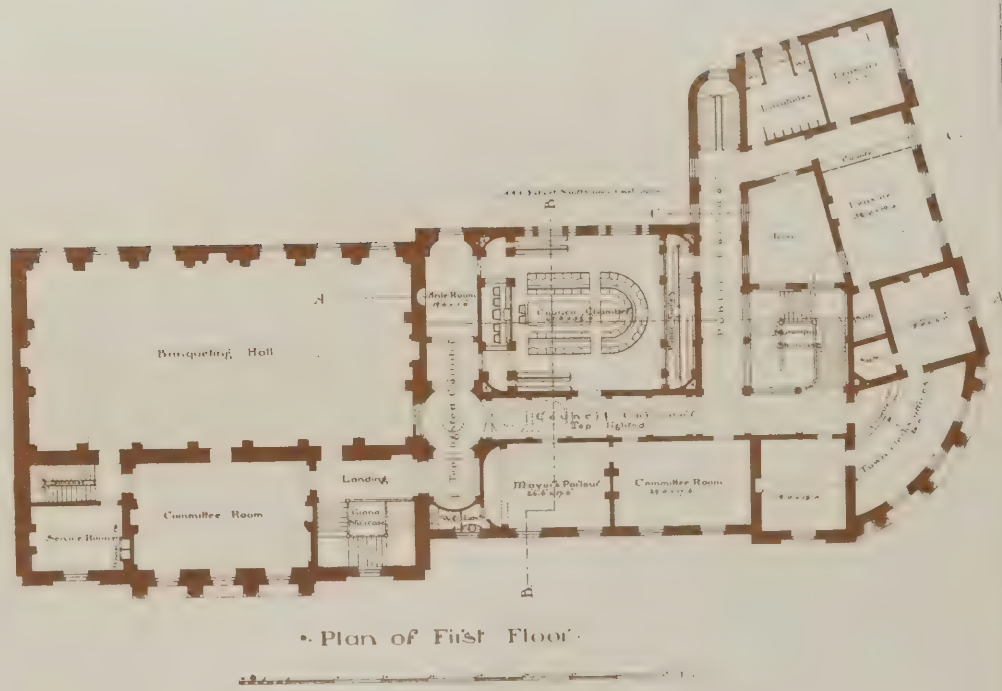


"PHOTO-TINT" by James Akerman 6 Queen Square London W.C.

DAIBUTSU (THE·SACRED·BUDDHA) AT KAMA-KURA· JAPAN FROM·A·PHOTOGRAPH·BY·PAUL·BEVAN·M·A

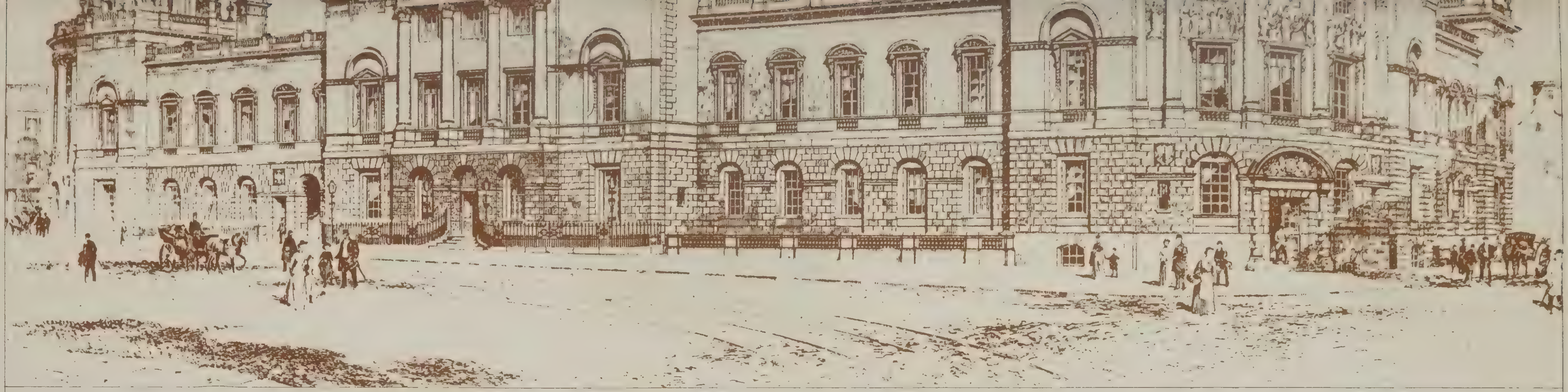


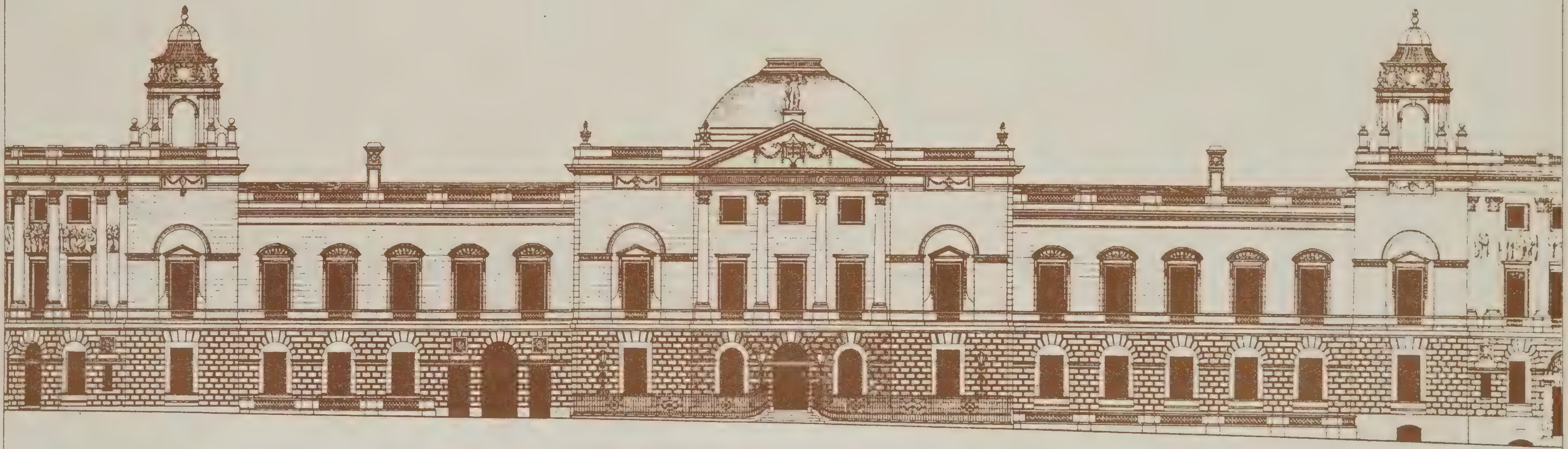
· Plan of Ground Floor ·



·Plan of First Floor·

BATH · MUNICIPAL · BUILDINGS · SELECTED · DESIGN · BY · J · M · BRYDON · FRIBA





· Elevation to the High Street ·

Photo Lithographed [illegible], James Akerman. 6, Queen Square. W C

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
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FRIDAY, JANUARY 15, 1892.

COMPETITIONS WITH THE LATEST IMPROVEMENTS.

IT may be fairly questioned whether the last ten years' progress in the management of competitions has not been, for most architects, a progress of out of the frying pan into the fire. Matters were bad enough under the old system. The selection of a design then rested, in most cases, solely with non-professional judges. They made a better or worse choice, as they happened to have more or less common sense and more or less natural or good taste. In some cases they chose very badly; but not infrequently they showed a knowledge of their own requirements, which is sometimes lacking to the "professional assessor," and they did not usually accumulate on the heads of the unfortunate competitors a long series of demands and regulations and penalties. Nor did they invent the system of compound competition, in which architects, by scores or hundreds, spend months of time in competing for the honour of afterwards being allowed to compete for a building. These are things which architects have brought on themselves. The question is whether they and their art are the better or the worse for them.

Compound competitions were first advocated with the idea of saving labour and expense. Instead of saving they have greatly increased them. Tempted by the apparent easiness of making mere "preliminary sketches," more men than before take part in almost every contest; but they often find, on taking up the matter in earnest, that the "preliminary sketches" are not sketches at all. A sketch is the shadowing out of a first idea not yet perfect or everywhere definite. It is a general conception not worked out in detail, and not professing to deal with every minor problem in construction or even in arrangement. A preliminary sketch leaves such things for consideration at a further stage, and does not profess to show, for instance, how every flue is going to be carried up, or how every bit of wall on the ground floor is going to be supported in the basement. It asks to be judged by the goodness of its main ideas, not by the perfection to which each subordinate item has been brought. The time for dealing with subordinate items comes when the general scheme has been approved, and not before.

If the "preliminary sketches" asked for in a compound competition could have been strictly kept down to this level, competitions of that type might really have been a blessing and not a curse. This, however, seems to have been found impracticable. Instead of an open competition of sketches, and a subsequent limited competition of well-studied drawings, there have usually been two successive competitions of elaborated plans. The first, it is true, have been smaller in scale than the second; but in other points both have been of the same order. If the preliminary plans have been to 1-16th scale, and the subsequent ones to $\frac{1}{8}$th scale, the former have been so detailed and so definite that they might almost as well have been drawn to the larger scale at once. What makes the labour in a competition is not the drawing, but the thinking. If one has to think out to its solution every doubtful point, one may as well exhibit the result on a scale large enough to show the entire scheme. Now, the instructions issued for these so-called "preliminary sketches" have commonly been drawn up with such minuteness, and have asked for so much and such definite information, that they have called for nearly as much thought and study as would suffice for finished plans. Being drawn up by an architect, too, these instructions ask for particulars which it never occurred to non-professional judges to require. Amongst these things are schedules showing the areas of rooms and the cubing-up of different parts of the building. No doubt they greatly facilitate an assessor's work; but they add materially, if not very heavily, to the lost labour of the unsuccessful architects.

To gain a commission of any importance, the competing architect has now to give nearly twice as much labour as he had to give ten years ago. If this labour went towards the improvement of the building, there might be much to say for it; but this is just what it does not do. Most of it goes in mere mechanical work, and in making two sets of nearly identical drawings instead of one set. The unsuccessful competitors have weeks, or months, of their time wasted on minor questions, which never need have been put before them. When their plans go in, a great proportion can be rejected at a glance, on the ground that the general scheme is bad. Why could not the matter have been so arranged that, in the first instance, general schemes *only* were submitted and adjudicated upon?

The fact is, that these preliminary competitions, with their demand for precision and detail, for information and exactness, have turned out to be something very different from what was expected. The term "sketch designs" originally suggested to architects two or three sheets of paper, or cardboard, containing pencil plans and sections, and elevations, to a really small scale. It has been found, on the contrary, to mean a whole set of show drawings, got up with care, outlined in ink, so that everything is sharp and clear,—worked out to exhibit every item of planning and arrangement, and mounted on purpose-made stretchers of a specified size. It has been found to mean, not the making of such preliminary sketches as would suffice for the average client, but the working under the eye of an acute and accomplished assessor, who will detect every slip and every omission, and mark them down against their authors. It has been found to mean that a good general conception has less chance than it used to have, unless it issues from its author's brain fully armed against criticism at every point. It has been found to mean that the best chance rests not with the man who would finally produce the best building, but rather with him who can produce, at the first start, the design most free from minor faults and unsolved problems of the smaller sort. It plays into the hands of a few clever men of this type, and leaves the rest almost without a chance.

The compound competition system, so far, has not fulfilled its promise. What is to be substituted for it if it goes? Not a return to the old want of system, of course. But there seem to be two alternatives possible. A double competition might be so managed that the sketches should be real sketches, and that only general schemes of plan and composition could be sent in at first. Then the working out of secondary points would be confined to the few selected competitors in the second stage. That would be one way out of the difficulty. The other way is to have only a single competition, but to insist on a smaller scale than formerly, and to keep perspectives down to a uniform small size. A scale 12ft. to an inch is amply large enough for most competitions, and so is a perspective as big as a double-page of the BUILDING NEWS. In every case, moreover, clear information about the surroundings of the site should be given. It is grievous to think, for instance, of the miserable waste of time for want of such information in a competition like that for the Sheffield Municipal Buildings. Men not lacking in ability here bestowed weeks of labour, which they could ill afford to throw away, in schemes which would never have entered their heads had they been told the simplest facts about the surroundings. They saw on plan only a very narrow passage next the churchyard, and little supposed that this was the best lighted side, or that which would be most conspicuously seen. Hence design after design could be thrown out at a glance, however great its practical or artistic merits. If these had been mere sketch designs, such as we have advocated, it would have been less of a pity; but, as it was, they had been worked out in many respects with minute care. No amount of ability could avail anything against this lack of simple information. The promoters, who might have had at their disposal all the skill thus misdirected, were practically deprived of it, and the architects thus left in the dark spent their days and nights on schemes which, as any Sheffield street-boy could have told them, could never receive a moment's serious consideration. It may be said that these architects should have gone and seen the site for themselves. Perhaps so, but this had not been made a condition, and six weeks' hard labour (if we may take that as the average of what they underwent) is a severe penalty for infringing a rule which was never stated.

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REMOVAL OF SNOW FROM TOWN STREETS.

ON giving some few instances of the removal of snow from town streets, by carting it away, in the BUILDING NEWS of Oct. 30 last, we intimated the intention to follow up the subject by showing how it may be better dealt with by melting it *in situ*, and as the coal gas used for lighting the streets and houses is not used by day it seems to afford the best source of heat for the purpose, although no doubt greater heat could be derived from petroleum. We shall, however, confine our remarks to the use of gas. In the economy of municipal management each department has its special committee, and when the gasworks belong to the town authority there seems to be reason to suppose that the gas committees would afford some facilities to the streets and scavenging committees in the use of gas for the purpose in question, especially in the day time, and would charge that committee with the cost of manufacture only, or but a slight addition to it, and that in most cases 2s. per 1,000ft. would be a sufficient charge for one committee to make upon the other. Another facility which might be afforded where the gasworks belong to the town authority would be that the ordinary day pressure might be increased on the occurrence of snow-falls. But perhaps in any case, whether the gasworks belong to the town's inhabitants generally or to a company, there would be no great difficulty in the matter if the charge be made 2s. 6d. per 1,000ft.

It was said in our former article on this subject that a cubic foot of snow in the condition to which it is usually reduced before it is removed weighs 8lb. We need not take the extreme case of a snowfall of a foot in depth, but take, for instance, one of 6in. This will probably in most cases measure about 4in. in depth at the time of removal. It will then weigh $2\frac{3}{8}$lb. per square foot, or 24lb. per square yard of street.

If the street be taken at 30ft. wide, there will be 10c.ft. to be removed from every lineal yard. In the following instance we shall take the snow and ice to be removed at 10° of temperature below the freezing point, or at 22°F., and the temperature of the water into which it is melted at 60°F. The heat required to convert a cubic foot of snow and ice weighing 8lb. into water at 60° would be as follows:—

Ice at 22 to ice at 32— 10 × 8 × ·504 (the specific heat of ice) .... =	40	units of heat.
Ice at 32 to water at 32 (the latent heat)— 8 × 192.................... =	1,136	,, ,,
Water at 32 to water at 60— 8 × 28 .... =	224	,, ,,
Units of heat required per cubic foot of snow and ice ..	1,400	,, ,,

The principle on which any such means of removing snow from town streets (that is by melting it) should be based, is that the heat should be taken to the snow rather than that the snow should be brought to the place where the heat might be situated. For this, although the distance to which it might be required to be removed might be but short in comparison with that to which it is now carted before a suitable place of deposit can be found, yet it equally requires filling into the carts and emptying where it would be melted. If an ordinary coal fire were to be adopted to produce the heat required it would have to be stationary; but if gas be the fuel, it can be conveyed in a pipe to any reasonable distance, and there burnt to produce heat sufficient to melt the snow. This would require that the burners be inclosed in a flat box or tray, the bottom and sides being of a non-conducting material, say, fireclay, of which gas retorts are made, and the top of boiler-plate, say, ½in. thick. The area of the top plate, or several plates riveted together, would be proportionate to the number of men employed in shovelling up the snow and placing it upon the apparatus. It would also depend upon the number of gas-jets per square foot which could be arranged underneath it, so that in the whole a sufficient quantity of gas might be burnt for the purpose intended. The rate of transmission of the heat through the plate would also have to be considered. The conducting power of iron, in units of heat transmitted per square foot per hour through a plate 1in. thick, per degree of difference of temperature between the two sides, is stated to be 233, and as the rate of transmission is inversely as the thickness of the plate, it would be 466 units per square foot per hour through a ½in. plate. With regard to the area of plate appropriated to each man shovelling up the snow, he should have about a square yard. He would remove from the street and place upon the snow-melter about 72c.ft. per hour. Four men would remove 288c.ft. per hour. For four men's work the amount of heat required for melting 72 × 4 = 288c.ft. of snow and ice per hour is 288 × 1,400 = 403,200 units per hour, and if the water runs off at a temperature of 60° the temperature underneath the plate would require to be 926° F., the difference being 866°.

According to Box's treatise on Heat before referred to, the conducting power of an iron plate 1in. thick is 233, and for any iron plate is—

$$= \frac{\text{Difference of temperature} \times 233}{\text{Thickness of plate}}$$

For a ½in. plate the quantity of heat transmitted in units per square foot per hour would be $\frac{866 \times 233}{\cdot 5} = 403{,}556$, as required. If the heat practically derivable from coal-gas be taken at 500 units per cubic foot, and 403,200 be required, the amount of gas burnt per hour would be $\frac{403{,}200}{500} = 806$ cubic feet.

The next consideration is how this quantity is to be supplied to the snow-melter, which must be mounted on four low wheels, and pushed along the streets as the snow becomes cleared away, a few yards at a time, the supply of gas being kept up through a flexible pipe of suitable material and construction, so as to be kept distended to its full diameter, and wound round the drum of a hose reel.

The distance apart of the street mains should be 80 or 90 yards, requiring a flexible pipe of that length or a little more—say, 100 yards. If the day pressure of the gas at the burners be made on the occasion of a snowfall of considerable amount, equal to 1in. of water, the diameter of the pipe would require to be 2in. In some of the outlying streets the main itself might not be larger than this, and the system could not well be applied; but every main street has a gas main large enough, used in the daytime, and it is only in the main and secondary streets where the system would be applicable.

If the drum on which the pipe would be wound in a single coil be 4ft. diameter, its length would be 5ft.; so that, mounted on a pair of wheels, it would not be inconveniently wide. The pipe, instead of 2in., might be 2¼in. diameter, and would still lie round the drum in a single coil. The flexible pipe being wound round a drum in this way, and taken to the place of junction with the gas main, and the intervening cock opened after one end of the pipe had been attached, the other end would be attached to the melting apparatus, and the burners lighted; and this attachment would serve for 100 lineal yards of street. If the width were 30ft., and the depth of partly-solidified snow 4in., resulting from a fall of 6in., four men shovelling up snow on to the melter would clear 96 lineal yards of street in 10 hours. All streets are more or less inclined longitudinally, and the removal of snow by the means indicated should be begun at the lower end, or from gully to gully upwards, the number of snow-melters employed at one time being determined by the quickness with which it might be desired to clear the streets.

Reckoning by the lineal yard of street, the weight of snow to be removed would be, as before stated, 240lb., and as each 1lb. weight requires 1,400 units of heat to convert it from ice at 22° F. to water at 60°, the amount of heat required per lineal yard of street would be 240 × 1,400 = 336,000 units. Each cubic foot of gas burnt yields, say, 500 units of heat, and there would be required $\frac{336{,}000}{500} = 672$ cubic feet of gas per lineal yard.

Allowing for the time taken up by the four men in moving the snow-melter along the street as mentioned, the time during which they would be removing 72c.ft. per hour each would be, say, 9 hours a day. The snow removed by four men in a day would be 96 cubic yards, extending along 86 lineal yards of street.

If the gas were charged, for this purpose, at 2s. 6d. per 1,000 feet, the cost for 10 hours' work would be:—

	£.	s.	d.
800 × 10 = 8,000, at 2s. 6d.	1	0	0
Four men's wages at 3s. 6d.	0	14	0
Interest and depreciation of plant	0	6	0
	2	0	0

For this, 96c.yds. of snow would be removed, being at the rate of 5d. per cubic yard.

That is about what it costs now to fill it into carts, and the difference between the two systems is that all the carting would be saved, and, which is of most importance, all the inconvenience of finding places of deposit for the snow. The sewers would receive and carry off the resultant water, as they do now carry off the same depth of rainfall.

With regard to the size of the apparatus for four men's work, and burning 800c.ft. of gas per hour, allowing one square yard to each man, the area would require to be 36sq.ft.; but the area is better determined by the quantity of gas to be burnt under it. If this be 800c.ft. per hour, and there be four burners per square foot, each burning 5c.ft. per hour, the area required would be $\frac{800}{4 \times 5} = 40$sq.ft., and the apparatus might be made 9ft. by 4½ft. The openings in the bottom would be made of such area as to admit the necessary quantity of air for combustion. The outlet pipes or flues might be carried horizontally along the top to dispose of some of the heat remaining in them, and this would be no hindrance to the snow being thrown upon the top of the apparatus. The whole need not stand more than 2½ft. from the ground.

The burners would be of the kind which allow the gas to be consumed most completely, and produce the least smoke, or none at all. The fireclay bottom and sides of the apparatus—say 2in. thick in the bottom and 1¼in. in the sides—would be supported on a light angle-iron frame, set upon four wheels, 18in. diameter, running loose on a square wrought-iron axle. But these and other details need hardly be described at present—more than is required to arrive at an estimate of the entire cost of the machine, which may be, say, from £40 to £50 each set. Perhaps the average number of days in a year on which it would be required for use would be ten, and as 6s. per day is set down as for interest and depreciation of plant, that would be at the rate of from 7½ per cent. to 6 per cent. per annum on the outlay.

We take, it will be observed, only the street widths in estimating the quantity of snow, &c., to be removed. Some who have treated of this subject of the removal of snow have included the whole area of the town, and so have come to wrong conclusions as to the difficulties. No doubt they are right as to the quantity which falls during a snowstorm, but it is only that part which greatly inconveniences public traffic that the town authorities will undertake the removal of. Moreover, we have not in the above instance taken the greatest possible depth, but only one which the more often occurs, and is yet great enough to cause serious inconvenience to traffic. This is better than going to the extreme conditions of the problem.

PHYSICAL LAWS OPERATIVE IN BUILDING.

MATERIALS employed in building are practically assumed to be inert and rigid, incapable of any change or deterioration, unaffected even by any physical laws. A building is supposed to be a structure rigidly connected in its several parts, and, although composed of various substances, so far homogeneous as to require on the part of architect and builder only ordinary precautions. Actual experience has demonstrated these to be gratuitous assumptions. Stones and bricks and cements are affected by moisture and temperature, timber and joinery soon indicate signs of decay, iron corrodes or becomes oxidised, expands and contracts under heat and cold, and other fabrics are subject to chemical, physical laws more or less detrimental to a lengthened existence. In fact, agencies are at work which operate to produce movement and reaction on the several parts, and by various physical and chemical actions to hasten the disintegration of the building. The skilful constructor and designer knows how to select and combine his materials for the purpose of as far as possible neutralising these effects. He knows, for example, what stones to use to resist the disintegrating agencies of the atmosphere and the acids it holds in suspension; he sees that they are laid on their natural beds, so that the atmospheric agencies should not injuriously affect them; he adopts certain means of protecting walls and the face-work from wind and rain, of uniting or dowelling the masonry exposed by such metals or substances that will not cause splitting or fracture; he selects timber and deals that are properly dried and seasoned, giving them sufficient means of play to prevent cracking by shrinkage, or making the boards and panels narrow to minimise shrinkage; he allows compensation to his iron beams, girders, and roofs, and by a careful consideration of the properties of various substances and the forces to which they are exposed, he adjusts their connection in the most desirable manner. Unfortunately, these precautions are seldom taken. Physical laws are not so well understood as they ought to be, or architects are too much absorbed in producing visible results, to pay much attention to these matters. We are constantly seeing failures as the result: walls that are pushed out of perpendicular by imperfectly designed or constructed roofs, piers thrust out of the vertical by arches, or crushed by overweight, rapid decay of stone walls, the splitting of stone masonry by oxidised iron bolts and cramps, chemical action, and acids destroying metalwork and roofs.

The forces which we have to guard ourselves against are chiefly gravity, the atmosphere, heat and cold, and moisture, capillarity, chemical affinity, and electricity. Each of these agencies would require more than one article in itself in treating building materials, and we can, therefore, merely discuss, in a very general manner, a few instances of neglect. The properties of certain building materials like stone and brick and cement, and the agencies to which they are exposed, are pretty well known and understood, though the preventive means to arrest disintegration and chemical action are very seldom applied. The effects of heat and cold, for instance, produce actions that tend to facilitate decay. All substances are exposed to expansion and contraction, and stone and brick and concrete are no exceptions to the rule. This law has not been recognised. The coefficient of expansion may be small, but sufficient to make it a factor in considering modes of construction and preservation. For example, the outside surface of stone is expanded and contracted by variation of temperature, and any chemical solution introduced into the outer surface or pores may not expand or contract in the same ratio as the stone itself. From experiments made it appears that the process for hardening and preserving calcareous stones known as "Fluate" has the advantage that expansion and contraction between 50° and 380° of the fluated stone is the same as that of the untreated stone. Any material or silicate process which expands or contracts more than the stone must necessarily fail and disintegration ensue.

We believe a great deal of the decay and exfoliation of the surface of some stones proceeds from the alternate effects of heat and cold under different conditions of dryness and moisture. These conditions set up a mechanical action which destroys the cohesion of the particles. Paints, stoppings, solutions, and varnishes applied to stone surfaces to preserve the stone fail from the reason we have stated; they either imprison the moisture, which during frosty weather expands and cracks the stone, or they expand and contract unequally. In these and many other cases mechanical action is set up in the material, mainly owing to the law of contraction and expansion due to cold and heat, and almost every part of a building is exposed to this action, either by the unequal movements of materials like stone and iron, subjected to variations of temperature, to the expansion of water in masonry, to gravity, and other recondite causes.

The force of gravity acts in many more ways than we are wont to expect. We know all about unstable structures, wind-pressure, thrusts, and so on, and we can, or ought to, provide for these forces, but there are many more unsuspected ways in which gravity acts. That subtle and ever-active force is busy at all times, and at work in dislocating masonry, fracturing lintels and window-heads, rendering cornices insecure, in throwing out of vertical walls and chimneys, in the subsidence of floors and partitions. How few architects take into account the action of sun and wind on chimney-stacks. A chimney-shaft gets saturated by rain, a frost sets in and a rapid thaw supervenes, the effect of which unequal thawing on both sides of the shaft, or the evaporation on the sunny side, is to cause the structure to bend over on the thawed or evaporated side, and consequently to disturb the equilibrium. The bend thus caused does not right itself, but becomes more aggravated at every repetition of the same agencies. It is like wedging the joints of brickwork on one side and loosening them on the other, thus bringing the weight on the contracted side. We have frequently seen walls curved or thrown out of perpendicular by the mere action of the sun. This case of disturbance may be attributed primarily not to gravity, but to the action of the atmosphere, heat, and cold in causing the force of gravity to assert itself. In this manner frost is a great enemy of structures by disturbing the original equilibrium and creating dangerous forces, which become more destructive each time. Structures like towers and turrets of masonry exposed to frost and strong sun may be built in perfect equilibrium, but may be seriously impaired by their united action (if the joints are porous or the mortar inferior), combined with other forces. Overhanging masonry, like a cornice, is a source of risk if ample anchoring or counterbalance are not provided. An overhanging mass, such as a heavy cornice, by shifting the centre of gravity of a wall, and throwing the weight on the outer toe of the foundation, may injuriously affect the stability. So, too, weighted arches, by being always active for mischief, require careful designing. The piers or walls on which they abut are exposed to lateral, as well as vertical, forces, which tend, should the foundations or footings be weak, to deflect from the perpendicular. At the corners of buildings this movement is most apparent. Even the bending of girders and beams under heavy loads creates lateral, instead of vertical, pressure, as the girder bears more on the inner edge of the piers than uniformly over the whole bearing. We know the action of roofs which are not properly restrained at the springing, and the same action is produced by the sagging of rafters. Also in many old and badly-constructed buildings floors deflect, as the pressure is no longer vertical, the weight being transferred to the inner edge of the wall. Then we have frame partitions which have sunk owing to defective bracing, which also causes a racking action on the sustaining walls. The effects of vibration on the floors of factories caused by machinery are also disturbing agencies, especially if the waves of vibration are not simultaneous with the movement of other parts of the structure, a fact that has been pointed out in the destructive effect caused by quickly vibrating machines in factories, and the swing of bells in towers of masonry.

Architects have mainly to be on their guard against the use of materials and methods of rigid connection. Every trade of building is exposed to the disastrous effects of moisture and frost. In cement and plaster work the havoc caused by water may be most injurious to masonry and plastering, but the effects of swelling and shrinkage in joinery, for example, are often of a very serious nature. A joiner may be very careful and minute in his fitting and joints, and yet his labour may be all useless if the deals are unseasoned, or the wood is allowed to become saturated by moisture in the walls and plaster. The fault is with those who hurry the building, and allow the joinery to be fixed and floors laid before the carcase is properly fit to receive them. One authority says that a building should be erected and covered at least nine months before the joiner's work is fixed; but we know that this rule is transgressed. The floors, doors, skirtings, and other fittings are sent directly the roof is on, and before the walls have evaporated their moisture. Directly the fires are lighted the joints open, the panels of doors and framing crack, or are drawn out of the grooves, the mitred shoulders of architraves open, the floor boards leave wide joints, and the doors and sashes of windows shrink to an extent that renders them useless for excluding draughts and rain, to say nothing about the continual rattling of sashes on windy days. The architect and joiner have much to learn in the modes of conversion of timber. It has been acknowledged on the best of authority that the most judicious mode of cutting is to observe the medullary rays to insure freedom from twisting or shrinking. The timber should, in fact, be cut in the direction of these rays, as being the natural plane of cleavage of the wood, and that followed by earlier carpenters in riving. Mr. Stevenson refers to this method of conversion as the easiest and best, and the one that minimises the effects of shrinkage. The old panellings of mediæval times were, as he says, made of riven boards. The effects of shrinkage can be allowed for by groovings, rebates, and the avoiding of wide panels and boards.

We have the means of allowing for expansion in the details of iron construction, but do we use them? They are seldom adopted, except in large roofs and floors. Rigid connections even in a small span iron roof may set up destructive forces which tend to tear the buildings, as we find in iron joists fixed to brick walls, which are continually drawn together or pushed apart at every change of temperature. Indeed, the whole question of combining and connecting is a neglected branch of construction. The homogeneous concrete iron floor is open to this objection, as concrete is known to be much affected by temperature, due to the ingredients of which it is composed. Cement is another material which the builder uses without considering its nature. A wall of brick and cement will show cracks caused by contraction, and it is known that a long coping set in cement will push out the stones at the end. Again, the cracks of a wall will often be found to close in damp weather, and open in dry, cold weather. All these instances show the mistake of rigidly connecting the stones or bricks by a material which is subject to the law of expansion. The instances we have given are enough to indicate the all-important question we have raised. Every material which enters into a structure—even the soil on which it stands—is subject to forces and reactions, external and internal; some dependent on moisture, heat, and cold; some on mechanical agencies, arising from the law of gravity; others on chemical changes and affinities; and it is further evident that those buildings which are most complex, and therefore heterogeneous in the nature of their materials, are those which, in the course of years, suffer most from them.

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THE STABILITY OF DOMESTIC CHIMNEYS.

IN the design of buildings, as in all structures of masonry, the relation of thickness to height is a very important matter. The architect designs largely by the eye. The visible quantities as expressed in his elevation and section are generally sufficient to enable him to dispense with those delicate computations of stability which the engineer so frequently calls to his assistance. The proportions of a well-designed structure give a full margin to stability, as they also satisfy the eye, which intuitively exacts a certain relation between height and width. Many of the proportions of brick buildings are regulated by bond, that is, the number of bricks and half-bricks. In the framing of the Building Acts the thickness of walls is thus regulated in the schedules. These thicknesses are sufficient for party-walls, which mainly sustain a vertical weight; but in the construction of chimney-stacks there is no clear rule. Under the 18 and 19 Vict. cap. 122, section 20, it is enacted that: "Every chimney-shaft shall be carried up in brick or stone-work all round, at the least 4in. thick, to a height of not less than 3ft. above the roof, flat, or gutter adjoining thereto, measured at the highest point in the line of junction with such roof, flat, or gutter"; but it goes on to give the maximum height, which is that it shall "not be built higher above the roof, flat, or gutter adjoining thereto, measured from the highest point in the line of junction of such roof, flat, or gutter than a height equal to six times the least width of such chimney-shaft at the level of such highest point in the line of junction, unless such chimney-shaft is built with and bonded to another chimney-shaft not in the same line with the first, or otherwise rendered secure." This regulation applies to the Metropolis. The proportion thus given as a maximum height is safe under ordinary circumstances, and in positions where the full force of the wind is not experienced; but it is rather too much in situations exposed to high winds or hurricanes, such as that which visited these shores a week or two since, and which blew down numerous stacks on houses. When we take into account the age and decayed nature of some bricks, the perishable mortar used in the joints of the stack, each of which conditions considerably reduces the margin of safety, we shall have no difficulty in coming to the conclusion that a large number of chimney stacks are in a very risky state, and that sudden gusts of wind render them exceedingly dangerous to the inmates, and also to persons who happen to be near the buildings. The only rule to insure stability is to take moments about the centre of gravity of the shaft where the wind-pressure acts. The stability of a chimney stack of course depends on the weight of the brickwork above the joint at the base, being such that it preponderates over the wind-pressure at the centre of gravity of shaft, to such a degree that the resultant of the two forces shall fall within the base of stack at the said joint sufficiently to prevent crushing of the material on that side, or tension on the opposite or windward edge. For the sake of stability, the line of pressure or resultant of the weight and wind pressure should fall within the shaft thickness at the joint level by at least one-quarter of the whole width of chimney. If we suppose an ordinary brick stack composed of 9in. flues and $4\frac{1}{2}$in. of brickwork on each side, the total width of stack would be 18in., so that the line of pressure should come within the joint by at least $4\frac{1}{2}$in. The height of the chimney above the joint would be 9ft. if the maximum statutory limit is allowed; and if we say there are five flues in width, the stack would be 6ft. wide. It is easy to find the weight of the brickwork above the level of joint, which may roughly be put at 80cwt. Then, if we multiply 9ft. by 6ft. and by the wind pressure, we shall obtain the total force which acts against the side of the chimney at its centre of gravity, and this force has to be counteracted by the 80cwt. acting through the centre of the chimney's thickness. There are thus three external forces acting upon the stack exposed to the wind: the weight of chimney acting vertically, the wind-pressure acting horizontally, and the reaction of the resultant. By taking moments about the centre of gravity, and assigning definite values to each force, the actual stability of the chimney can be found. It will be found from this investigation that chimneys of this height scarcely fulfil the conditions of stability, especially when the tenacity of the mortar at the joint is small or impaired by age. Of course the tenacious property of the mortar has something to do with the question, as good mortar would increase the resistance to its overturning, but little dependence can be placed on this alone, as it would be extremely unwise to trust to the tenacity of a joint.

We frequently see chimneys which rise from the eaves level to a height of 10ft. or 12ft. above at the side of a house slightly inclined, partly by the action of the sun and moisture. These ought to be thicker or buttressed. Iron stays are abominations, and should not be tolerated. We think the only proper means of strengthening chimney stacks of this height is to give them more base—to add, in fact, piers or half-brick projections between the flues on each side. The subject is one that demands attention from the London County Council, and from all local authorities who have the administration of building by-laws. Several fatal accidents from falls of chimney stacks have been reported lately which call for some attention on the part of officials.

NONCONFORMIST CHURCH BUILDING.*

By JAMES CUBITT.

CHAPTER III. (*continued*).

6.—VENTILATION.

WHILE a church only needs to be warmed for half the year, or less, it needs to be ventilated at all seasons; and when there is least need of warming there is most need of ventilation. The commonest system, known as natural ventilation, depends on the difference of temperature between the inside and outside air. In cold weather, fresh air is ready to rush in at every crevice. All that is wanted then is to confine its entrance to the proper places, and afterwards to keep it under control. But on hot days—when it is most wanted—the supply of fresh air on this plan runs short, or ceases entirely. The outer air is drawn in only when it is colder than the air inside the building. When it is much colder it is drawn in rapidly. When it is only a little colder, it is drawn in slowly; and when it is no colder, it is not drawn in at all. Now there are many days in a hot summer when the interior of a large building is actually cooler than the outer air; and at such times all systems of unassisted natural ventilation fail to act properly.

Ventilation by mechanical pressure, or by mechanical suction, on the other hand, is trustworthy, but expensive. Fresh air, warmed or cooled according to the season, is forced in from outside. The exhausted air is sucked out through ventilating trunks, by means of revolving fans or similar contrivances. On such a system the entrance and exit of the air no longer depend on the excess of the inside over the outside temperature. The circulation goes on whether in winter or summer, as long as the machinery works. The drawback is the cost of working it. A gas-engine, or in very large buildings, two or three gas-engines, are required, unless water-power is made use of, and this, except on a very small scale, is not much cheaper than gas. Hence, ventilation by mechanical power is generally too costly for use in Nonconformist churches.

A comparatively inexpensive compromise between the two systems is frequently resorted to. This consists in aiding the exit ventilation in some one of several ways. One way is to take advantage of the wind outside the building, and thus to obtain an up-current in the extracting shaft. Both revolving ventilators and fixed ones have been designed on this principle, and have been largely used. If a high wind were constantly blowing, no doubt a constant up-draught, though a feeble one compared with the force of the wind, would in this way be kept up. But high winds, fortunately, are by no means incessant, and perfectly calm days are common enough. Now, on a calm, sultry day in summer, just when an up-draught is most wanted, this system absolutely fails to produce it. And on a calm, frosty day in winter, not only does the up-draught cease, but the cold air creeps past the ventilator, and descends as a powerful down-draught. The force of the wind might undoubtedly be turned to good account in assisting ventilation. But to do this effectually, the force would have to be stored. The ordinary hand-to-mouth plan of getting an up-draught just while the wind blows, and perhaps a cutting down-draught when it ceases to blow, is too crude, too primitive to hold its ground when ventilation comes to be taken up as a serious matter.

An up-current in the extracting shaft, produced by heat, is much more regular and reliable. A sufficiently powerful coil of high-pressure hot-water pipes, forms, where it can be introduced, a very convenient way of applying the heat. In other cases a gas-stove, or a ring of gas-jets, will answer the same purpose. The extracting shaft, again, if formed of sheet-iron, may be carried up inside the boiler-flue, the heat of which, passing through the iron, will produce a considerable up-current with little need for care or attention. If this last plan is adopted, it must be remembered that exit ventilation will be needed at times when the heating apparatus is not required. Means must, therefore, be provided, such as the addition of a separate fireplace for use in summer only, by which this flue can at all times be kept hot.

If no artificial assistance is given to the outgoing current of air, then its stoppage in very hot weather must be counted on and provided for. In such a case a considerable part of the windows should be made to open, and should especially be set open between the services. The congregation will then, on each occasion, enter a building filled with fresh air, and not with already vitiated air, and even if the ventilation during the time of service does not go on quite so rapidly as it should do, its faults during a period no longer than an hour or two will hardly become very serious. There are great differences between writers on this subject with regard to the quantity of air which each occupant of a building needs. Some of them taking as a basis the capacity of the human lungs, and the average rate of breathing, have decided that 3c.ft. per minute, or 180c.ft. per hour, ought to be enough. Others, instead of simply calculating what *ought* to be enough, have tried by experiment to ascertain what really *is* enough—how much fresh air, that is, actually needs to be supplied in order to keep the atmosphere inside a building from becoming perceptibly tainted and impure. These authorities, who are by far the more trustworthy, also differ much among themselves; but they agree in making far higher demands than the merely theoretical writers. Instead of 180c.ft. per hour, they ask for something like 900ft. in the case of every child in a school, and they consider about 1,400ft. necessary for each adult in concert-halls and similar buildings.

A current of air moving at a greater velocity than about 3ft. per second is felt, by persons who are sensitive to such things, as a draught. If, therefore, the air is liable to come in faster than this, it should be prevented from blowing directly upon the congregation. This is easily managed by causing it to enter through vertical inlet shafts of sufficient size, open at top, and fixed against the inside of the walls. Of this kind are the so-called Tobin ventilators. They are generally used too small, and are often made needlessly ugly; but when properly treated, they are useful as being the simplest possible contrivance for turning a horizontal inrush of air into a vertical one. Care must of course be taken that there are no projections above the openings of these inlet shafts, on which the vertical currents may strike and be deflected downwards. If wire net is fixed over these shafts as a guard, it should have openings at least ½in. square, and should by no means be put across the top of the opening; if it is, it will cause the air current to spread out sideways instead of going upwards. It should, therefore, be placed a foot or more down the inside of the air shaft.

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In cold, or even moderately cold, weather, it is a great improvement to warm the air which enters by these upright shafts. The common type of Tobin ventilator, however, is too narrow to let this be done in what is generally the most convenient way—that is, by radiators, or coils of hot-water pipe. And again, where some degree of perfection is aimed at, the pipes which heat the incoming air should be capable of being used apart from the general heating apparatus. They should belong, in short, to the draught-preventing system before spoken of. Where the air is to be warmed in this way, the inlet ventilators should be wide enough to contain a large quantity of hot-water piping. The air should be admitted in such a way that it is compelled to pass through the piping before it enters the church. And as the quantity of air which will come in from the outside varies enormously with the temperature, valves or air-sluices of simple construction will be needed to regulate it. Warmed air may be admitted near the floor level; but it is better for cold air to enter at a height of 5ft. or 6ft.

With regard to exit ventilation, or the extraction of exhausted air, two or three points remain to be noticed. The arrangement by which air is extracted generally consists of an upright shaft, opening outwards at top, and one or more air trunks, leading from the various ventilating apertures in the ceilings or roofs, and connected with the bottom of the upright shaft. This shaft may be treated as a chimney, a flue, or a ventilating turret, and the higher it is, the greater will the up-draught be. The ventilating apertures for extracting foul air should be placed near the highest points of the ceilings. They will be required not only in the central part of the building, but also in the ceilings below the galleries, if the latter are of any considerable size. The extracting air-trunks are of metal, or of wood, planed smooth inside, and tongued together so as to be practically air-tight. They should not be placed horizontally, but should slope upwards in every part towards the upright shaft. The means of producing, or assisting, an upright current in this shaft have already been noted. If a gas stove, or a ring of gas jets is employed, a short funnel fixed above them, with its base fixed air-tight to the shaft, and its top opening into it, will help to prevent any accidental descent of cold air from the top. It is, in fact, of the very greatest importance that every part of the extracting system should be fitted together with air-tight joints, so that there is no leakage into, or from, the surrounding atmosphere at any point between the ventilating apertures in the ceilings at bottom, and the free outlet at the top of the upright shaft. Any such leakage will not only stop the up-draught, but will, in all probability, lead to cold down-draughts also.

On the whole, ventilation is a thing that needs more care in arranging, and more intelligence in working, than it usually gets; and the first step towards its improvement is to get rid of the idea, which is as common as it is baseless, that there is, or ever is likely to be, any system of ventilation which, once adopted, will manage itself with no need for attention, in all seasons and at all temperatures.

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THE ACTION OF HEAT FROM OPEN FIREGRATES, STOVES, AND HOT-WATER PIPES.—I.

By F. DYE.

THOSE who make a profession of hot-water works, or heating by hot air or by stoves, almost invariably make it a point to deprecate the use of open grates, and to show that with these articles very irregular results are the general rule, and for a given amount of heat they are not very economical in fuel. On the other hand, the maker of the open firegrate can claim advantages for his manufactures which the other methods of heating do not possess, and he can just as readily deprecate these other methods in question, owing to their having disadvantages which are absent when the open grate is used.

Speaking as favourably of the open grate as possible, it has to be admitted that, with the average of those that are now in use, the heat evolved is very irregular indeed, and even with careful stoking the effect, by way of heat distributed into the room, for a given quantity of fuel, is less than with either of the other methods referred to. Let it be clearly understood, however, that this last paragraph is intended to apply to the average grate now in use, as quite the majority consist of what are commonly termed "registers," having a register flap at back, and no provision to reduce the speed of combustion. This is an old-pattern grate, and is very greatly improved upon by many new grates, more lately introduced, and which will be alluded to directly as they more nearly approach perfection. These latter, however, are not yet in the majority by any means.

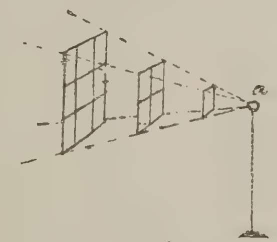

FIG. 1.

From this it will be gathered that the heat evolved from open grates is different in action and results to that obtained from stoves and water pipes, and requires to be treated distinctly in these papers. In the same way the two methods usually form two distinct trades or callings, and the one deprecates the other as a rule, as just mentioned.

The mode by which heat is transmitted from the fire of an open grate to the persons or objects in a room is termed "radiation." Now, radiant heat acts in a manner peculiar to itself, firstly in sending its rays in direct lines from the source of the heat, and anything that does not come within the area or focus that the rays cover will not get heated by them, and would remain quite cold were it not that other indirect agencies cause the radiated heat to ultimately raise their temperature. The rays or lines of heat from the glowing fuel travel, as just stated, in direct lines from this source; but they diverge, or spread out, somewhat as they get away. The exact sum of their divergence is stated as follows:—"The amount of radiant heat received by a given surface varies in the same proportion or ratio as the inverse of the square of the distance from the source of heat."

Fig. 1 illustrates and makes this technical rendering clear (*a* being the source of heat). It will be seen by this figure that as the rays of heat get further and further from their source they become more distributed as to the area they act upon, and a moment's thought will show that as they thus widen out they lose in power or intensity, and this is why it is that as we get further and further away from a fire the heat gets less and less. It is nothing else, for even if the fire were outdoors and the air in motion, it must not be thought that air or wind would make any difference to the direct course of radiant rays of heat. As an instance, to show that these rays travel in such distinctly direct lines, let anyone place a screen between them and the fire, and see how instantly the heat is cut off. The same with a sunshade and the sun's rays. The heat does not curl round the edge of these screens and strike the person who is shielded behind them, for it will be found that the shadow cast by a sunshade is wanting in heat, the same as it is wanting in light.

Now when radiant rays of heat (more frequently called radiant energy, for heat has been found to be nothing more or less than motion) strike or impinge upon an object, the temperature of this object is raised; it is made warmer, more or less, as it is capable of quickly or slowly absorbing heat. When it has received heat it at once commences to re-radiate, to redistribute it by radiation. This second radiation of heat is not so strong as the first from the fire, but is none the less certain, and it travels in the same direct lines. The lines of heat may, however, in this case proceed to some part of a room where the primary rays do not reach, and here they go to warm other objects, which in their turn distribute the heat again in different directions, and so it goes on. We might say the heat is tossed from one article to another about the room and so distributed; but this process goes on rather slowly, and when a fire is first lighted in a room, it is some time after the direct radiant heat is felt before the parts that do not receive these first, and more powerful, rays are warm. This re-radiation of heat is one of the causes of the distant and remote parts of a room becoming ultimately warm.

If the direct rays of heat from a fire encounter a polished surface, there is instantly an active dispersal or deflection of the warmth. The action is essentially the same as with a ray of light that encounters a polished object. By an arrangement of mirrors, or such surfaces, it would be possible to divert the heat as desired; but this arrangement is neither practical nor probable.

Another, and most active, source of heat diffusion is the action of "convection." The word diffusion is correct here, as the way in which convected heat acts, has no straight lines, or such rules governing it, but causes the heat to transfer itself here, there, and everywhere, in a rapid, and effective, and independent manner.

"Convection" is derived from the word *conveho*, to carry up, and is the act of conveying heat by the ascent of heated particles of air or liquids. It is this action that we depend upon in a hot-water apparatus, and without it we could have no circulation of water. It acts in the same manner with air, only more rapidly. The action of convection is as follows: The air, or atmosphere, is composed (like water) of an innumerable quantity of minute particles or molecules, these minute particles all being quite distinct and independent of one another, and, furthermore, being wholly devoid of friction or resistance of this kind in their movements. In all solid substances we look for friction to manifest itself more or less according to the surface of the particles of the substance; for instance, if we piled up jagged pieces of stone, we could make the heap a considerable height, owing to the friction brought to bear by the rough shape of the pieces preventing their slipping. If we attempted to make a heap with, say, billiard balls, we should not get along so well; but, to give an idea what absence of friction there is amongst the particles of liquids and gases, let anyone try and make a heap of water.

Most authorities agree that there is not only absence of friction amongst fluids (liquids and gases) but also a positive repelling influence, for it is found in exhausting the receiver of an air-pump that although the air gets more and more diminished as the pumping is continued; yet, when the quantity is very reduced, it still pervades the whole of the space, though in an attenuated form. What remains in the receiver does not collect in one spot; but the particles spread themselves about, getting as far apart from one another as possible, it would seem, and this phenomenon is just as noticeable when the air left in the glass is only about $\frac{1}{10,000}$ its original contents.

Having shown that air is composed of exceedingly small particles, ready to move freely in any direction that they may be impelled, the actual process of convection can be explained as follows: When air comes in contact with a heated object, those particles which have contact become heated also (for air absorbs heat readily), but directly the particles increase in temperature they also increase in size; they expand with heat, like every other substance, solid or fluid, does. Now, when a substance or particle is increased in bulk without increase in weight, it is rendered lighter than its smaller fellows. If we had a piece of cork 2in. square, and a piece of wood 1in. square, both weighing exactly the same, we should call the cork the lighter material owing to its having greater bulk for a given weight. The particles of air, therefore, that are warmed and rendered lighter than their fellows, are instantly displaced and caused to rise up by the superior weight of the latter, and as the new cold particles come in contact with the heated object, so they are warmed and lightened, and cause the rise also.

Fig. 2 illustrates a heated ball, and the arrows indicate the action of the air as the particles touch and are carried up in the way explained. The action is so rapid that there will be a constant stream of cool air to the ball, and an equally constant stream of hot air rising from it so long as it remains heated. If any heated object is taken, and some cigar-smoke gently blown upon it, it will be seen how quickly the smoke takes an accelerated upward direction when it comes over the source of heat; the heated up-current of air carries it with it. This is rather a long explanation devoted to convection, but it is a subject little known, or, at any rate, less known than its kindred subject—radiation. In stove and hot-water works the subject of convection is all important, as will be seen directly.

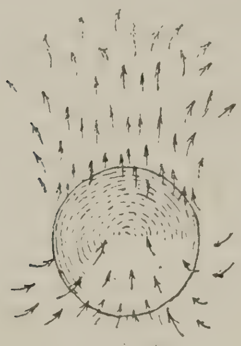

FIG. 2.

It will now be understood that air coming in contact with furniture and objects in the room which have received warmth by radiated heat, instantly sets up convection currents, and this transfers heat to the distant or obscure parts of the room just as readily as the re-radiation explained, if not more so in some cases. These convection currents also bring fresh air for respiration, and Nature has provided many things which induce these currents of air to our benefit. There is a circulating motion of air induced by everything that has warmth—even the human body itself. If a cold object were introduced into a hot room this also would induce the action explained, but the movement would be reversed. The warm-air particles would be contracted by contact, and they would fall—just the opposite to the explanation given, but just as certain and rapid. The next paper will deal with the advantageous and special features of the open grate.

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PROSCENIUM CURTAINS.

IN a paper on theatres and music halls, published in the *Building and Engineering Journal* of Melbourne, Mr. Ernest Woodrow describes the various curtains before the public as: (1) Single wrought-iron plates, and wrought-iron plates fixed on a frame, with an air-space between. (2) Wrought-iron plates and wire-gauze combined. (3) Asbestos cloth in various forms. (4) Canvas curtains with water-spray. (5) Water-spray curtain. Referring to each of these the author says: What is required is a fire-resisting surface not affected by the great heat of a fire on the stage, which will prevent the passage of flame and smoke into the auditorium; a surface not affected by water thrown upon it when it is heated, a surface sufficiently rigid in itself to resist falling timber, &c., upon it, and one that shall not be too heavy to be raised and lowered. Iron plate curtains buckle and twist, allowing flame and smoke to pass, they convey heat, and are heavy; wire gauze does not withstand falling bodies, and smoke and flame will pass through it if damaged; asbestos is fragile, and becomes easily torn; water and canvas depend altogether upon the water being spread over them; water-spray will not stop the passage of flame and smoke. Mr. Max Clarke has invented a *protected* iron curtain which is said to fulfil these conditions. It is an open framework of iron and wire, protected by a covering of silicate cotton and slag-wool on each side. This cotton is covered with wire netting, and forms an absolutely non-conducting material, and can be covered on the auditorium side with green baize, to look like a green curtain, or have painted canvas, and take the place of the "act drop." This curtain is pliable, and will adapt itself to any strain, is fire and smoke proof, and can be raised by man or hydraulic power.

◆

HYDRAULIC AND SANITARY APPLIANCES.

THE catalogue issued by Messrs. Charles Winn and Co., of St. Thomas Works, Birmingham, and 41, Holborn Viaduct, is replete with illustrations, descriptions, and prices of plumbers' goods, all of which are reliable and in everyday use. The patent "Acme" siphon cistern made by this firm, of which over three thousand are in use in Noel Park, on the Estate of the Artisans', Labourers', and General Dwellings Company, is a very perfect cistern, and has given much satisfaction for its working capabilities. and the testimonials appended from the deputy chairman are conclusive. The "New River cistern" has also been largely used; it has the top of the siphon above the top of cistern, as required by some of the water companies. Both cisterns give a rapid flush, and their simplicity and avoidance of valves, leathers, &c., which get out of order, are important. The price in strong cast-iron, painted, with chain and handle, is only 20s. Several valve closets are illustrated. We notice "Winn's improved elastic-seated valve closet," an apparatus for first-class dwellings, highly approved by architects for the depth of water in basin and cleanliness of action. The inlets are straight, and the water divides and flushes each side of basin, and has a strong scouring action at the back. The price—from £2 15s. to £4 13s.—is very moderate for best quality closets. Winn's household closets for use with their siphon cistern of different types are shown; 291 B is specially recommended by Dr. Hill, medical officer for Birmingham. The backs are made straight, so as to prevent soiling. These basins and traps are made in one and two pieces, and are self-cleansing. These closets are known as the "Trent" and "Severn," and are made with raised ornament in the pedestal form. Winn's patent Granville closet is another capital pattern for cleanliness and outlet. Various fittings, flushing cisterns and slop-closets, sinks of improved make in cast iron, glazed porcelain, and stoneware; traps and bends, soil-pipe ventilators, baths and fittings, lavatories, we note. Winn's patent "Washington" urinals of all forms, stop-cocks, beer machines, are catalogued and illustrated. The patterns of pumps for different uses are very complete. We must specially notice the screwing machines with adjustable dies for wrought-iron tubes—a powerful machine which will grip 2in. tube as firmly as ¼in. without injury, and fitted with a capital screwing arrangement for size of tube and threads. These are well known, and are largely used. Winn's "improved portable screwing machine," Nos. 6,191, 6,196, 1,025 are noteworthy. One merit of this catalogue is that it is so arranged that a plumber will find on adjacent pages what he requires in connection with another class; the illustrations, descriptive matter, and prices, all consecutively arranged so that all relating to one class of goods or appliance can be readily referred to.

PRICES.—XXVIII.*

(All Prices Include Profit).

JOINER (*continued*).

HARDWOOD DOORS: Spanish mahogany, not polished—

		£	s.	d.
2½in. four panels, square framed	per ft. sup.	0	4	6
Ditto ditto bead butt	ditto	0	4	9
Ditto ditto ditto flush......................	ditto	0	4	11
Ditto ditto moulded on one side	ditto	0	4	11
Ditto ditto ditto two sides	ditto	0	5	4
Ditto ditto ditto, and one side bolection moulded	ditto	0	5	6
Ditto ditto top panels cut for glass, loose beads not included	ditto	0	4	9
Ditto ditto top panels sashed	ditto	0	5	3
Ditto ditto in small squares............	ditto	0	5	9
Ditto ditto stop-chamfered on one side including plain stops	ditto	0	5	3
Ditto ditto ditto two sides..............	ditto	0	6	0
Ditto ditto raised panels one side ...	ditto	0	5	6
Ditto ditto ditto two sides..............	ditto	0	6	6
Hung folding extra	ditto	0	0	3
1½in. six panels, square framed.........	ditto	0	3	9
Ditto ditto bead butt	ditto	0	4	0
Ditto ditto ditto flush......................	ditto	0	4	3
Ditto ditto moulded one side	ditto	0	4	2
Ditto ditto ditto two sides	ditto	0	4	7
Ditto ditto ditto and one side bolection moulded	ditto	0	4	10
Ditto ditto top panels cut for glass, loose beads not included	ditto	0	4	0
Ditto ditto top panels sashed	ditto	0	4	6
Ditto ditto ditto in small squares ...	ditto	0	5	0
Ditto ditto stop-chamfered on one side including plain stops	ditto	0	4	6
Ditto ditto ditto two sides..............	ditto	0	5	3
Ditto ditto raised panels one side ...	ditto	0	4	9
Ditto ditto ditto two sides	ditto	0	5	9
Hung folding.................................	ditto	0	0	2
2in. six panels, square framed	ditto	0	4	3
Ditto ditto bead butt......................	ditto	0	4	6
Ditto ditto ditto flush......................	ditto	0	4	9
Ditto ditto moulded on one side	ditto	0	4	8
Ditto ditto ditto two sides	ditto	0	5	1
Ditto ditto ditto and one side bolection moulded	ditto	0	5	4
Ditto ditto top panels cut for glass, and not including loose beads	ditto	0	4	6
Ditto ditto top panels sashed	ditto	0	5	0
Ditto ditto in small squares..	ditto	0	5	6
Ditto ditto stop-chamfered one side including plain stops..	ditto	0	5	0
Ditto ditto ditto two sides	ditto	0	5	9
Ditto ditto raised panels one side ...	ditto	0	5	3
Ditto ditto ditto two sides...............	ditto	0	6	0
Hung folding.................................	ditto	0	0	3
2½in. six panels, square framed	ditto	0	5	0
Ditto ditto bead butt	ditto	0	5	3
Ditto ditto ditto flush	ditto	0	5	6
Ditto ditto moulded on one side	ditto	0	5	6
Ditto ditto ditto two sides..............	ditto	0	5	10
Ditto ditto ditto and one side bolection moulded	ditto	0	6	2
Ditto ditto top panels cut for glass, not including loose beads	ditto	0	5	3
Ditto ditto top panel sashed	ditto	0	6	0
Ditto ditto ditto in small squares ...	ditto	0	6	8
Ditto ditto stop-chamfered on one side including plain stops	ditto	0	5	9
Ditto ditto ditto two sides	ditto	0	6	6
Ditto ditto raised panels one side ...	ditto	0	6	0
Ditto ditto ditto two sides..............	ditto	0	7	0
Hung folding.................................	ditto	0	0	3

HARDWOOD DOORS: Wainscot or American walnut, dwarf—

		£	s.	d.
1in. one panel, square framed	per ft. sup.	0	2	0
Ditto ditto bead butt	ditto	0	2	2
Ditto ditto ditto flush	ditto	0	2	3
Ditto ditto moulded on one side	ditto	0	2	3
Ditto ditto ditto two sides	ditto	0	2	6
Ditto ditto ditto and one side bolection moulded	ditto	0	2	8
Ditto ditto stop-chamfered one side, and plain stops	ditto	0	2	6
Ditto ditto ditto two sides..............	ditto	0	2	10
1¼in. one panel, square framed	ditto	0	2	2
Ditto ditto bead butt	ditto	0	2	4
Ditto ditto ditto flush......................	ditto	0	2	5
Ditto ditto moulded on one side......	ditto	0	2	5
Ditto ditto ditto two sides	ditto	0	2	8
Ditto ditto dtto and one side bolection moulded	ditto	0	2	10
Ditto ditto stop-chamfered one side and plain stops	ditto	0	2	7
Ditto ditto ditto two sides	ditto	0	3	0
1½in. one panel, square framed	ditto	0	2	6
Ditto ditto bead butt	ditto	0	2	8
Ditto ditto ditto flush	ditto	0	2	9
Ditto ditto moulded one side	ditto	0	2	9
Ditto ditto ditto two sides	ditto	0	3	0
Ditto ditto ditto and one side bolection moulded	ditto	0	3	2
Ditto ditto stop-chamfered on one side including plain stops	ditto	0	2	11
Ditto ditto ditto two sides...............	ditto	0	3	4
2in. one panel, square framed	ditto	0	2	9
Ditto ditto bead butt	ditto	0	2	11
Ditto ditto ditto flush	ditto	0	3	0
Ditto ditto moulded on one side......	ditto	0	3	0
Ditto ditto ditto two sides	ditto	0	3	3
Ditto ditto ditto one side bolection moulded	ditto	0	3	5
Ditto ditto stop-chamfered on one side and plain stops ...	ditto	0	3	2
Ditto ditto ditto two sides...............	ditto	0	3	7
1in. two panel, square framed	ditto	0	2	2
Ditto ditto bead butt	ditto	0	2	4
Ditto ditto ditto flush	ditto	0	2	5
Ditto ditto moulded on one side......	ditto	0	2	5
Ditto ditto ditto two sides...............	ditto	0	2	8
Ditto ditto ditto and one side bolection moulded	ditto	0	2	10

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		£	s.	d.
1in. two panel, stop-chamfered one side and plain stops	per ft. sup.	0	2	7
Ditto ditto ditto two sides	ditto	0	3	0
1¼in. two panel, square framed	ditto	0	2	3
Ditto ditto bead butt	ditto	0	2	5
Ditto ditto ditto flush	ditto	0	2	6
Ditto ditto moulded one side	ditto	0	2	6
Ditto ditto ditto two sides	ditto	0	2	9
Ditto ditto ditto and one side bolection moulded	ditto	0	2	11
Ditto ditto stop-chamfered one side and plain stops	ditto	0	2	8
Ditto ditto ditto two sides	ditto	0	3	1
Ditto ditto raised panels one side	ditto	0	2	11
1½in. ditto square framed	ditto	0	2	7
Ditto ditto bead butt	ditto	0	2	9
Ditto ditto ditto flush	ditto	0	2	10
Ditto ditto moulded one side	ditto	0	3	1
Ditto ditto ditto two sides	ditto	0	3	4
Ditto ditto ditto and one side bolection moulded	ditto	0	3	6
Ditto ditto stop-chamfered one side and plain stops	ditto	0	3	0
Ditto ditto ditto two sides	ditto	0	3	5
Ditto ditto raised panels one side	ditto	0	3	2
2in. ditto square framed	ditto	0	3	0
Ditto ditto bead butt	ditto	0	3	2
Ditto ditto ditto flush	ditto	0	3	3
Ditto ditto moulded one side	ditto	0	3	3
Ditto ditto ditto two sides	ditto	0	3	6
Ditto ditto ditto and one side bolection moulded	ditto	0	3	8
Ditto ditto stop-chamfered one side and plain stops	ditto	0	3	8
Ditto ditto ditto two sides	ditto	0	4	1
Ditto ditto raised panels one side	ditto	0	3	7

HARDWOOD DOORS: Honduras mahogany; ordinary sizes—

		£	s.	d.
1in. two panels, square framed	per ft. sup.	0	2	0
Ditto ditto bead butt	ditto	0	2	2
Ditto ditto flush	ditto	0	2	3
Ditto ditto moulded one side	ditto	0	2	3
Ditto ditto ditto two sides	ditto	0	2	6
Ditto ditto stop-chamfered one side and plain stops	ditto	0	2	5
Ditto ditto ditto two sides	ditto	0	2	10
1¼in. ditto square framed	ditto	0	2	2
Ditto ditto bead butt	ditto	0	2	4
Ditto ditto ditto flush	ditto	0	2	5
Ditto ditto moulded one side	ditto	0	2	3
Ditto ditto ditto two sides	ditto	0	2	6
Ditto ditto ditto and one side bolection moulded	ditto	0	2	8
Ditto ditto stop-chamfered one side including plain stops	ditto	0	2	7
Ditto ditto ditto two sides	ditto	0	3	0
1½in. ditto square framed	ditto	0	2	4
Ditto ditto bead butt	ditto	0	2	6
Ditto ditto ditto flush	ditto	0	2	7
Ditto ditto moulded one side	ditto	0	2	7
Ditto ditto ditto two sides	ditto	0	2	10
Ditto ditto ditto and one side bolection moulded	ditto	0	3	0
Ditto ditto stop-chamfered one side and plain stops	ditto	0	2	9
Ditto ditto ditto two sides	ditto	0	3	2
Ditto ditto raised panels one side	ditto	0	2	11
Ditto ditto top panels cut for glass, not including loose beads	ditto	0	2	6
Ditto ditto top panels sashed	ditto	0	3	0
Ditto ditto ditto, small squares	ditto	0	3	4
Hung folding add	ditto	0	0	1½
2in. two panels, square framed	ditto	0	2	9
Ditto ditto bead butt	ditto	0	2	11
Ditto ditto ditto flush	ditto	0	3	0
Ditto ditto moulded one side	ditto	0	3	0
Ditto ditto ditto two sides	ditto	0	3	3
Ditto ditto ditto and one side bolection moulded	ditto	0	3	5
Ditto ditto stop-chamfered one side, including plain stops	ditto	0	3	2
Ditto ditto ditto two sides	ditto	0	3	7
Ditto ditto top panel cut for glass, not including loose beads	ditto	0	2	11
Ditto ditto top panels sashed	ditto	0	3	5
Ditto ditto ditto in small squares	ditto	0	3	9
Ditto ditto raised panels one side	ditto	0	3	4
1¼in. four-panel, square framed	ditto	0	2	2
Ditto ditto bead butt	ditto	0	2	4
Ditto ditto ditto flush	ditto	0	2	5
Ditto ditto moulded one side	ditto	0	2	5
Ditto ditto ditto two sides	ditto	0	2	8
Ditto ditto ditto, bolection moulded on one side	ditto	0	2	9
Ditto ditto bead butt and moulded	ditto	0	2	7
Ditto ditto ditto flush and ditto	ditto	0	2	8
Ditto ditto stop-chamfered on one side and plain stops	ditto	0	2	7
Ditto ditto ditto two sides	ditto	0	3	0
Ditto ditto top panels cut for glass, not including loose beads	ditto	0	2	4
Ditto ditto top panels sashed	ditto	0	2	10
Ditto ditto ditto small squares	ditto	0	3	2
Ditto ditto raised panels one side	ditto	0	2	9
Hung folding add	ditto	0	0	1½
1½in. four panels, square framed	ditto	0	2	9
Ditto ditto bead butt	ditto	0	2	11
Ditto ditto ditto flush	ditto	0	3	0
Ditto ditto moulded on one side	ditto	0	3	0
Ditto ditto ditto two sides	ditto	0	3	3
Ditto ditto ditto bolection moulded on one side	ditto	0	3	5
Ditto ditto bead butt and moulded	ditto	0	3	2
Ditto ditto ditto flush and ditto	ditto	0	3	3
Ditto ditto stop-chamfered on one side and plain stops	ditto	0	3	2
Ditto ditto ditto two sides	ditto	0	3	7
2½in. top panels cut for glass, not including loose beads	ditto	0	2	11
Ditto ditto top panels sashed	ditto	0	3	5
Ditto ditto ditto in small squares	ditto	0	3	9
Ditto ditto raised panels one side	ditto	0	3	4
Hung folding add	ditto	0	0	1½
2in. ditto, square framed	ditto	0	3	3
Ditto ditto bead butt	ditto	0	3	5
Ditto ditto ditto flush	ditto	0	3	6
Ditto ditto moulded on one side	ditto	0	3	6
2in. four panels, moulded two sides	per ft. sup.	0	3	9
Ditto ditto and bolection moulded on one side	ditto	0	3	11
Ditto ditto butt and moulded	ditto	0	3	8
Ditto ditto ditto flush	ditto	0	3	9
Ditto ditto stop-chamfered on one side and plain stops	ditto	0	3	8
Ditto ditto ditto two sides	ditto	0	4	1
Ditto ditto top panels cut for glass, not including loose beads	ditto	0	3	5
Ditto ditto top panels sashed	ditto	0	3	11
Ditto ditto ditto in small squares	ditto	0	4	3
Ditto ditto raised panels one side	ditto	0	3	10
Ditto ditto hung folding, add	ditto	0	0	2
2½in. ditto, square framed	ditto	0	3	10
Ditto ditto bead butt	ditto	0	4	0
Ditto ditto ditto flush	ditto	0	4	2
Ditto ditto moulded one side	ditto	0	4	2
Ditto ditto ditto two sides	ditto	0	4	6
Ditto ditto and bolection moulded on one side	ditto	0	4	8
Ditto ditto bead butt and moulded.	ditto	0	4	4
Ditto ditto ditto flush ditto	ditto	0	4	6
Ditto ditto stop-chamfered one side and plain stops	ditto	0	4	3
Ditto ditto ditto two sides	ditto	0	4	8
Ditto ditto top panels cut for glass, not including loose beads	ditto	0	4	0
Ditto ditto top panels sashed	ditto	0	4	8
Ditto ditto ditto in small squares	ditto	0	5	0
Ditto ditto raised panels one side	ditto	0	4	6
Ditto ditto hung folding add	ditto	0	0	2
1½in. six-panel, square framed	ditto	0	3	0
Ditto ditto bead butt	ditto	0	3	2
Ditto ditto ditto flush	ditto	0	3	3
Ditto ditto moulded one side	ditto	0	3	3
Ditto ditto ditto two sides	ditto	0	3	6
Ditto ditto ditto and bolection moulded on one side	ditto	0	3	8
Ditto ditto bead butt and moulded	ditto	0	3	5
Ditto ditto ditto flush ditto	ditto	0	3	6
Ditto ditto stop-chamfered one side and plain stops	ditto	0	3	6
Ditto ditto ditto two sides	ditto	0	4	0
Ditto ditto top panels cut for glass, and not including loose beads	ditto	0	3	2
Ditto ditto top panels sashed	ditto	0	3	8
Ditto ditto ditto small squares	ditto	0	4	0
Ditto ditto raised panels one side	ditto	0	3	8
Ditto ditto hung folding, add	ditto	0	0	1½
2in. ditto, square framed	ditto	0	3	7
Ditto ditto bead butt	ditto	0	3	10
Ditto ditto ditto flush	ditto	0	3	11
Ditio ditto moulded one side	ditto	0	3	10
Ditto ditto ditto two sides	ditto	0	4	1
Ditto ditto bead butt and mouldded	ditto	0	4	0
Ditto ditto ditto flush ditto	ditto	0	4	1
Ditto ditto moulded one side and bolection the other	ditto	0	4	3
Ditto ditto stop-chamfered one side and including plain stops	ditto	0	4	1
Ditto ditto ditto two sides	ditto	0	4	7
Ditto ditto top panels cut for glass, not including loose beads	ditto	0	3	9
Ditto ditto top panels sashed	ditto	0	4	2
Ditto ditto ditto in small squares	ditto	0	4	6
Ditto ditto raised panels one side	ditto	0	4	4
Ditto ditto ditto two sides	ditto	0	5	0
Ditto ditto hung folding add	ditto	0	0	2
2½in. ditto square framed	ditto	0	4	2
Ditto ditto bead butt	ditto	0	4	4
Ditto ditto ditto flush	ditto	0	4	6
Ditto ditto moulded one side	ditto	0	4	6
Ditto ditto ditto two side	ditto	0	4	10
Ditto ditto bead butt and moulded	ditto	0	4	8
Ditto ditto ditto flush ditto	ditto	0	4	10
Ditto ditto moulded one side and bolection the other	ditto	0	5	1
Ditto ditto stop-chamfered one side and plain stops	ditto	0	4	8
Ditto ditto ditto two sides	ditto	0	5	2
Ditto ditto top panels cut for glass, not including loose beads	ditto	0	4	5
Ditto ditto top panels sashed	ditto	0	5	0
Ditto ditto ditto in small squares	ditto	0	5	6
Ditto ditto raised panels one side	ditto	0	4	10
Ditto ditto ditto two sides	ditto	0	5	6
Ditto ditto hung folding add	ditto	0	0	2

HARDWOOD DOORS: Segment-headed, Pitch-pine, ordinary sizes—

		£	s.	d.
1¼in. two panel	per ft. sup.	0	1	2
Ditto ditto bead butt	ditto	0	1	4
Ditto ditto ditto flush	ditto	0	1	5
Ditto ditto moulded one side	ditto	0	1	4
Ditto ditto ditto two sides	ditto	0	1	6
Ditto ditto ditto and one side bolection moulded	ditto	0	1	7
Ditto ditto bead butt and moulded	ditto	0	1	5
Ditto ditto ditto flush ditto	ditto	0	1	7
Ditto ditto stop-chamfered one side and plain stops	ditto	0	1	7
Ditto ditto ditto two sides	ditto	0	2	0
1½in. ditto square framed	ditto	0	1	3
Ditto ditto bead butt	ditto	0	1	5
Ditto ditto ditto flush	ditto	0	1	6
Ditto ditto moulded one side	ditto	0	1	5
Ditto ditto ditto two sides	ditto	0	1	7
Ditto ditto ditto and bolection on one side	ditto	0	1	8
Ditto ditto stop-chamfered one side and plain stops	ditto	0	1	8
Ditto ditto ditto two sides	ditto	0	2	1
Ditto ditto raised panels one side	ditto	0	2	0
Ditto ditto ditto two sides	ditto	0	2	9
Ditto ditto top panel cut for glass, not including loose beads	ditto	0	1	5
Ditto ditto top panel sashed	ditto	0	1	9
Ditto ditto ditto in small squares	ditto	0	2	0
Add if hung folding	ditto	0	0	1
2in. ditto square framed	ditto	0	1	4
Ditto ditto bead butt	ditto	0	1	6
Ditto ditto ditto flush	ditto	0	1	7
Ditto ditto moulded one side	ditto	0	1	6
Ditto ditto ditto two sides	ditto	0	1	8
Ditto ditto ditto and one side bolection mouldnd	ditto	0	1	9
2in. two panel, stop chamfered one side and plain stops	per ft. sup.	0	1	9
Ditto ditto ditto two sides	ditto	0	3	2
Ditto ditto raised panels on one side	ditto	0	2	0
Ditto ditto ditto two sides	ditto	0	2	8
Ditto ditto top panel cut for glass, not including loose beads	ditto	0	1	6
Ditto ditto top panel sashed	ditto	0	1	10
Ditto ditto ditto in small squares	ditto	0	2	1
Add if folding	ditto	0	0	1½
1¼in. four panels, square framed	ditto	0	1	3
Ditto ditto bead butt	ditto	0	1	5
Ditto ditto ditto flush	ditto	0	1	5
Ditto ditto moulded one side	ditto	0	1	7
Ditto ditto ditto two sides	ditto			
Ditto ditto ditto bolection on one side	ditto	0	1	8
Ditto ditto stop chamfered on one side	ditto	0	1	8
Ditto ditto ditto two sides	ditto	0	2	1
Ditto ditto raised panels one side	ditto	0	1	11
Ditto ditto ditto two sides	ditto	0	2	7
Ditto ditto top panel cut for glass, not including loose beads	ditto	0	1	5
Ditto ditto top panels sashed	ditto	0	1	10
Ditto ditto ditto in small squares	ditto	0	2	2
1½in. ditto, square framed	ditto	0	1	4
Ditto ditto bead butt	ditto	0	1	6
Ditto ditto ditto flush	ditto	0	1	7
Ditto ditto moulded one side	ditto	0	1	6
Ditto ditto ditto two sides	ditto	0	1	8
Ditto ditto ditto and bolection moulded on one side	ditto	0	1	9
Ditte ditto stop-chamfered one side plain stops	ditto	0	1	9
Ditto ditto ditto two sides	ditto	0	2	2
Ditto ditto raised panels one side	ditto	0	2	2
Ditto ditto ditto two sides	ditto	0	3	0
Ditto ditto top panel cut for glass, not including loose beads	ditto	0	1	6
Ditto ditto top panels sashed	ditto	0	1	10
Ditto ditto ditto in small squares	ditto	0	2	2
2in. ditto, square framed	ditto	0	1	5
Ditto ditto bead butt	ditto	0	1	7
Ditto ditto ditto flush	ditto	0	1	8
Ditto ditto moulded one side	ditto	0	1	9
Ditto ditto ditto two sides	ditto	0	1	9
Ditto ditto ditto and one side bolection moulded	ditto	0	1	10
Ditto ditto stop chamfered one side including plain stops	ditto	0	1	10
Ditto ditto ditto two sides	ditto	0	2	3
Ditto ditto raised panels one side	ditto	0	2	2
Ditto ditto ditto two sides	ditto	0	3	0
Ditto ditto top panels cut for glass, not including loose beads	ditto	0	1	7
Ditto ditto top panels sashed	ditto	0	2	0
Ditto ditto in small squares	ditto	0	2	3
2¼in. ditto, square framed	ditto	0	1	8
Ditto ditto bead butt	ditto	0	1	10
Ditto ditto ditto flush	ditto	0	1	11
Ditto ditto moulded one side	ditto	0	1	10
Ditto ditto ditto two sides	ditto	0	2	0
Ditto ditto ditto and bolection moulded on one side	ditto	0	2	2
Ditto ditto stop-chamfered one side including plain stops	ditto	0	2	1
Ditto ditto ditto two sides	ditto	0	2	6
Ditto ditto raised panels one side	ditto	0	2	3
Ditto ditto ditto two sides	ditto	0	2	10
Ditto ditto top panels cut for glass, not including loose beads	ditto	0	1	10
Ditto ditto top panels sashed	ditto	0	2	4
Ditto ditto ditto small squares	ditto	0	2	9
2½in. ditto, square framed	ditto	0	1	11
Ditto ditto bead butt	ditto	0	2	1
Ditto ditto ditto flush	ditto	0	2	2
Ditto ditto moulded one side	ditto	0	2	1
Ditto ditto ditto two sides	ditto	0	2	3
Ditto ditto ditto and bolection moulded on one side	ditto	0	2	5
Ditto ditto stop-chamfered one side including plain stops	ditto	0	2	4
Ditto ditto ditto two sides	ditto	0	2	9
Ditto ditto raised panels one side	ditto	0	2	8
Ditto ditto ditto two sides	ditto	0	3	5
Ditto ditto top panels cut for glass, not including loose beads	ditto	0	2	1
Ditto ditto top panels sashed	ditto	0	2	9
Ditto ditto ditto in small squares	ditto	0	3	3

◆

CHIPS.

A high tower will, it goes without saying, be one of the features of the Chicago Exhibition. It will be 1,150ft. in height, will contain 6,000 tons of steel, and has been designed by Mr. George S. Morison, of New York and Chicago, who, unlike many engineers of such erections, has not slavishly followed M. Eiffel's ideas.

The contract for the erection of the Leeds new post-office, the site for which was purchased from the corporation for £54,000, has been let to Messrs. Thomas Obank and Sons, of Idle, near Leeds, for £58,200.

Mr. Francis Adams, formerly of the Office of Woods and Forests, and for more than 40 years clerk to the Crown Estate Commissioners, died on the 5th inst. at his residence, Holmfield, Surbiton, aged 70 years.

The deliveries of Portmadoc slates for the last year amount to 133,145 tons, against 117,754 tons in the previous year. Owing to several quarries having discontinued working from exhaustion of rock or other causes, the production has been considerably less, and it is estimated that stocks have been reduced by full 20,000 tons. The prospects of the slate trade are brighter than for many years past, as the production cannot be daily increased, and consumption has evidently overtaken supply.

CONTENTS.

Competitions with the Latest Improvements 83
Removal of Snow from Town Streets 83
Physical Laws Operative in Building 84
The Stability of Domestic Chimneys 85
Nonconformist Church Building 86
The Action of Heat from Open Firegrates, Stoves, and Hot-water Pipes.—I. 87
Proscenium Curtains 88
Hydraulic and Sanitary Appliances 88
Prices.—XXVIII. 88
Our Illustrations 90
Competitions 90
The BUILDING NEWS Directory 91
Wayside Notes 111
Gloucester Cathedral Restoration 111
The Society of Architects 112
The Crystal Palace Electrical Exhibition 115
New Buildings in Birmingham 115
Notes on Terracotta.—VI. 116
Architectural and Archæological Societies 117
Building Intelligence 117
Correspondence 117
Intercommunication 118
Legal 118
Legal Intelligence 118
Water Supply and Sanitary Matters 119
Our Office Table 119
Meetings for the Ensuing Week 120
Tenders 121

ILLUSTRATIONS.

MAGDALEN TOWER, OXFORD.—A DECORATIVE ALPHABET IN THE RENAISSANCE STYLE.—SECOND PREMIATED DESIGN FOR THE NEW COURTHOUSE AT CORK.—ST. AUSTELL LIBERAL CLUB. — "RALSTON," BROMLEY, KENT. — HIGHER GRADE SCHOOLS AND TECHNICAL SCHOOLS, BATLEY.

Our Illustrations.

THE MAGDALEN TOWER, OXFORD.

OUR illustration is from an original pen-and-ink drawing (12in. by 20in.) by Mr. Claude de Neuville, which attracted considerable notice at Mr. Mendoza's recent exhibition of black and white. It represents the tower as seen from the bend on the north side of Magdalen Bridge—one of the best places to judge of the beauty of its proportions. It was built 1492-1505, and is about 145ft. high. It is not of one size all the way up. The decrease may be stated at from 4in. to 6in. just above the base or plinth, 3in. to 4in. at the stringcourse just below the large windows of the belfry, and 2in. or 3in. at a course half-way up the same. The upper portion (belfry) was thoroughly restored, and a new statue of St. Mary Magdalen by Mr. Conrad Dressler substituted under the direction of Mr. E. P. Warren, during last summer. This new feature is shown in the drawing. The buildings below the tower occupy the site of the former Hospital of St. John the Baptist. The bridge was erected in 1779, and was widened a few years ago under the direction of Mr. W. White, city surveyor of Oxford.

DESIGN FOR AN ALPHABET, BY JAMES WEST.

THE alphabet here shown has been designed in a style corresponding with that which was so popular in Germany in the 16th century. The letters in the original drawing are nearly 3in. high, and they are reproduced by process in any size. Mr. West does not confine himself to designs in this particular style, as a reference to the pages of any of the art magazines will show.

CORK COURTHOUSE.

SIR T. N. DEANE AND SON, of Dublin, the authors of this the second Premiated Design, say:—"As regards our plan for above, we can add very little in the way of description. We were bound to the external walls of the old courthouse, and there was little opportunity of making elevations. The back and sides were modified as regards the windows to suit our arrangement of the inside. We took some liberty in regard to the architecture of the inside, in the entrance hall, courts, and grand-jury rooms. These were treated in a Free Italian style. The building would have cost fully £20,000 to carry out. The joint-committee of the county, grand jury, and the city were rather of opinion that they could rebuild for £15,000, which was quite too little. Mr. Thomas Drew, who acted as assessor, was of opinion that our plan was *a tie* with Mr. Hill's plan." Mr. Hill's design was awarded the first place, and we illustrated his drawings in the BUILDING NEWS for Dec. 25 last.

ST. AUSTELL LIBERAL CLUB.

THIS building has been lately erected by Mr. Francis Barratt, C.C., of 39, Lennox-gardens, London, for the Liberals of St. Austell, for which district Mr. Barratt sits in the Cornwall county council. It was opened by the Right Hon. Sir George O. Trevelyan, Bart., M.P., and comprises on the ground-floor two good-sized shops and club entrance. On the first floor a reading-room, 29ft. 6in. by 22ft., a smoking room 22ft. by 16ft. 6in., which are so arranged that they may be thrown into one for political gatherings. A library 13ft. by 12ft., and a kitchen 17ft. 6in. by 11ft. 6in. On the second floor is an open-timbered roof billiard room, measuring 46ft. by 22ft. with two tables, a secretary's room, and the necessary cloak-rooms, lavatories, &c., the whole being approached by a spacious staircase with carved newels and balusters. The building is lighted throughout by electricity, and everything necessary has been done to render the appointments complete. The architect is Mr. Silvanus Trevail, C.C., of Truro, and the contractors are Messrs. Smith and Jacob, of St. Austell.

"RALSTON," BROMLEY, KENT.

THIS house has been lately finished, from the designs and under the superintendence of Mr. Evelyn Hellicar. The walls to about the height of the first floor are faced with red bricks; above the walls are hung with weather tiles of a good red colour, the same being used to cover the roof. The ground-floor accommodation will be seen by the plan. The first floor contains five bedrooms, dining-room, ballroom, &c. The work has been satisfactorily carried out by Mr. T. Crossley, of Bromley. The illustration is from a drawing shown in last year's Royal Academy.

HIGHER GRADE SCHOOLS, BATLEY.

THE perspective view is as submitted in the competition, and shows the boys' and girls' departments, although the girls' portion is being first erected. Also it has been arranged, since the competition, to have two additional class-rooms in each department, which are shown on the plan. The site is in one of the best positions, and from which there is an extensive view of the town and surrounding country, being on the slope or hill side. The lower or basement portion has been utilised for covered playgrounds, cooking class-rooms, heating-chambers, store-rooms, &c. The principal floor contains the vestibules, which are recessed, passages in each department distinct for the children and adult entrance to galleries, central hall, class-rooms, cloak-rooms, masters' and mistress's room. Internal staircases are provided for access to the covered playgrounds below. On the first floor are extensive galleries, from which access is had to class-rooms well lighted by side lights and ornamental dormer lights (not shown on the drawing). These are intended for music and drawing. The materials are of the very best description throughout without extensive elaboration. Outer walls of Yorkshire Delph stone. The covered playgrounds are also lined with stone. All dadoes, entrances, &c., are of American oak, and the cloak-rooms and lavatories have marble mosaic floors, majolica-tiled dadoes, strings, and bases 4ft. high. The lavatories, supporting walls, &c., are of cream glazed, solid earthenware. Especial and novel means have been designed for the heating and ventilation, so that a change of atmosphere may be obtained constantly at three different levels. The central hall is lighted from all sides; the ceilings of class-rooms being flat, and formed with steel joists imbedded in concrete, and covered with the Seyssel Mineral Asphalte. Doors are provided for access to these flats for cleaning windows or any other purpose that may arise. The total cost of both departments will be about £8,000, the first portion being well advanced, the corner-stone being laid about a month since by Mr. Geo. Hirst, chairman of the school board, on which occasion he was presented by a handsome silver trowel, and a mallet of African blackwood, elaborately turned and ornamented, the handiwork of the architect Mr. Harry B. Buckley, 8, East Parade, Leeds.

TECHNICAL SCHOOL, BATLEY.

THIS perspective view, as submitted in competition, shows the full scheme for the subjects to be taught, which are principally:—Chemistry, weaving and designing, dyeing, applied mechanics, mining engineering, building construction, health and sanitation, drawing, book-keeping, shorthand, modern languages, botany, &c. There are also rooms for the caretaker, head master's room, secretary's office, governor's room, closets, cloak-rooms, lavatories, w.c.'s, &c. The lecture-hall is 44ft. by 32ft. with gallery, for 100 students, and will have a completely fitted lecturer's table, with large sliding blackboards, diagram, screen, &c., also a preparation-room at the back 40ft. by 9ft. fitted with work bench, tables, &c., with large opening communicating with lecture-hall as usual, for the passing of apparatus, &c. Tenders will be invited in due course for the various works. Mr. H. B. Buckley, of 8, East Parade, Leeds, is the architect.

COMPETITIONS.

HARROGATE.—In a limited competition for new Wesleyan chapel and schools, Grove-road, Harrogate, the designs submitted by Messrs. Morley and Woodhouse, architects, of Bradford, have been adopted.

CHIPS.

The Leamington Town Council decided on Monday, by 16 votes to 10, to open the free reading-rooms and reference library from 2 to 6.30 on Sundays during the winter months.

In the case of Arthur Gerrard, of Liverpool-road, N., builder, the order of discharge in bankruptcy has been suspended by the registrar for four years, from July 23, 1891.

Messrs. Hovenden and Berridge, of Bishopsgate-street Without, E.C., surveyors, have dissolved partnership.

Just before evening service commenced in Holy Trinity Church, Harrow-green, Leyton, on Sunday, a fire broke out in the vestry, which was not subdued until the chancel had been gutted.

At the last meeting of the town council of Rochdale, it was agreed to expend £60,000 on extensions at the gasworks, including a new gasholder 150ft. in diameter and 100ft. high, and tank, retort house, retort stack, coal stores, and new approach road.

On Saturday afternoon the restored monument to Queen Eleanor in Lincoln Cathedral was unveiled by the High Sheriff of Lincolnshire, Mr. Joseph Ruston, at whose cost the restoration has been carried out. In character it is a marble altar monument, with a life-size effigy of brass and copper, fully gilt, and having on the edge an inscription in brass. Queen Eleanor died at Harby, near Lincoln, on November 28, 1290, and her body was taken to Lincoln and embalmed.

On the Feast of the Epiphany, in St. James's church, Exeter, was unveiled a reredos, in oak, divided into five panels, each surmounted by crocketed canopies, and numerous pinnacles springing therefrom. Over the central canopy is an octagonal, crocketed pinnacle, rising to the height of 16ft. The design was from the office of Messrs. Tait and Harvey, the Close, Exeter, and the carving was executed by Mr. E. T. Rogers, Sidwell-street, Exeter.

The Belfast Corporation have increased the salary of Mr. J. C. Bretland, M.Inst.C.E., city surveyor, to £800 per annum; that of Mr. Jas. Munce, Assoc.M.Inst.C.E., Mem.San.Inst., the assistant city surveyor, to £350 per annum; and that of Mr. G. A. Boyd, third assistant and inspector of buildings, to £150 per annum.

Mr. Edward Tidman, F.S.I., M.S.A., of Westminster, has just been appointed by the Technical Education Committee of the Essex County Council, lecturer on "Hygiene," and will shortly commence a course of lectures under their auspices.

The Langdale School, near Ambleside, is being warmed and ventilated by means of Shorland's patent Manchester stoves and exhaust roof ventilators, the same being supplied by Mr. E. H. Shorland, of Manchester.

M. Charles Louis Muller, an historical painter, died on Saturday at the age of 76. He studied under Gros and Leon Cogniet, and began exhibiting in 1837. His best-known work is the "Appel des Condamnés sous la Terreur," one of the largest pictures at the Luxembourg.

Three painters will be elected as Associates at the meeting of the Royal Academicians next week but one. The men most likely for election are said to be Stanhope Forbes, J. M. Swan, Albert Moore, or M. Lawson.

The county council have adopted plans by Mr. James Wilson, M.Inst.C.E., of Greenock, for the construction of a reservoir near Inellan.

In the competition for plans for the sewerage of Eastleigh (late Bishopstoke), Hants, the rural sanitary authority of South Stokeham have adopted the scheme submitted under the motto "Health and Economy." The estimated cost is between £9,000 and £10,000.

THE BUILDING NEWS DIRECTORY.

At the request of many advertisers it has been determined to commence with 1892 the weekly publication of a BUILDING NEWS DIRECTORY, to which Architects may easily refer when in search of the makers and vendors of Architectural and Building Specialities.

The large Advertiser is, of course, to a considerable extent independent of such help. By his judicious iteration of the merits of his specialities he effectually impresses the mind of the constant reader with his claims to attention. But he will find it to his interest to avail himself of our new help to publicity; and besides, there are hundreds of Manufacturers who never advertise in the ordinary way, or who, if they do so, only advertise one or a few of the articles they make and supply, and who yet essentially need *constantly to remind Architects of their existence.*

It may be urged that the Trade Directories and Price Books to a certain degree supply this want; but when it is remembered how limited, comparatively, is their circulation, and how swamped the comparatively few that are wanted are for the most part amongst hundreds of thousands of other names and addresses in which Architects have no interest, and among which they are seldom likely to search for what they require, it will be seen at once how advantageous in a Journal like THE BUILDING NEWS will be the introduction of the feature we contemplate.

We propose, therefore, to devote space *in the body of the paper, immediately preceding and following the Illustrations*, and not among advertisements, or on the inside pages of the outer sheet, to a carefully-arranged *Directory of Makers and Vendors of Architectural Specialities and Builders' Appliances*, under generic and suggestive heads which will naturally suggest themselves to Architects and others in search of Advertisers' addresses.

It will be evident, of course, that many Manufacturers will desire to have more than one entry in the list, because they supply more than one speciality. For the majority possibly one entry will be ample, and that we undertake to make and to repeat weekly in every edition for the sum of ONE POUND PER ANNUM, payable strictly in advance, and expiring on the 31st of December in each year. We cannot undertake to charge for parts of years in connection with this matter, so that entries should at once be forwarded, accompanied by the necessary subscription, that they may appear throughout the whole of 1892.

Clients who may desire to have more than one entry under different heads can do so to any extent they please by payment of *One Pound each* for every additional entry.

All payments *must be made in advance*, as this feature is not introduced as a remunerative one to the Publisher in itself, and the small charge made will barely defray expenses, and will not allow of booking. Name and address must not exceed one line.

The following firms have already entered their names. We cannot keep the list open long, so those desirous of being included should *send in their instructions at once*, as when the allotted space is full no more names will be received this year.

ARCHITECTURAL DESIGNERS—
Finsbury Tracing and Drawing Office, 113, Pavement, E.C.

ARCHITECTURAL PHOTOGRAPHERS—
Bedford, Lemere, and Co., 147, Strand, London, W.C.

ARCHITECTURAL TERRACOTTA—
Gibbs and Canning, Ltd., Tamworth.

ARTISTS IN STAINED GLASS—
Bourne Swaine, 61, King Edward-road, Birmingham.

ASPHALTE—
Avelines Sicilian Asphalte. Joseph Bernays, 96, Newgate-street, E.C.

BATH STONE—
Bath Stone Firms, Limited, Bath.

BLINDS—
Williams, G. A., and Son, Queen's-road, Bayswater.

BOOKS—
B. T. Batsford (Professional), 52, High Holborn, London, W.C.

BRICKS—
Accrington Brick and Tile Co. (Facing Bricks, Plastic and Semi-Plastic), 8, St. James-street, Accrington.
Gibbs and Canning, Ltd. (White Glazed), Tamworth.
Heather Brick and Terracotta Co , near Ashby-de-la-Zouch.

BRICK AND TILE MACHINERY—
Clayton Howlett Co., Woodfield-road, Harrow-road, W.

BUILDING & QUANTITY SURVEYORS—
Anderson, A. E., 36, Victoria-road, Northampton.
Flew, J., 11, Popplewell Chambers, Bradford.

BUILDING COMPOSITION—
White, W., Great Western Works, Abergavenny.

CASEMENTS AND WINDOWS—
Wragge, Geo. (Wrought Iron, Steel, and Gunmetal), Wardry Works, Chapel-street, Salford.

CEMENT MANUFACTURERS—
Rugby Portland Cement Co., Rugby.

CEILING DECORATIONS—
Heaton, J. Aldam, 26, Charlotte-street, Bedford-square, W.C.

CONCRETE—
Fambrini and Daniels, Excelsior Art Concrete Works, Lincoln.

CURTAIN BLINDS—
Heaton, J. Aldam, 26, Charlotte-street, Bedford-square, W.C.

DECORATORS—
Campbell, Smith, and Co., 75 and 78, Newman-street, London, W.
Lamb, J. (Specialist), 14, Marlbro'-road, Turnham Green.

DEVONSHIRE MARBLE—
Goad, J. and E., Phœnix Steam Marble Works, Plymouth. (See Brompton Oratory.)

ELECTRIC BELLS—
Gray, J. W., and Son, 113, Leadenhall-street, E.C.
Teale and Somers, Electricians, Leeds.

ELECTRIC LIGHT APPLIANCES—
Macfarlane, Walter, and Co , Saracen Foundry, Glasgow.

FANLIGHT OPENERS—
Osborn, David, High-street, Berkhamsted.

FIBROUS PLASTER—
Plastic Decoration and Papier Mache Co., ltd., 21, Wellington-street, Strand, London, W.C.

FIREPLACES—
Edwards, F., and Son, 54, Great Marlborough-street, W. (see advt. p. V.)
Teale Fireplace Co. (Teale and Somers), Leeds.

FIREPROOF FLOORS—
Lindsay Neal, W. H., and Co., 15, North Wharf, Paddington.
Phœnix Fireproof Flooring Co., 9, Oxford-street, Manchester.

FIREWOOD SPLITTING & BUNDLING MACHINERY—
Glover, M., and Co , Patentees and Saw Mill Engineers, Leeds.

FURNITURE—
Foster and Cooper, 63, Long-row West, Nottingham.

GASFITTERS—
Beaven and Sons, 38, Eastgate-street, Gloucester.

GRANITE MERCHANTS—
Webb, Percy C., 41, Eastcheap, London, E.C.

GRATES—
Edwards, F., and Son, 54, Great Marlborough-street, W. (see advt. p. V.)

HEATING APPARATUS—
Boyd, Jas , and Sons, Paisley.
Edwards, F , and Son, 54, Great Marlborough-street, W. (see advt. p. V.)
Grundy, J , 30, Duncan-terrace, City-road, London, N.
Teale Fireplace Co. (Teale and Somers), Leeds.

HORTICULTURAL BUILDINGS—
Boyd, Jas., and Sons, Paisley.
Gloucester Railway and Carriage and Wagon Co., Gloucester.
Macfarlane, Walter, and Co., Saracen Foundry, Glasgow.

HYDRAULIC RAMS—
Blake, John, Oxford-street Works, Accrington, Lancashire.

INTERIOR WOODWORK—
Foster and Cooper, 63, Long-row, Nottingham.

IRON AND STEEL GIRDERS—
Walmsley, B., 15, Mawdsley-street, Bolton.

JOINERY—
Brock, W., and Sons (and Woodwork of all Descriptions), Albert-road, Bristol.
Elliott, Saml., Albert Joinery Mills, Newbury.
Gloucester Railway and Carriage and Wagon Co., Gloucester.

JOINER'S OILSTONES—
Whittle Hill Hone Co., Charley Forest, near Loughboro'.

LIGHTNING CONDUCTORS—
Gray, J. W., and Son, 113, Leadenhall-street, E.C.
Morris & Gold, Wardrobe Chambers, Queen Victoria-st., E C.
Teale and Somers, Leeds.

LIFTS AND CRANES—
Waygood, R , and Co., Falmouth-road, Gt. Dover-street, S.E.

LIME BURNERS—
Rugby Portland Cement Co., Rugby.

LOCKS—
Colledge and Bridgen, Wolverhampton.

MARBLE WORKERS—
Emley and Sons, ltd., Marble Works, Newcastle-on-Tyne.
Patteson, J. and H., 36 and 38, Oxford-street, Manchester.

MOSAIC WORKERS—
Patteson, J. and H., 36 and 38, Oxford-street, Manchester.

PAINTS—
Torbay and Dart Paint Co , ltd., Dartmouth.

PAPERHANGINGS—
Land, J. and H., 93, Cannon-street, E.C.

PASSENGER LIFTS—
Waygood, R., and Co., Falmouth-road, Gt. Dover-street, S.E.

PAVEMENT ROLLERS—
Gilchrist, Alex., 25, Eglinton-street, Glasgow.

PERSPECTIVES—
Finsbury Tracing and Drawing Office, 113, Pavement, E.C.

PHOTO-LITHOGRAPHY—
Whiteman and Bass, 236, High Holborn, W.C.

PIPES—
Gibbs and Canning, Ltd. (Glazed Stoneware), Tamworth.

PLUMBERS—
Beaven and Sons (Sanitary, Hot Water, and General), 38, Eastgate-street, Gloucester.

QUANTITY LITHOGRAPHERS—
Pettitt, T., and Co , 22 and 23, Frith-street, and 50, Old Compton-street, London, W.

RAIN WATER SEPARATORS—
Roberts, C. G., Haslemere, Surrey.

SANITARY APPLIANCES—
Gibbs and Canning, Ltd., Tamworth.
Macfarlane, Walter, and Co , Saracen Foundry, Glasgow.

SANITARY ENGINEERS—
Sanitary and Domestic Engineering Co., Principal: Irwin C. Wallas, The Sanitary Works, Kilburn, N.W.

SCULPTORS—
Read, Herbert (and Church Fitting Maker), St. Sidwell's Art Works, Exeter.

SINKS—
Gibbs and Canning, Ltd. (Cane-colour Glazed), Tamworth.

SPEAKING TUBES—
Gray, J. W., and Son, 113, Leadenhall-street, E.C.

SPECIAL ENGINEERING BRICKS—
Accrington Brick and Tile Co., 8, St. James-street, Accrington.

STAINED-GLASS—
Adam, Stephen, and Co. (formerly Adam and Small), Glasgo
Camm, T. W., High-street, Smethwick, Birmingham.
Worrall, W , and Co., 75, Endell-street, London, W.C.

STABLE FITTINGS—
Macfarlane, Walter, and Co., Saracen Foundry, Glasgow.

STEEPLE JACKS—
Morris & Gold, Wardrobe Chambers, Queen Victoria-st., E.C.

STONE—
Fielding, J. (Alton Stone, Red, White, and Mottled), Alton Staffordshire.

STONE WORKING MACHINERY—
Powis Bale, M., and Co., Appold-street, London, E.C.

STOVES—
Edwards, F., and Son, 54, Great Marlborough-street, W (see advt. p. V.)
Teale Fireplace Co. (Teale and Somers), Leeds.

TELEPHONES—
Gray, J. W., and Son, 113, Leadenhall-street, E.C.
Teale and Somers, Leeds.

TERRA-COTTA—
Accrington Brick and Tile Co. (and Ornamental Brickwork) 8, St. James-street, Accrington.
Pulham, J., and Son, 50, Finsbury-square, and Broxbourne, Herts.
Thompson, Jabez, Northwich, Cheshire.

TILES—
Carter and Co. (Encaustic, Mosaic, and Faience), Poole, Dorset.

TRACINGS—
Finsbury Drawing [and Photo-Copying] Office, 113, Pavement, E.C.
Marshfield and Co. (Photo-copied), 5, Little Queen-street, Westminster, S.W.

VENTILATION—
Acme Ventilating and Heating Co., Liverpool and London.
Buchan, W. P., R.P., S.E., 21, Renfrew-street, Glasgow.
Gibbs, John, and Son, 27, South John-street, Liverpool.
Howorth, Jas , and Co., Victoria Works, Farnworth, Bolton.
Teale Fireplace Co. (Teale and Somers), Leeds.

WATER CLOSETS—
Bostel and Son, 73, Ebury-street, S.W.

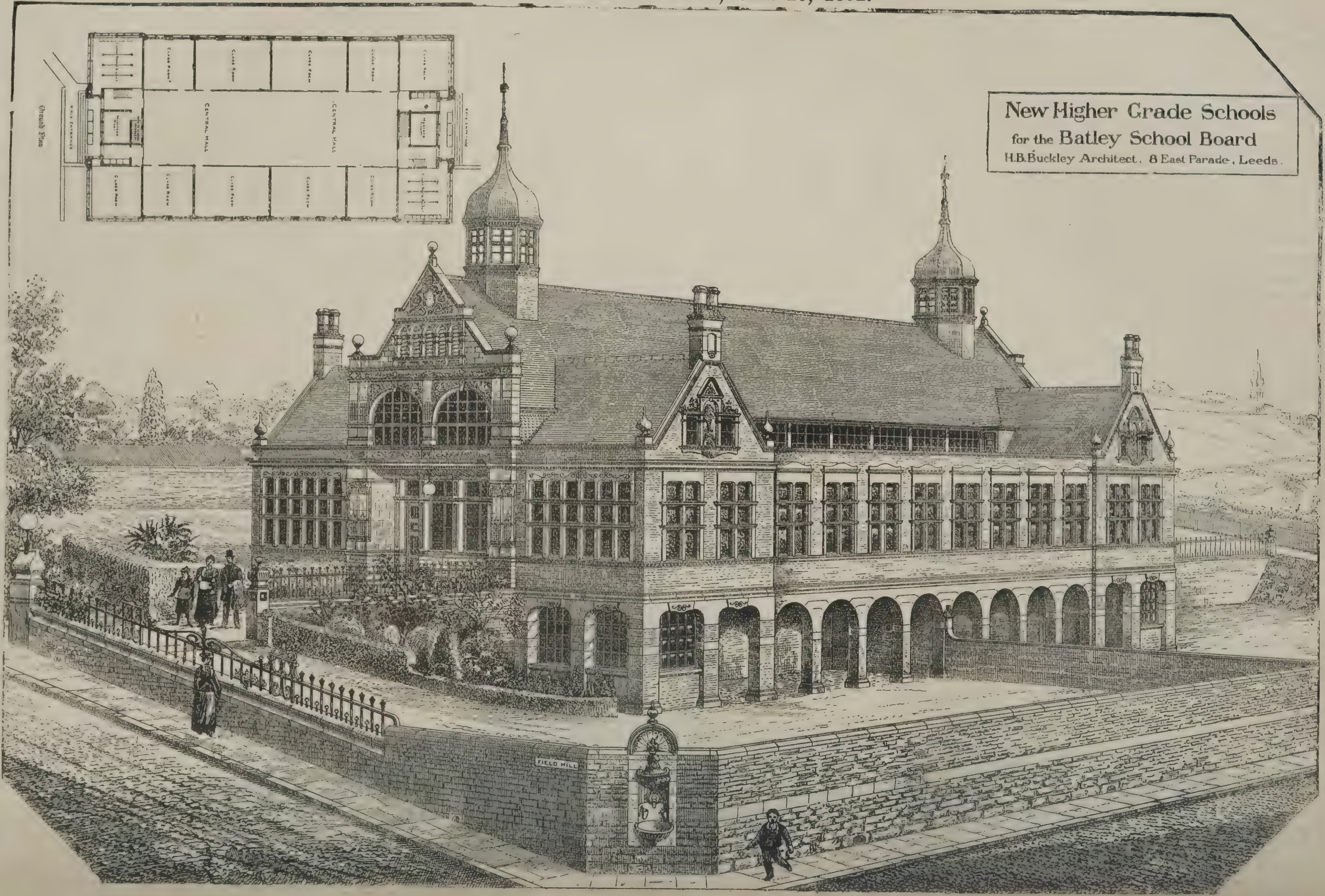
WOOD BLOCK FLOORING—
Gregory, T., and Co., Station Works, Clapham Junction, S.W
Lowe, Roger L., Worsley-road, Farnworth, Bolton.

WOOD CHIMNEY PIECES—
Foster and Cooper, 63, Long-row, Nottingham.

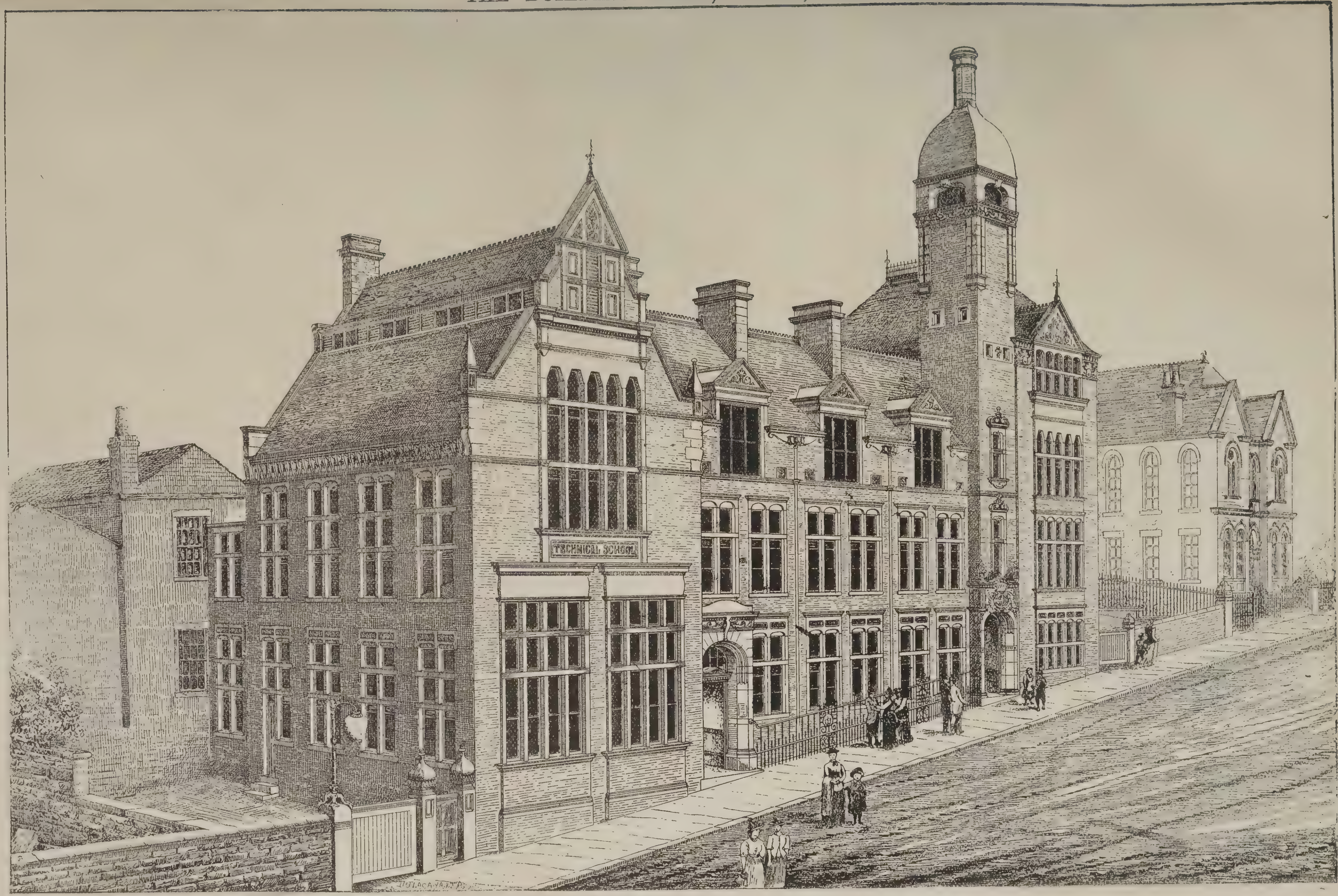
WOOD-WORKING MACHINERY—
Butler, Sydney, Park Works, Langley-lane, Vauxhall, S.W
Reynolds, F. W , and Co., Acorn Works, Edward-street Blackfriars-road, S.E.

WROUGHT-IRON GATES, GRILLES, &c.—
Teale and Somers, Leeds.
Worrall (Specialist), Byrom-street, Liverpool.

ZINC WORKERS—
Thomerson, Chas., 263 and 265, Hackney-road, N.E.



New Higher Grade Schools
for the Batley School Board
H.B. Buckley Architect. 8 East Parade, Leeds.



TECHNICAL SCHOOL, BATLEY.—Mr. H. B. BUCKLEY, *Architect.*

WAYSIDE NOTES.

THE Benedictine Abbey at Fécamp was, prior to the great fire on Tuesday last, one of the most interesting and architecturally beautiful of the ancient buildings of France. Such a reflection should cause regret to be felt for the destructive conflagration, even if there were no other point of interest; but what seems more of a blow to the Englishman was the "immense destruction of liqueur," which was announced in large type in the press. To read between these lines we see pathetic lamentation in the public heart—or stomach—at the waste of good liqueur, just, too, in mid-winter, when the mere thought of the generous fluid brings upon one a genial, after-dinner mood. What matters the destruction of the Benedictine architecture when the Benedictine liqueur has been burnt in innumerable hogsheads? The edifice "fell in with a frightful crash," which is deplorable; but how much more heart-rending the sacrifice of the bottles of liqueur stored up in the building, and audibly "exploding amid the ruins, flames of fire shooting up from the blazing alcohol." It may be said, for the consolation of lovers of "Benedictine," that, unlike the destruction of the beautiful architecture, the loss of the liqueur is reparable by dint of strenuous endeavours of the good monks of the Abbey at Fécamp, who may "make up for lost time" whenever they get a temporary roof over their heads. The epicure in liqueurs may, therefore, hope again, while the lover of old French architecture will hang his head in despair, and feel that all things temporal indeed pass away.

One generally imagines that, so far from requiring any outbreak of fire to destroy our English cathedrals, they are all pretty well destroyed already by so-called restorations, and as ancient buildings are in a *non est* state. It seems, however, that there yet remain portions of these old buildings in a goodly unrestored condition; for an architectural report made by request to the Dean and Chapter of Gloucester shows their cathedral to be in want of numerous works of reparation, and, indeed, to be in some portions in an absolutely ruinous condition. Judging from the condensed paragraphs alluding to this report, it appears that there has been some considerable neglect of even these timely repairs that all buildings require if they are not to run into premature ruin and decay. In 1886, Sir Gilbert Scott reported on the state of the cathedral, and it is stated that the recommendations therein made have been left wholly untouched, which I don't say is altogether to be regretted; and, reflecting upon the cast-iron state of the exterior of many of our once-magnificent cathedrals, it may be even said to be somewhat of a blessing to succeeding generations. Nevertheless, there can be no excuse for the neglect of *repairs*. It is really remarkable how quickly a building will fall into a quite woe-begone condition so soon as regular reparation is neglected. A shut-up and neglected house quickly shows signs of the neglect, although, strangely enough, if occupied, even if repair is neglected, it does not seem to deteriorate so rapidly. A cathedral wants repairing just as much as a warehouse or a pair of boots, and if *repairs* were not so often neglected we should not require those wholesale "restorations" which have sapped seven-eighths—without exaggeration—of the beauty of effect of our old English churches and cathedrals.

I have looked in at the rooms of the Society of Antiquaries, and had a most interesting and instructive time inspecting the fragments, relics, and models, of, discovered at, and respecting, the Roman city at Silchester. Maps, plans, and models give one a very good idea of the general aspect of the Silchester excavations. The various finds are most extensive, and much of the pottery and Samian ware of great beauty of design. What remains of an architectural character that have been discovered and are on view, tend more than ever to strengthen my old belief that true Classical architecture was something wholly different to what we—with our heads full of Palladio and Vitruvius, and semi-diameters, and modules, and discoveries of mathematical refinements in old buildings that were never intended by the old designers—are apt to imagine. The more we discover of ancient Classical architecture, the more we see that it was left for wonder-seeking and mathematico-statistical minds to crystallise proportions, and distil the "Orders" out of the remains that have come down to us at this day. Every fresh find, of old Roman architecture in particular, gives support to the very sensible theory that there was at least as much variety of composition and detail in that style as in any that came before or after it. There are in the exhibition at Burlington House two or three architectural fragments that strikingly illustrate my meaning. There are bases and arch-imposts wholly unlike the supposed conventional Classical types, and yet possessing great beauty. A friend has suggested that perhaps this work may be regarded as Romano-British rather than Roman; but I hardly think that on this score we can explain the variety of design in the details. All Roman work in Britain may be regarded as *Romano-British* in a sense.

It has always been my belief that so long as we have a grasp of the *first principles* of design we may vary all architectural forms, and yet by re-adjustment of harmonious proportions, always produce a beautiful feature. Thus, if one could properly understand the exact principles that cause, say, *an Attic base* to appear beautiful to our, and to educated, eyes, we could surely vary its proportions infinitely and always produce a pleasing effect. And it would seem to me that it was in this kind of variation that the Classical architects obtained their novelty of design, whereas we mostly in this day seek for novel effect rather by fresh combination of hackneyed forms than by varying every detail. It must be admitted that we have plenty of variation of detail, nowadays, *of its kind;* but this is generally that pernicious originality for the sake of originality which results in an architectural fiasco. A few *master-architects* among us doubtless have this grasp of their work that enables them, almost unfailingly, to produce pleasing forms; but in the 99 this faculty is wholly wanting. I submit, however, to an extent, it may be cultivated by patient study of principle.

An instrument to detect invisible flaws in metal is calculated to prove of great use in engineering and architectural works. I read of one recently invented by a French officer—Captain de Place. Small flaws are not to be detected by blows from a hammer, and consequently an instrument to effect the purpose would prevent the overlooking of slight, though, at times, no less dangerous defects in iron or steel. By a peculiar combination of a microphone and telephone, certain sounds are heard when applied to the metal to be examined, these sounds altering when a cavity or flaw exists. The instrument seems to be practically a minute reproduction of the principle of striking with a hammer. A pin in the instrument hits the metal, and the inappreciable sound it makes is made audible by the combination of microphone and telephone. Practice is required to enable the hearer to distinguish the sounds pertaining to solid and defective metal, but the faculty of perception is said to be easily required. Trials with the instrument have been made at Ermont, at the works of the Northern of France Railway Company, to find defects in rails, and the trials are reported to have been satisfacfory, defects in the metal being found where indicated by the instrument.

The London Bridge accident seems to be enveloped in some mystery, nothing at all explanatory of the cause of the unfortunate occurrence having come out at the preliminary coroner's inquest. It is to be hoped that when Major-General Hutchinson has completed his inquiries he will be able to give a complete and satisfactory explanation of the affair, and thus possibly help to avoid a third accident at this point. For a train travelling so slowly—only eight or nine miles an hour, according to the statement of Livett, the driver—the wreck was astonishing, as I saw for myself when passing the scene some hours after the accident. The carriage had the appearance of a match-box when trodden on, and seemed mixed up with the signal post, the latter apparently growing out of the ruins. It should be a point in the inquiry to ascertain how much, if anything, the bogie carriage behind, with its twelve wheels and great length of some 57ft., had to do with the cause. Off the line, bogie trucks must certainly run erratically, and in this case might have tended to overthrow the carriage preceding, and causing it to become "jammed" up in such an extraordinary way against the sharp angle of the two iron parapets at the junction. The S.E.R. seem demoralised somewhat by this accident, and ever since trains have been delayed more or less. This certainly is better than another accident; but it makes me think that, what with delays with fogs and delays without fog, I may as well hire a carriage of the company, and fit it up as a travelling office, whilst I have to spend so much time journeying backwards and forwards on the line.

GOTH.

GLOUCESTER CATHEDRAL RESTORATION.

THE Dean and Chapter of Gloucester have just issued an appeal for aid in maintaining and restoring the cathedral, and have already received promises amounting to over £2,000. They state that there is, for Gloucester Cathedral, no "fabric fund." In the five years ending Michaelmas, 1879, the dean and chapter spent out of their revenues £5,167 on the fabric; in the five years ending Michaelmas, 1890, £1,125 only; while the capitular incomes were reduced by over 50 per cent. through agricultural depression. The report by their architect, Mr. F. S. Waller, of Gloucester, states that many parts of the building may be said to be in an absolutely ruinous state—a strong assertion, it is true, and one that may appear almost incredible when taking into consideration the very large sums known to have been expended on the cathedral during the last thirty years. This, however, admits of easy explanation when we see that much work which the late Sir Gilbert Scott declared to be necessary in 1866 has been left entirely untouched, remaining in the same condition, especially as regards the roofs and parapets, as when he inspected the cathedral, excepting that the lapse of time has necessarily created still greater dilapidations. Large sums have been expended on the choir and on internal fittings, and on windows for the reception of painted glass, and the external repairs have also been very considerable, including the north and south transepts, the south porch, the nave and choir, the pinnacles and parapets of the tower, and some other portions of the building; but many more remain to be done. The most pressing of these works include the walls, windows, parapets, pinnacles, and roofs of the north and south aisles of the choir; the roof and gutters of the south aisle of the nave, and the condition of the great tower also, which, excepting the pinnacles, parapets, and chief cornice (which are in perfect condition), sadly requires pointing and general repair. Indeed, pointing alone would be the means of staying further decay, and of preserving the stonework for many years to come.

As regards the probable cost of the most pressing of these dilapidations, Mr. Waller estimates that £2,200 will be sufficient to complete all that will be required for the walls, parapets, and roofs of the choir aisles and chapels, and the worst parts of the roof of the south aisle of the nave. For the pointing and repair of the stonework of the tower, probably not less than from £1,000 to £1,500 will be required. The other roofs spoken of by Sir Gilbert Scott were estimated by him to cost upwards of £2,250. It will therefore be seen that between £5,000 and £6,000 is now required to simply repair and reinstate where necessary the most important of dilapidations, and a further £1,200 would be required for the reparation of the Lady Chapel.

St. Andrew's, Helpringham, one of the best of the Fen churches, was reopened by the Bishop of Lincoln on Tuesday week, after undergoing restoration. The restoration was brought about in consequence of the collapse of the roof of the nave last year. Much of the seating—which was new in 1873—was crushed, necessitating extensive repairs. The principal features of the present restoration are the new roofs to both chancel and nave. The work has been carried out by Messrs. Close, of Lincoln, at a cost of £1,100.

All the services at Norwich Cathedral are to be held in the nave, owing to the restoration of the three great columns which, with the fourth recently repaired, support the tower. These three columns have been in a state of dilapidation for more than half a century. The stone to be used in the work is already cut, a large staff of masons having been busily engaged under the direction of the cathedral architect. The restoration of the Ethelbert Gate, at the entrance from Tombland to the Upper Close, is now complete.

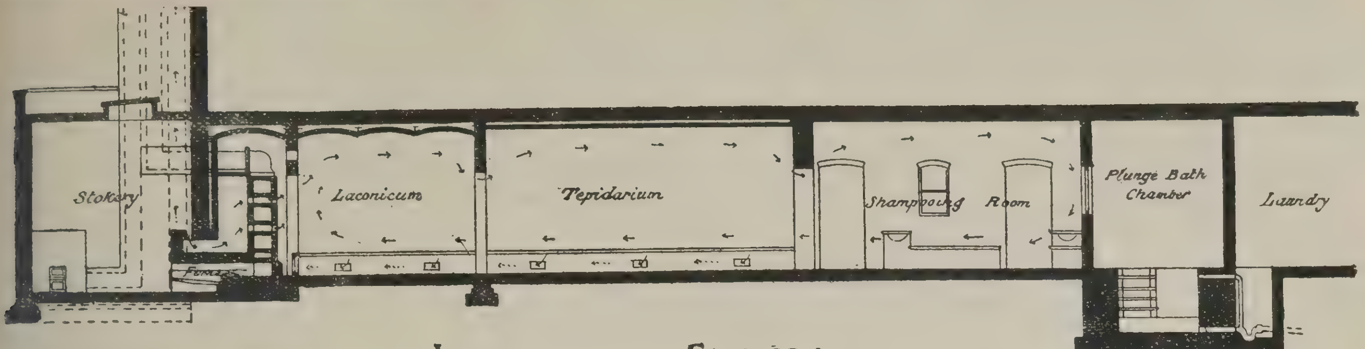
THE SOCIETY OF ARCHITECTS.

THE fourth ordinary meeting of the Society of Architects for the present session was held at St. James's Hall, Piccadilly, W., on Tuesday evening, Mr. E. J. Hamilton, vice-president, in the chair. The following gentlemen were elected as members:—Charles Granville Baker, 5, Bloomsbury-square, W.C.; William Radford Bryden, of Buxton; and Charles Edward Davenport, A.M.Inst.C.E., Heath Bank, Nantwich. The chairman proposed a vote of thanks to Professor Henry Adams, member of council, for the gift to the society of a large photograph of the Belfry of Bruges, and of small prints of the same to members issued in the last number of the *Proceedings.* This was carried unanimously.

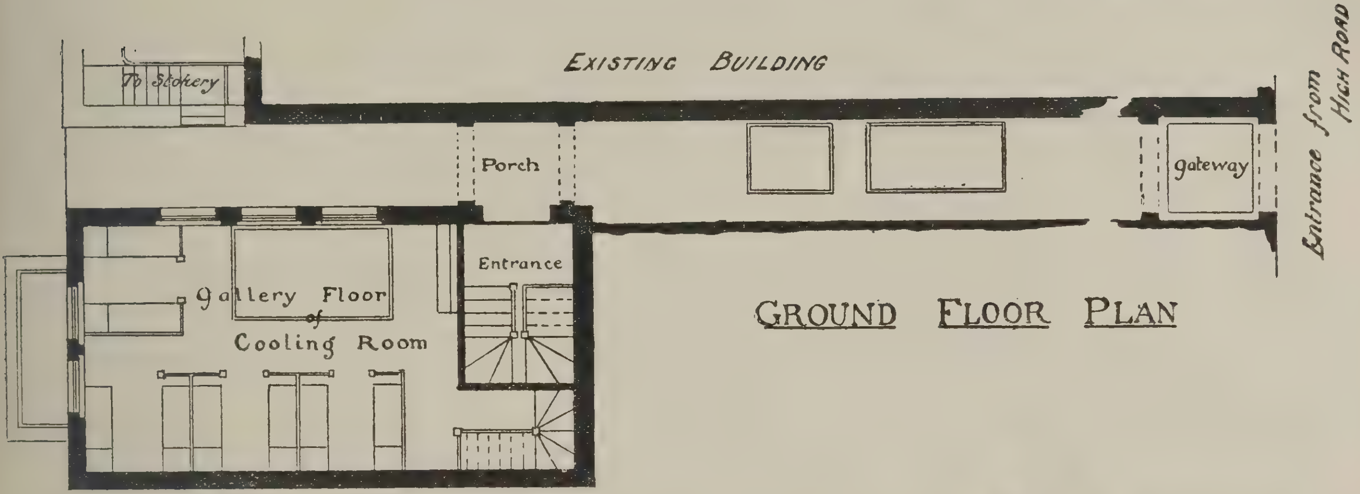
A paper on

BATHS AND BATH-HOUSES

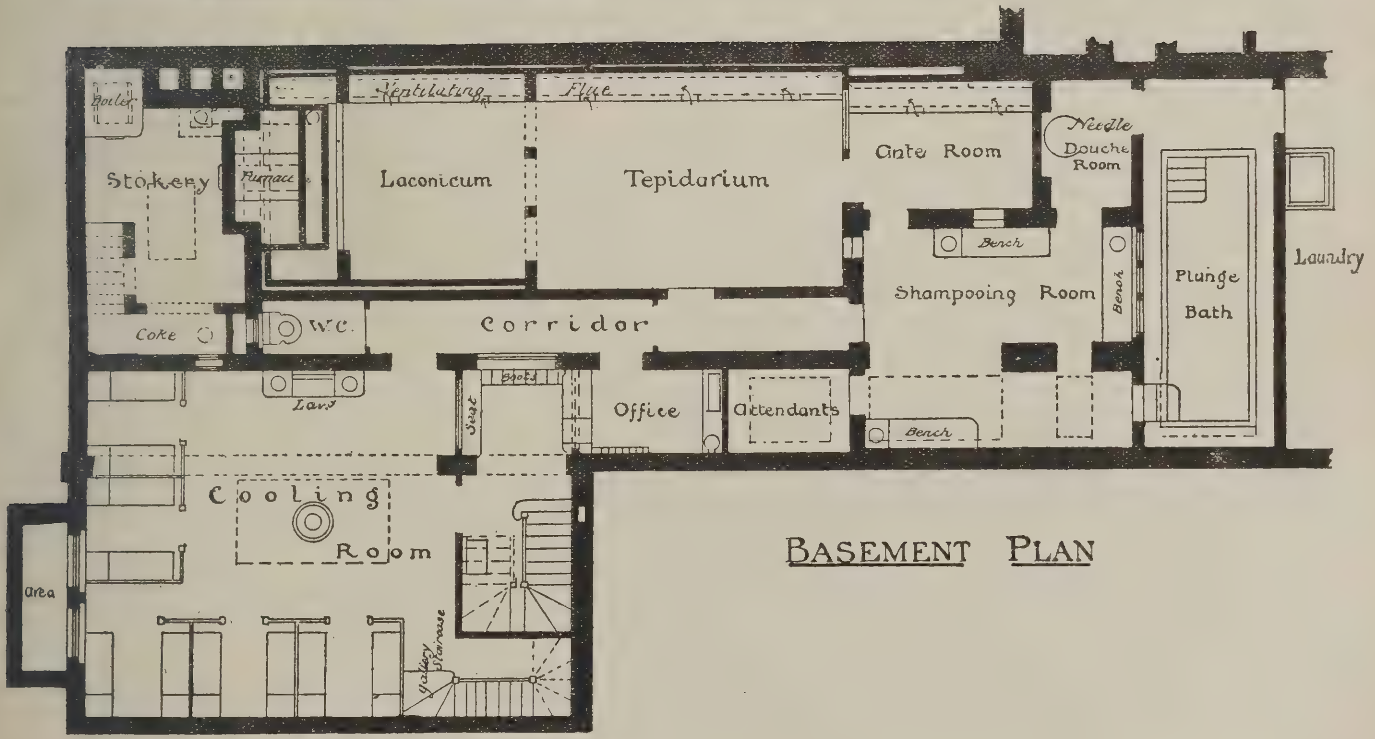
was read by Mr. R. OWEN ALLSOP, who exhibited on a screen numerous drawings, plans, and sections illustrating his own designs and those by Messrs. Spalding and Cross and Mr. T. W. Cutler. He remarked that a neglect of the study of the requirements of the day with respect to baths and bathing would ultimately throw much of the work of designing and arranging such institutions into other hands. Such a consummation would be regrettable, not merely on selfish, professional grounds, but because it is only when one's mind grasps a scheme in its entirety that complete unity is attained, with economy of construction and administration as its natural result. In a bath-house that has been the result of a division of labour between two persons—the one devising and supervising the shell of the building, and the other contriving and supplying every kind of appliance and fitting required, and arranging every detail of heating and ventilation, and neither party comprehending the ways and means of the other—in such a system of bath-building there can never be that true economy and convenience of plan and working which results when one mind grapples with the whole problem until every detail is mastered, and every part is brought into harmonious relation to the whole. It is possible for an unskilled planner to produce a fairly convenient church, a passable town hall, or a house, whose occupier shall not regard the evident discrepancies of plan as anything more than another of those ills to which the flesh is heir. It becomes, however, a matter of impossibility for anyone to plan a convenient bathing establishment, of any kind whatever, unless he has first mastered every detail of the several baths to be provided, their properties, modes of preparation, methods of administration, their heating, fitting, and accessory appliances. For, over and above the attributes of ordinary buildings, there is something in a bath-house to mark it as quite of its own kind—eminently *sui generis.* It has not merely to be built and occupied like the ordinary run of buildings. When all is complete it has to be found in working order. Unless the plan be such as will be suited to the convenience of the bathers, and adapted to the practical ends in view, it must be regarded as a complete failure; and unless the hundred and one minor details of an important bathing establishment have been foreseen and predetermined, the bath-house is a non-success. The machine—so to call it—does not work; or, if it does succeed in fulfilling its allotted task, it is at such cost as to prevent for all time the possibility of its proving a paying concern. Such being the disastrous result of bath-building without regard to ultimate working and without proper preliminary study of the subject, what are the objects to which an architect, intrusted with commissions for bath-building, should direct his study and research? Firstly, I should say, to the medical aspect of the subject. In any consideration of baths and bathing, it becomes of importance to distinguish between the merely cleansing and the curative or medico-therapeutic bath. Without a just perception of the value of each bath, whether cleansing or curative, it will be impossible to intelligently plan a bath-house of any kind. In the planning of ordinary public bathing establishments lack of medical knowledge may be of little importance; but where the architect has to deal with the Turkish bath, the bath-house of the hydropathic establishment, and public medical baths, such as those of health resorts and inland watering-places, a knowledge of baths as hygienic, remedial, and curative agents is indispensable. Let the bath architect then study the medical aspect of the subject, and acquire a correct knowledge of the therapeutic attributes of baths and the principles of scientific bathing, for which, it may be said, the term "hydropathy" is only another name. The solid fruits of such a study will be evident in the convenient disposition of the bath-rooms, the intelligent placing of the fittings, and the consequent saving of time and temper of the bath attendants. All baths may be classed under one of two heads—those having for their aim mere cleanliness of person, and those which are intended to effect some medical cure in the bather. Thus the ordinary warm-water bath is wholly referable to the former class, while the latter embraces all medical baths and hydropathic remedies, together with the miscellaneous "cures" of the different bathing resorts. A broader, and perhaps still better, distinction would be to distinguish between baths for the preservation of health and those for the cure of disease. Taking this system of classification we may include under the health-preserving bath all ordinary warm and cold baths, either in fresh or sea water, swimming-baths, shower-baths, and the Turkish bath. Under the heading of the cure of disease we shall find all medical and hydropathic paths such as douche baths, the Russian bath, electric, massage, and medicated baths, and the thermal cures with mineral waters and naturally-heated spring waters, besides all the miscellaneous baths and treatments devised by an ingenuity more or less misapplied. Baths, again, may be classified according to their respective qualities. Thus we may talk of tonic baths, sudorific baths, stimulating and sedative baths. The effects of baths upon the bather depend upon three things: firstly, the temperature of the water; secondly, the mode of application; and, thirdly, the duration of the application. A bath at a given temperature for, say, three minutes may be tonic; the same continued for fifteen minutes may be sedative. As a general rule cold baths are tonic, and hot baths sedative. Sudorific baths are hot air and vapour baths, and generally require a concluding cold, tonic bath. Hot water baths, if of considerable temperature, are also in many constitutions conductive to perspiration. They too, therefore, require a tonic application of cold water; and here we see the result of bath-building without regard to therapeutic effects; for not one out of a hundred public warm slipper baths is fitted with a shower or douche attachment, such as enables the bather to give tone to the skin after the enervating and relaxing effects of the hot water. Were there any true science in the arrangement of our public bath-houses, there would be, without exception, to every slipper bath a cold shower or douche. "I cannot think," said a friend, "why people staying at hydropathic establishments should have to do such a lot of washing. They surely cannot require so much cleansing that they must needs bath three times a day." Here we have an example of the popular delusion that all baths must necessarily be for the sake of cleanliness of person. To rid oneself of this notion is a great thing, and the first thing necessary to all who have to do with planning and arranging bath-houses. Public baths, as a present-day feature in the social arrangements of this country, are not worthy of the age. Contrasted with the institutions of ancient times they are insignificant, both in size, scope, and number. When we reflect that in old Rome at one time there were nearly nine hundred public baths, and that in our mammoth city, with its population of five millions of souls, we find only some twenty or thirty public bathing establishments, and these of a type wholly inferior to the palatial edifices of the days of the Roman Empire, we appreciate to the full the point and significance of the term, "the great unwashed." But although the present position of the question of public baths may leave so much to be desired, we cannot look round without noticing the progress made since the days preceding the passing of the Baths and Washhouses Act. That eminently humane and judicious measure has secured benefits to the poorer section of the inhabitants of large towns that have been appreciated to the full. A few moments' study of statistics showing the steady increase in the number of bathers—and washers—will show this. It is satisfactory and gratifying to find that the public baths movement has yet life and spirit, and that there is still enterprise and enthusiasm in our London vestries for the formation of schemes for bath-building. It is to be regretted that often the good intentions of the Metropolitan vestries to put the Act into operation have been frustrated by the difficulty—often the impossibility—of obtaining a site suitable for the erection of the requisite buildings. Many schemes that would prove boons to the poor in densely populated districts have thus been delayed, and some parishes, which have adopted the Act years ago, to this day remain unable to carry their intentions into practical effect. On the other hand, there are parishes in London where the neglect of the opportunities afforded by the Baths and Washhouses Act is most culpable. Of the parishes comprising London, not more than one-third—certainly not more than two fifths—have adopted the Act. It would be well, perhaps, if the Act, instead of being left to the tender mercies of vestrymen and others, were made compulsory—as compulsory as the Education Acts. Public baths and washhouses should be planned with strict regard to economy in every way that will give the institution a fair chance, not only of paying expenses, but of showing such a profit on the year's work that the balance may be placed towards the refunding of the original loans borrowed for the purposes of their erection. Many institutions have been erected, and—either on account of extravagant first cost, or by reason of their uneconomical working arrangements—are for ever prevented from paying their way. Hence they become a continual burden on the rates. And there is no valid reason why such establishments should not pay. Despite the low charges fixed by the Act for the various baths and for the use of the laundries, there are to be found existing buildings where a fair profit is shown at the end of the year's business. Such desirable results will be generally secured when those who are intrusted with the design of these establishments have given full study to every detail of arrangement and fitting required—when architects themselves ascertain and adopt the most effectual and economical means of heating, and water and steam supply, &c. We may go into public bathing establishments and see boilers of out-of-date, wasteful construction, burning twice as much fuel as necessary to effect the given purpose; engines large enough to drive twelve times the machinery with which they have to deal, their waste steam—truly such—being turned to no useful account, and wasteful irradiation from a quarter of a mile of unpacked pipings. Furthermore, bath-valves taking twice as much of the attendant's time to manipulate as they should do; and wastes emptying at a dribble while bathers are waiting in the ante-rooms for the baths they cannot get. What chance have such establishments of becoming paying concerns? In baths erected as commercial speculations this waste, through uneconomical arrangements, does not so frequently occur, for in such institutions there is the proprietor keenly alive to the various details and fittings. But in the public establishment it is apparently no one's business to see that economy is duly observed. The poor ratepayer suffers in the end, and has to "pay the piper" in the shape of lengthy lists of deficits in the yearly accounts of the establishments, or at least the interest on loans raised for their erection. Next, then, to an acquaintance with the medical aspect of baths, it would seem desirable that the bath architect should pay far more than ordinary attention to working details peculiar to the bath-house, and especially to the problems in the engineering department, not merely putting himself in the hands of this or that firm of manufacturers, but studying for himself the subject of steam and water, both for supply and heating purposes; the theory of bath heating; the various methods of maintaining the temperature of swimming-baths; the construction of furnaces and boilers, of water super-heaters, of pumps even. Learn to distinguish between the true and false in bathing appliances; between the useful and the useless in valves, cocks, and wastes. Be above, not under, the hot-water fitter: know when every pipe is in its right place, and of the proper diameter. Master the whole of the water supply from the main inlet-valve to the tanks and cisterns, and from the tanks and cisterns to the most insignificant draw-off tap. Be not deceived: a range of half a dozen long Lancashire boilers and an engine on the scale of a broad-gauge locomotive are a trifle out of proportion to the work of warming a couple of swimming-baths, heating a few washing-tubs, and driving three or four centrifugal wringing-machines. Such matters as these are "of the essence of" the



LONGITUDINAL SECTION



GROUND FLOOR PLAN



BASEMENT PLAN

success of public bathing establishments where the work must be accomplished at the smallest possible outlay. I therefore put it to the architectural profession—on the grounds before stated—whether, in such case, the study of the practical matters of baths and bathing are not of prime importance, and mere architectural questions of secondary consideration? For my own part, I would have the bath architect lay down, for the time being, the velvet coat of the dilettante, and, donning the blue blouse of the engineering mechanic, look the problem, "Architecture: a profession or an art?" squarely in the face, and find the solution that to him it shall be for the nonce an exact science. For attention to mere architectural display, where plan, arrangement, and equipment are a *sine quâ non*, is vanity and worse. The generally accepted arrangements of the public bath and washhouse have altered to a wonderfully small extent since the taking over of the Goulston-street baths at Whitechapel and the erection of the pioneer establishment in Marylebone. Practically the only change in the department of warm slipper-baths is the substitution in modern buildings of porcelain baths for the original unpleasant-looking zinc troughs, and the improvement of valves and wastes. The same white deal tops of exactly the same cut, the same deal seat, and the same cold slate slab divisions and slate doors, with the same prison-like effect about the passages, and all of the same size, and scantling to the sixteenth of an inch, showing conclusively either that unimprovable perfection has been attained, or that, ever since the inauguation of the Baths and Washhouses Act, architects have been copying one another with a touching fidelity, and exhibiting brotherly love of a degree of warmth not generally supposed to exist. In the swimming-bath department change, if not definite progress, is to be noted. The old Cornish boilers, through which at spasmodic intervals circulated the waters of the "swim"—as the bath attendants have it—are giving place to steam-heating, with beneficial results to the swimmer, the so-called "patchiness" of badly-warmed baths being reduced to a minimum by well-conceived systems of circulation. The bath itself is growing larger, every year something has been attempted in this way; and if this increase in length and water area is a true index of an increasing number of bathers, and not merely a bait to attract swimming clubs, it is a development to be welcomed. Increase of depth may also be noticed, and will delight the player at the fashionable game of "water polo," who, had he his way, would have no part of any London swimming-bath less than five feet deep. A point demanding attention and needing reform and improvement in public baths is the absence of any sudorific appliances. The Act provides for vapour baths, and some of the existing establishments possess these features in a more or less imperfect and incomplete form; in others we look in vain for even the antiquated vapour-box. On this point I make bold to suggest that the Baths and Washhouses Act is defective; and I believe that future years will see an amendment of the Act, permitting the incorporation of the hot-air bath in the public bathing establishments. The time is nearly ripe for this innovation, and the cause only requires a champion in Parliament. If the hot-air bath should be incorporated in such buildings, the innovation would do much towards maintaining a regular attendance of bathers all the year round, and prevent that lamentable falling off in the number of bathers that occurs every winter at all the establishments. Wherever the Turkish bath has been introduced into public bath-houses it has proved an unqualified success. If the Act could be amended, so as to do away with the vapour bath, which—contrasted with the hot-air bath—is worse than useless, and the Turkish bath substituted at, say, a maximum charge of from sixpence to one shilling, it would be well. After personal experiments and research, I am inclined to the belief that there is very little in the vapour baths as a sudorific appliance. Such baths act rather as depressants, and, indeed, are to the hot-air bath what the climate of a misty marsh is to the ozone-laden air of the dry breezy downs. Except in the hands of a physician, little faith must be placed in the vapour, or Russian bath, and it seems to me to be altogether out of place in the schedules of the Baths and Washhouses Act, and in the apartments of the establishments that this Act calls into existence. One other point in public baths I would mark for improvement, and that is the introduction of a cold shower bath over every warm bath—over the cheapest bath—and at no increased charge. At present we find in the slipper-bath department of public baths that one or two of the bath-rooms are fitted with the old-fashioned shower bath. Now, as before said, after a hot bath—unless the bather can step from the bath to his bed—the relaxed condition of the skin and perspiratory glands absolutely demand the application twice of cold water in order that the cuticle may be strengthened and hardened against cold. Every warm bath, therefore, should have its cold shower. The arrangement need not be anything but the simplest, and a system of waste-prevention would do away with any reckless use of water. The warm bath at present afforded by the Act, in public bath-houses, is a half measure. The whole would be complete if a cold shower were appended. If a thing is to be done, let it be done well; if the Legislature provides a cheap bath, let it, cheap or dear, be at least complete in itself. And here I am reminded of a letter I received from a "Working Man," who recently wrote to me as follows:—"I think it is of great importance if only every family could have the benefit of such arrangements (namely, Turkish baths in private houses), but I am inclined to think barely one family in a thousand could have the use of baths in their own homes, and to go from home takes time and money, and the 999 look three times at one penny when they spend it. I have thought someone might take more interest in general for the working men's benefit, and a quicker arrangement might be invented, so that in ten minutes a working man might walk into baths or a wash-house, drop a penny into a slot that would turn on a rain bath for the length of five minutes, take his soap and towel and have a good rub down in the five minutes, dress, and go on his way again." Now, at first sight, there is a spice of the humorous in the idea of a man dropping a penny into an automatic machine and receiving a shower bath for, and in consideration of, the said coin. So it struck me at first, but I have come to the conclusion that there is "something in it." A great item in the cost of baths of all kinds is always attendance; and to reduce attendance to a minimum is a great thing. The automatic shower-bath, therefore, if in any way feasible, would certainly do away with a considerable amount of attendance. The idea seems to deserve careful working out, if, as seems probable, the arrangement would still further cheapen baths for the poor. Next to the institutions of the Baths and Washhouses Act, the public baths erected by corporations for special curative purposes deserve notice. I refer to such establishments as the baths of Harrogate, Bath, Buxton, and other places possessing naturally medicated waters. Such bath-houses assume more of the Kursaal type, and indeed for fine examples of this kind of bathing establishment we must look to the Continent and bath-houses like the *Friedrichsbad* at Baden-Baden with its splendidly appointed baths. In this country, without doubt, the finest bathing establishment of this kind is the new—comparatively new—block of corporation baths at Bath, with their beautiful bathrooms, well equipped, dual dressing-rooms, and elaborate "full bath" with hydraulic cranes for lifting invalids in and out of the water. Shortly there will, I believe, be provided an elaborate bath-house of this description at Harrogate, and a few weeks ago the Corporation of Cheltenham decided upon a course of action that may ultimately lead to a similar enterprise. But the English seem to have neglected the development of this kind of bath building. As a direct consequence we have thousands of health seekers annually journeying to the Continent for a course of water drinking and bathing; whereas, there being plenty of fine inland watering-places in Great Britain, if the resources of their spring waters were properly developed, and fine, pleasant, and attractive bath-houses erected, with good promenading places, grounds, winter gardens, reading rooms, orchestras, &c.—as we find them abroad—I believe that in such a case a large percentage at least of the people now yearly flying out of the country would stay in their own land. Allied to the medical bath-house is that of the hydropathic establishment. This is a rapidly developing feature in the country, a really large section of the public being now its patrons. It therefore deserves the attention of the architect, who will find much room for improvement in the plan of most existing institutions, which, with their mean, cramped bath-houses and inconvenient residential blocks, are not calculated to forward the cause of hydropathy. We may pass over the subject of the arrangement of the residential portions of such institutions, which, in all their main features, must necessarily, more or less, resemble a well-designed, high-class residential hotel, and, as such, possess no peculiar features needing remark here. It is in the bath-houses that we find special attention and study necessary. The peculiar exigencies of the hydropathic establishment demand that careful economy of plan which I have before advocated. The great aim here, after providing for the practical requirements of each case, and the comfort of the patients and bathers, is to economise the labour of the bath-attendants. Compactness of plan, easy communication between the several rooms or departments, and a proper sequence of the bath-rooms are the chief desiderata. A great fault in most existing establishments is the want of a complete double set of baths, so that lady patients may have their bath ready at all hours of the day. The single Turkish bath is a great mistake. There should always be two. Another defect is the mean dressing-room accommodation. Connected with each bath-room for douches, massage, &c., should be two dressing-rooms. This is a point to be noted by all designers of high-class baths, whether hydropathic or not. If only one dressing-room is provided, the use of the bath-room is wasted during the time that the bather is dressing; whereas with two dressing-rooms time is economised, in that one bather may be bathing whilst the other is dressing or undressing. In these two points then, the provision of a second Turkish bath and the bettering of dressing-room accommodation, there is room for immediate improvement. The mean cramped dressing-boxes of the ordinary hydropathic bath-houses are behind the age, and detrimental to the interests of hydropathy, a fact that will be admitted by all who have spent any time in these institutions and heard the incidental complaints of visitors. If the hydropathic establishment is to flourish in the future, the bath-house must be improved with the age. The secret of success in future enterprise in the building of these institutions will surely be found in this improvement. For the public are ever appreciative of something better than anything heretofore provided. Be it a hydropathic establishment, theatre, or eating-house, the one thing needful to success in these days of refinement and luxury is to out-do all former efforts in the same direction. This may seem to some a platitude; but as one goes through the world it is impossible to help noticing that, platitude or not, the principle is constantly ignored. The Turkish bath well deserves the study of the architect. The great strides made since the Renaissance, so to speak, of this method of bathing, renders it of importance that those who have the charge of the erection of such buildings should endeavour to keep the standard of excellence of design on a par with the progress in point of numbers. I fear that this institution has suffered in the past not a little from the neglect or want of study on the part of architects, and, as a consequence, the arrangement of Turkish baths has devolved upon bath proprietors and managers, attendants and shampooers, who have been in receipt of *honoraria* from architects. As a rule, therefore, the architect has worked as a mere machine in the hands of such persons, merely drawing the plans in accordance with the advice received. The result of this has been that the design of the Turkish bath has become invested with an air of mysteriousness. Mr. So-and-so announces his patent system of heating, and a rival bath proprietor proclaims the special virtue of his method of ventilation, and so on, the outcome of which results in the curious, though illogical and paradoxical, fact that each bath in London is the "best ventilated" and has "the highest temperature." Further, such has been the jealousy with which bath proprietors have endeavoured to guard the secrets of their wonderful heating and ventilation appliances that I have heard of one who, well equipped with brush and broom, was wont to resort, in the dead of the night, to his furnace-chamber, and there, secure from the curious eyes of his own employés, unlock certain portions of the heating apparatus and proceed to sweep the flues! This is not as it should be, and in order that I may miss no opportunity of dispelling that air of mystery which yet hangs over the subject, I will now endeavour to explain in a few words the principles of heating and ventilation that should govern the designing of the Turkish bath. This class of bath may be said to consist of four parts or sections—1, the cooling and dressing rooms; 2, the hot rooms; 3, the shampooing and washing rooms; and, 4, the heating chamber and its accessories. The end and aim of the heating and ventilating devices are the maintenance of a regular temperature and pure atmosphere in the hot rooms. In the ordinary Turkish bath the heating is accomplished by means of iron stoves or arrangements of iron flue-pipes, supplying a constant stream of hot air, which, entering at an intake, passes by and over the stoves and flues into the hot rooms, and thence, having served its purpose, is extracted by one or another system of ventilation. This system of heating—though a great advance upon the methods employed in the first baths erected after the introduction of the Turkish bath into this country—has yet serious objections to its employment in a really hygienic bath. In the first place, the air is generally over-heated, and deprived thereby of more or less of its vitalising properties. Then it is a chemical fact that heated iron in a hot, dry atmosphere gives off a certain amount of metal in minute particles, which, flowing in with the rush of air, is detrimental to the occupants of the hot rooms. A third, and no less serious, objection is that, under this system, the heat is applied to the bathers by convection—that is to say, the bath is simply a hot-air bath, and not a heat-bath, as all physiologists who study the question will admit the so-called Turkish bath should be, and as the mighty *Thermæ* of ancient Rome certainly were. In order to obviate the disadvantages of the ordinary hot-air method of heating, we must employ a system of heating by direct radiation; and to avoid the over-heating of the air, and prevent its contamination with deleterious particles, we must employ in our furnaces a heating-surface of fire-brick or fire-clay. To attain an effective radiation, the heating apparatus must not be stowed away in a basement, but brought forward and exposed at the end of the suite of hot rooms, so that nothing may cut off the direct rays of heat. The heating apparatus must be of such design as, in addition to affording this radiant heat, to supply a constant stream of pure hot air. The principle of ventilation is then as follows:—The fresh air enters by way of a comparatively low-level intake, provided with an "air filter," an arrangement of glass louvres and fine cloths, to remove dust, &c., and is drawn towards the heating surfaces of the furnace. Thence it passes into the end of the suite of hot rooms, and therein follows the natural course of circulation. It flows along the upper levels of the hot rooms, and having reached the end of the suite, commences a return courses along the floor of the bath. Thus there is a constant aërial circulation in the hot rooms, and stagnation is avoided. But unless some of the air in the hot rooms is continually withdrawn, the atmosphere of the bath will become impure, and unless the vitiated air is taken out no fresh air can enter. We have, therefore, to provide for this extraction. Where, and at what level? In the ventilation of ordinary living rooms, the temperature of the apartments being lower than that of respired air, the expirations of its occupants ascend to the ceiling, and are there extracted. The temperature of the air in the hot rooms of a Turkish bath being much higher than that of respired air, and the exhaled carbonic acid gas being heavier than air, the respirations of the bathers do not rise as ordinarily, but descend, and in consequence they must be extracted at the lowest level of the bath. The ventilating openings must be placed at the floor level of the hot-rooms, and must be connected with an extraction-flue or flues, conducting to a ventilating shaft. These opening will drain away the lower stratum of air in the hot rooms, and as the exhaled carbonic acid gas will settle down to this level, the atmosphere of the bath will be kept pure, more or less so, according to the efficacy of the management of flues and shaft. So long as this ventilating shaft is kept well above the level of the cold air intake, ventilation must, in accordance with simple physical laws, be automatic and continuous. In concluding this necessarily hasty sketch of bath-houses, I would re-urge the desirability of architects devoting their attention to baths and bath-building on the practical, matter-of-fact lines I have advocated. Study the medical aspect of the subject, and we shall surely find that, in future, the deplorable errors in the misplacing of bath-rooms and the misapplying of fittings will become less frequent. Attack the engineering problems in the way indicated, and greater economies in the maintenance and working of establishments must surely result. Lastly, if you will, direct your energies to the beautifying of our streets and squares with noble-fronted bath-houses, and if you cannot equal, at least show a desire to emulate the examples of antiquity, endeavouring to raise buildings which, while blessings in the present day, shall, at the same time, be monuments to posterity.

Mr. E. Tidman, F.S.I., in proposing a vote of thanks to Mr. Allsop for his practical and interesting paper, advocated the compulsory provision of baths in all houses. Mr. Ellis Marsland seconded the motion, pointing out that, although it was usual to cover in baths with wooden roofs, the practice was a mistaken one, as timber was not a material that could withstand the variation of temperature, or the damp heat to which such a roof was subjected. He strongly supported the provision of many small instead of a few large bath-houses in a district. The motion was supported by Mr. A. W. S. Cross (Messrs. Spalding and Cross), Mr. B. Bell, who explained his system of ventilation, and advocated the employment of attractive power to draw off vitiated air at a low level, and by Messrs. J. R. Manning, John Laurie, Henry Adams, and the Chairman, and was carried by acclamation. Mr. Allsop briefly replied.

THE CRYSTAL PALACE ELECTRICAL EXHIBITION.

LAST SATURDAY an exceedingly interesting and comprehensive exhibition was inaugurated at the Crystal Palace, representing the various electric systems of lighting and electrical supply now in use, including all kinds of dynamos, accumulators, engines, lamps, and electroliers, as well as all that relates to electric telegraphy and telephony. The manager of the Crystal Palace Company, Captain Henshaw Russell, deserves no little credit for the manner in which he has brought so much really representative material together from all parts of the kingdom in illustration of the subject which he has so successfully endeavoured to elucidate. The first Electric Exhibition was held at the Crystal Palace ten years ago, but the considerable strides which have in the mean time been made in the development of all branches of electrical engineering render the previous show a very elementary affair as compared with the present excellent display. In so large an undertaking which had to be carried out in a building which has not been closed to the public for a single day, it is not surprising to find on the first day much remaining to be set in order and finished in detail.

The generating machinery shown represents every recognised type of important machine generally known, and many of these are now in every-day use in the central stations in the Metropolis and chief towns throughout the country. A powerful Kapp dynamo is to be driven by a 350H.P. Davey-Paxman engine, and a Crompton dynamo equal to about 1,000 8c.p. glow lamps is set in motion by another big engine by the same firm. Messrs. Siemens Bros. combine dynamos with Willans and Tangye engines used on P. and O. steamers; and Messrs. Crompton exhibit a machine equal to running 4,000 8c.p. incandescent lamps, the Willans engine used in this case being 200H.P. The gas-engines alone in this section form quite an exhibition of their own class, all more or less developed from the original Otto engine. The Postmaster-General shows the instruments used from the introduction of the telegraph in 1837 down to the present time, a most valuable collection displayed in the nave of the Palace. The National Telephone Company, too, have here an important exhibit in the form of a music room, where visitors, on paying a small entrance charge, may hear various entertainments and concerts at the London, Liverpool, or Manchester theatres transmitted by means of the telephone. Of course, only those performances which are in progress at the time the visit is made to the telephone room can be heard. Messrs. Croggon and Co. have erected a small tower to illustrate their tape form of lightning-conductors, and in this model building may be seen a peal of tubular bells rung by electricity from a keyboard below. The same enterprising firm have on view a good display of pendants, artistic lamps, and wall-brackets worth looking at. The Egyptian mosque hard by, arranged as the stand of Messrs. Rashleigh, Phipps, and Dawson, is introduced to illustrate the application of electric lighting in forms used by the Assyrians. The lights and poles, hand regulating holtophote city posts, iron brackets of all shapes, and samples of submarine cables shown by Messrs. Siemens Bros. constitute a large display of much utility; while of equal interest is the collection of show buoys and other marine apparatus on the large stand of Messrs. Johnson and Phillips. Messrs. Waygood's electric passenger lift, driven by a Siemens single magnetic circuit motor, is in use for elevating visitors to the galleries of the Palace, where the popular side of the Exhibition is more in evidence. Here are various rooms furnished in leading styles, such as the Jacobean and the Italian, to illustrate the application of electric light to bedrooms, boudoirs, dining and drawing rooms. Among the telephone exhibits we noticed all descriptions in operation by Messrs. F. C. Allsop and Co., of Clerkenwell, and the Blackman Ventilating Company show two Blackman fans driven by separate electric motors, illustrating the various and effective applications of these exhausts and blowing-in supplies. Messrs. Chubb and Sons Lock and Safe Company are exhibitors of the latest improvements in electrical alarms, and they also include in their collection several patent gunpowder-proof locks, wedge and drill-resisting plate doors and other appliances. Messrs. Dorman and Smith are makers of porcelain switches and cut-outs, carbon contact switches, switchboards, and general accessories for electric-lighting of the most recent shapes and patterns. Messrs. Easton and Anderson figure in the machine-room, and supply currents to various stands in the exhibition, besides illustrating the transmission of power. Here, too, are to be seen the exhibits of Messrs. Roberts, Adlard and Co., of Eastcheap, with their slate slab switchboards, and other electrical mounts, deserving of attention. In one of the galleries the Medical Battery Company are the exhibitors of various medical batteries and electrodes, ozone apparatus, chiropody and dental chairs, reversing statical current apparatus, and aural appliances.

NEW BUILDINGS IN BIRMINGHAM.

MR. F. W. LLOYD, the city building surveyor, has supplied us with the following return of new buildings, &c., for which plans were approved during the year 1891, together with a summary of the three previous years:—

	1891.	1890.	1889.	1888.
Houses and shops	966	1,061	938	2,034
Business premises	36	65	18	63
Manufactories, warehouses, and shopping	183	179	163	124
Churches	0	0	2	0
Chapels	0	2	0	3
Schools	3	3	3	3
Miscellaneous	214	185	211	182
Alterations and additions	139	213	195	178
Totals	1,541	1,708	1,530	2,587

About 1,000 houses are each year erected in the city. The great disparity between 1888 and the other years is due to the fact that plans were approved in that year for several large blocks, each containing upwards of 100 houses, some of which are not, even up to the present, entirely completed.

It will be seen that the purely manufacturing premises show a steady increase throughout the whole series of years, whilst, in addition to the actually new business premises, under which head are classed large retail establishments, hotels, suites of offices, &c., there are many included under the head of alterations and additions which almost amount to a reconstruction of existing business premises. Although there are no churches or chapels this year, there are several mission-rooms, notably St. Thomas's, Church of England, Ellis-street; Church of England (iron), Harrison-road; Methodist (iron), Dudley-road; a brick mission-room in Camp-hill, and a Congregational Mission in Waverley-road. The schools, three in number, are Roman Catholic Boys' School, Bartholomew-street; King Edward's Girls' School, Stratford-road; and Seventh-Standard Technical School, Waverley-road. The miscellaneous include—Birmingham General Dispensary, new branch, Burbury-street; New Pig Market, Bordesley-street, Allison-street, and Meriden-street; Hide and Skin Market, Bradford-street; Athletic Institute, John Bright-street; Assembly Rooms, Dudley-road; Salvation Army Barracks, Corporation-street; extension of School of Art, Cornwall-street: enlargement of Blind Institution, Church-road, Edgbaston; and new premises for Young Women's Christian Association, the Crescent. Amongst the additions and alterations are:—Additions to Roman Catholic Girls' and Infants' Schools, Bartholomew-street; enlargement of Church of England Schools, St. Barnabas, Ryland-street; new Cookery School, at Soho-road Board School; enlargement of superintendent's house, Winson Green Asylum; alterations and improvements at Town Hall; additions to Midland Institute; and to Lecture-hall, Severn-street. The houses include the 65 artisans' dwellings, built by the City Corporation in Ryder-street, Old Cross-street, and Lawrence-street.

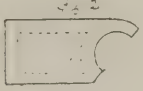
In order to give some idea as to the progress of buildings in the recently annexed districts, the following table is given, the numbers in which are not included in the preceding table:—

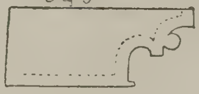
	Balsall Heath.	Saltley.	Harborne.
Houses and shops	674	233	11
Business premises	0	1	0
Manufactories, &c.	6	3	0
Miscellaneous	18	4	1
Alterations and additions	0	3	9
Total	698	244	21

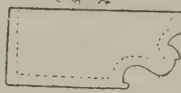
We are informed that the average rate of increase in Harborne is about 100 houses, &c., but the past twelve months have been exceptionally quiet.

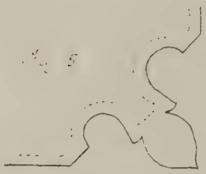
From the above return, taking into consideration the nature and size of many of the alterations and additions, it may safely be assumed that, so far as Birmingham and district is concerned, the building trades have had a busy year.

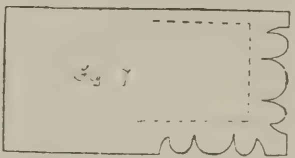
Six hundred and forty-five notices have been forwarded to property-owners and others as to dangerous buildings, projecting signs, emblems,

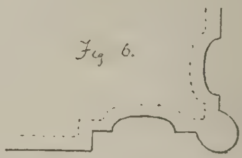


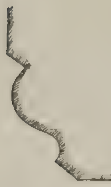


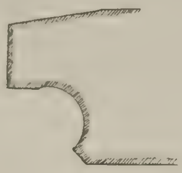


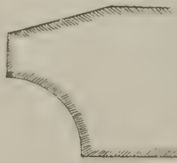


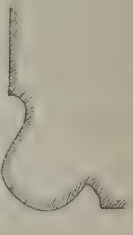


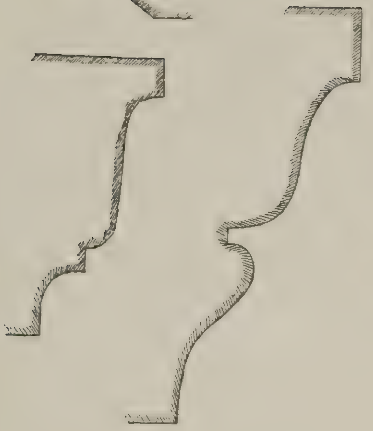


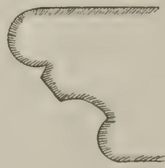


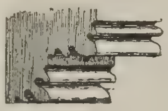


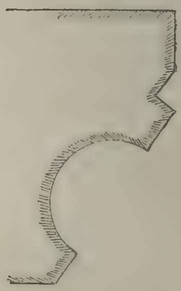












&c. During the year a quantity of land, amounting to 176½ yards superficial, has been conceded to the corporation by owners of property setting back projecting windows, steps, &c.

* * *

NOTES ON TERRACOTTA.*—VI.

SECTIONS.

In this article free use will be made of actual terracotta sections, to show either their fitness or unfitness, as the case may be, for reproduction in this material, with a view to arriving at a general principle to aid in the design and selection of mouldings suitable for a terracotta treatment. A principle well understood by manufacturers is that the blocks and their members throughout their entirety should be made up of a uniform thickness of clay, so as to obtain a uniform shrinkage in the process of drying and firing. This principle cannot be too strongly emphasised; and manufacturers who undertake the reproduction of sections in which this principle cannot be mainly adhered to are, in a measure, to blame for bringing discredit upon a material which should not attach to it. It is at least incumbent upon them to point out these things before putting the work in hand. Delicately and intricately-formed mouldings are always more expressive of a refinement of taste and feeling than those of a larger type. But it has been already shown that these are the less suitable for terracotta; and nothing will serve the purpose of illustrating this better than the arch-moulding of the 13th-century or Early English, Fig. 1, in which it is utterly impossible to get a uniform thickness of clay in the build of the block. Delicate and intricate mouldings are more successfully treated in solid prisms of brick sizes, or approximations to brick sizes; the greater number of joints thus obtained affording facilities for intersecting the various individual members. he profiles of mouldings of the most successful terracotta sections are of a large, bold type, partaking of the simple characteristics of the Classic orders, and of the Romanesque, the former "capable," says Professor T. Roger Smith, "of producing the most delicate changes of light and shade, and contours of the most subtle grace." The adjoining figures represent typically good and bad terracotta sections.

Fig 2. The incut of the hollow is so great that little attachment is left between the salient member and the body of the block. This is fit only for a brick size, and even at that the chances are that it would be but an abortion of the true shape.

Fig. 3. Here again the incutting and partial detachment of the hollow and the bead below the top fillet enhances the risk of a true section when fired. The bead would unavoidably be a solid piece of clay plus the thickness of the general build of the block (from 1¼in. to 1½in.), shown by dotted line. The shrinkage of the bead would, consequently, be greater than that of the other parts, resulting in an unsatisfactory section. Fig. 4 is an improvement of the previous sections, as will be seen by the dotted lines, showing the clay uniformly thick throughout the block. The very beautiful profiles, Figs. 5 and 6, though appearing as actual terracotta sections, are too detached and redundant of members in one block. This is even more so in Fig. 7. The remaining Figs. represent typically good sections, considered from the point of view as admitting a uniform thickness, and as not possessing too many members in each block. In Fig. 7 there are no less than eight members, and, apart from any other objection, it would be found impracticable, in fixing the work, to keep the true continuity of line of any one member, without, almost to a certainty, throwing out of intersection a greater or less number of the remaining seven members. When such sections have to be fixed, the salient members should be worked to, in preference to the retiring ones, and those which will be in shadow. But in spite of all the skill and patience that may be bestowed, unsatisfactory work will be the result of the employment of such contours.

All knees, returns, and arch or label springers, whether moulded or pressed, should be produced in one piece, not formed of two separate pieces, united by means of a "stuck joint," thus: In the case of label springers or returns, two pieces of the moulding are cut to the required length and angle—45° or otherwise—as a joiner would cut a mitre. The areas of the two sectional cuts are scored by a sharp-pointed knife and a mason's drag to form a key, and are then closely rubbed together with a medium of soft clay to unite the two pieces. This method, though saving the cost of making a mould, often proves dearer in the long run. It is "scamped" work, and should not be permitted. The greater proportion of such joints will not stand the crucial test of the kiln; and even those blocks which do, are easily reduced to their constituent pieces by a smart, jarring blow of the trowel of the fixer.

It is a practice of some architects, in the case of foliated capitals and other ornate features of a peculiar character, to have a model of the intended work executed in plaster of Paris under their own personal supervision, which, when approved, is sent to the manufacturer to be used as the "original" from which to take off the piece-moulds to be used in the reproduction of the work. This practice recommends itself as at least saving the architect a journey of, perhaps, a considerable distance, and the manufacturer the responsibility of a possible doubtful interpretation of the architect's ideas. Cellular or stone-like terracotta is produced in a manner somewhat similar to that described as pressed through the "die." This is used in the execution of Mr. Colcutt's design of the new bank at Ludgate-hill, now building. The advantage claimed for it is that it can be worked like stone—*i.e.*, in the case of arch blocks, for instance, cellular blocks of clay would be produced, rectangular in shape, and the radial or wedge-shape of the voussoirs afterwards brought about by the removal of the surplus clay. This could be done while the block is in the plastic state, or at any time between then and its going into kiln, by "wasting," or working it off with a mallet and chisel; but, preferably, while it is in the former condition. This mode of manufacture, if brought to a successful issue, would raise terracotta *par excellence* as an exterior building material. At present, it can be said to be only in the experimental stage. What has been accomplished in this direction is due to the enterprise of the firm of Sir Henry Doulton and Co, Lambeth. The great expense attaching hitherto to its production is, perhaps, the chief obstacle to its ultimate success; but, taking into account the ravages of time on our old stone-built structures—monuments of the deep-seated veneration and superstition of the Middle Ages, "when art was still religion," and Palissys and Dürers were found in every craft, stamping the work with the individuality of the workman—one cannot but regret that the consideration of cost should hamper us to-day in the choice of an enduring material which, properly employed, might enter into a rivalry with those grand old architectural piles, surrounded with the quickening atmosphere of inspiration, but built, alas, with such perishable material! Cellular terra-cotta will be further dealt with in the next article.

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ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

LIVERPOOL ARCHITECTURAL SOCIETY. — A special meeting of the above society was held at their library on Monday last, under the presidency of Mr. T. Harnett Harrison, F.R.I.B.A., when a paper was read on "Cement and Cement Testing," by Mr. J. A. Berrington, A.R.I.B.A. fully illustrated by practical tests of specially prepared briquettes, by a Michele machine, also by the use of Vicat's needle, and the method of sifting, weighing, mixing, &c., in order to ascertain the quality of the cement, were fully gone into. All the briquettes tested yielded very good results, as much as 1,000lb. tensile stress being registered on the area of $2\frac{1}{4}$in., four days old, dry mixed. Special attention was directed to the method of mixing in favour with manufacturers—i.e., very dry mixing, some of the tests being with briquettes with 16oz. of water to 48 of cement, and others with 10oz. of water to 48 of cement, the latter giving much better results; but it was pointed out that cement mixed so dry as the latter could only be used for such purposes as foundations for roadways, carefully rammed and consolidated (and the same method had to be adopted to fill the moulds for the tests). If used as mortar or for any other purposes, 25 per cent. of water was as little as could practically be used, and this proportion was considered the legitimate test. The paper and the experiments were much appreciated by the members, as giving them a practical insight into the modes of testing and the best manner of judging of reliable cements, which are not always open to the investigation of architects. A hearty vote of thanks was accorded to Mr. Berrington, which was extended to Mr. A. Ellis, who assisted in the experiments.

SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.—The monthly meeting of the Society was held at the School of Art on Tuesday, the 12th inst. Mr. F. R. Farrow, F.R.I.B.A., vice-president of the London Architectural Association, read an interesting and instructive paper on "The Ventilation of Public Buildings." He commenced by defining the principles on which ventilation depends, being the substitution of fresh air for foul air, which to be successful must be without draught. Foul air is air vitiated to a certain definite extent, fresh air, air in a normal state of purity. Draught is the unpleasant contact of moving air with the person, and air is a fluid and a gas, and, therefore, heated air is lighter than cold air of equal purity, and foul air is heavier than fresh air of equal temperature. In elaborating these points he gave figures as to, and formula for the calculations of proper temperatures, speed of incoming air, to avoid draught, size of flues, engines, &c., and described the proper means for effecting the purposes required, either by natural or artificial ventilation, showing the superiority of the latter over the former. He gave several examples of different forms of ventilating apparatus and their application to different classes of building, including some of the large public buildings of Vienna, the Rathhaus, University, Bourse, and Grand Opera House, which are ventilated on elaborate systems. He showed what to avoid in planning out systems, and the essential points to be provided.

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The new board schools for boys at Charlotteville, Guildford, were opened on Friday. They accommodate 400 scholars, and for the erection and furnishing, the tender of Messrs. Morgan, Isted, and Morgan, of Southampton, was accepted at £4,200. Mr. W. G. Lower was the architect, and Messrs. Hammer supplied the school desks and furniture.

Building Intelligence.

ALNWICK.—Felton Wesleyan Methodist chapel was opened last week. It is a Gothic structure, built of local stone. The size internally is 36ft. by 24ft., and the schoolroom at the western end is 30ft. by 15ft., a part being screened off by revolving shutters to form a sewing-room, or vestry. Advantage has been taken of the difference of level to get a heating place under the east end of chapel, in which is placed a Grundy hot-air stove. The roof has wrought-iron segmental principals, with wood boarded ceiling up sides of roof and carried across under collar-beams. The seats are open benches of pitch-pine. The pulpit-platform is raised five steps at the west end, and is on the same level as the schoolroom behind it, enabling the minister to see its occupants from the pulpit, through an open screen with tracery. The architect is Mr. F. R. N. Haswell, F.R.I.B.A., of North Shields.

CARNALWAY.—The parish church of Carnalway, which, with the exception of the tower and spire, has been rebuilt, has been consecrated by the Archbishop of Dublin. The new church was designed by Mr. J. F. Fuller, the dioscesan architect, in the Hiberno-Romanesque style, and his designs have been carried out by Mr. A. P. Sharp, of Brunswick-street, Dublin. The church consists of a chancel, choir, choir transepts, nave, vestry-room, and entrance-porch under the tower. The organ stands in the north transept. The transepts and choir are fitted with carved seats, and desks of solid oak. The inner roof is a perfect semicircle, sheeted with pitch-pine, and supported by carved pitch-pine ribs.

CORK.—A fresh block is being added to the district lunatic asylum, and is now approaching completion. It is 300ft. long, and will provide accommodation for 400 additional patients. It is four stories in height, and is divided into day-rooms and dormitories, with a considerable proportion of single rooms for patients and attendants. Three large annexes have been built to the rear, containing lavatories and sanitary accommodation for each floor. The upper stories are approached by three staircases with granite steps, and walls lined with white glazed bricks. Externally the building is lined with red brick. The heating apparatus is being erected by Mr. Grundy, of London. The building stands by itself at a distance of about 600ft. from the main building, and they will be connected by a covered passage. The plumbing and gas-fitting have yet to be done. The total cost will be about £26,000. The architect of the new buildings is Mr. W. H. Hill. The contractor is Mr. Samuel Hill.

ORPHAN WORKING SCHOOL, HAVERSTOCK HILL.—These schools, which usually have over 500 children in occupation, have had to be closed, and the children removed, owing to defects in the sanitary condition of the buildings, and the Estates Committee instructed their architect, Mr. Chas. Bell, to prepare plans and specifications for putting matters in order. Mr. Bell prepared two schemes, one for improving the existing sanitary arrangements in their present position, and another for building detached separate sanitary blocks. As either of the schemes were likely to entail considerable expense, it was decided to consult some eminent sanitary expert on the matter, and Mr. Edward Tidman, C.E., F.S.I., of Westminster, was instructed, and has just reported to the committee, advising the adoption of the separate detached blocks with certain modifications. Mr. Tidman's report was adopted, and the architect instructed to obtain estimates strictly on the lines of Mr. Tidman's report and recommendations, and it is proposed to carry out the work without delay.

◆

An inquest was held last week at Prittlewell, Essex, on the body of James Bragg, builder, who committed suicide on Saturday by cutting his throat with a carving knife. It was stated that deceased, who was 75 years of age, suffered from insomnia, and a verdict of unsound mind was returned.

New schools of science and art in Berkeley-square, Clifton, Bristol, were formerly opened on Friday. The premises include six studios, each 29ft. by 21ft., and other rooms. Messrs. Trew and Sons, of Broad-street, Bristol, were the architects, and Mr. G. Elmes, of Windmill-hill, Bedminster, was the contractor.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

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The charge for advertisements for "Situations Vacant" or "Situations Wanted" is ONE SHILLING for TWENTY-FOUR WORDS, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., L., LI., LIII., LIV., LVIII., LIX., and LX. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

TECHNICAL.—BOND. (The sketch you give does not show the mode generally used. The bricks are laid as stretchers on one side and headers on the other. There should be no straight joint through face, as you show; the third header from angle should break the joint by $2\frac{1}{2}$in., then the closer follows. Study the examples given in Rivington's "Building Construction," which is all you need to pass the Government exams.)

RECEIVED.—F. R. G. Co.—C. K. T.—Cambrian.—S. C.—A. N. and Co.—L. G. T.—R. M. S. Co.

Correspondence.

WHAT IS ARCHITECTURE?

To the Editor of the BUILDING NEWS.

SIR,—1. If a duly qualified person calling himself an architect, employ his vacant time in competitions; or in perspective views for exhibitions, or build for a client who liquidates, and so he loses money to which he is entitled; or if he revel in the study of sculpture, mosaic, decoration, and such-like productions that do not pay in the long run;—then architecture is a Profession.

2. If an architect be in sufficiently good practice to keep in his office an accountant who is artful enough to send his bills in the day the work is done, and can secure 5 per cent. upon the cost of the building, prompt cash, without discount; or if he become a shareholder, director, or designer in a retail concern, called "Æsthetic and Co., Limited," for the manufacture and sale of keramics, metal works, mural adornments, or woven fabrics in loud patterns and dubious tints, any of which can be specially, or indirectly, quoted in his building specifications, so that he can make good profit out of art productions—then architecture is an Art.

3. If an architect, in building speculative, bay-windowed Queen Anne houses, or bungalows, invest his money so that they meet with a ready sale, owing to the attraction of the band of music daily upon the pier at Mudford-on-Sea, and he clear 15 per cent. by the transaction—then architecture is a Trade.

4. If an architect design and superintend the erection of a building, but, under the advice of his solicitor, so arrange the conditions of contract that the settlement of the builder's bill of extras and deductions is relegated to a quantity surveyor as sole arbitrator, the final result being that the architect receives just payment for his honest services without a counterclaim deduction by the client, notwithstanding the judicial decision in the recent case "Rogers *v.* James,"—then architecture is a Science.—I am, &c.,

R. P.

Intercommunication.

QUESTIONS.

[10695.]—**Bricks and Brick Making.**—Could any reader of the Building News inform me whether there is such a thing as a small hand-machine for moulding bricks? Also where I could see a small kiln (on the Hoffman system) for burning bricks?—Currie.

[10696.]—**Paint.**—Will any reader kindly inform me how to find out how many coats of paint have been laid on woodwork when six coats have been specified? Some clerks have glasses. The paint is cut with a knife, and then a glass is held to it, which reflects the different layers of paint. Where can I get such a glass, and what name is it known by?—Inductus.

[10697.]—**Keeping Surface-Water out of Cesspool.**—Will some reader kindly inform me the best way of keeping the surface-water from percolating through brickwork of a cesspool? The cesspool, 7ft. square and 10ft. deep, is in 9in. brickwork, puddled with clay outside and cemented on inside when finished; but hitherto the incoming water prevents this being done.—H. L. H.

[10698.]—**Building Line.**—The by-laws of the corporation of the town in which the writer has some cottage houses to erect, contain nothing referring to the building line; and on submitting plans for approval of the borough surveyor, showing the cottages set back 9ft. from line of other buildings, with a low wall with palisade railing on top, in same line as other property, the building committee refuse to pass the same, unless the front of the cottages is lineable with others. Under the Public Health Act, 1875, I notice a clause to the effect that the urban authority have power to fix the building line of any property to be pulled down and re-erected, but it does not seem clear to me whether or not a person may set the front of any new building behind the fixed line on either side. Would any of your readers give an opinion on this matter?—Doubt.

[10699.]—**Safe Loads for Timbers.**—Will any reader say how the safe load for timbers of various sizes is arrived at, both for distributed loads and the reverse, and what is the best book on the subject?—S. T.

[10700.]—**Traps.**—Can any of your readers suggest a means of keeping an ordinary 4in. Buchan trap clear where the drain (which is 4in. diameter) has only a fall of 1½in. to 10ft. for 18yds.? Although the closet flushes four gallons at a time, the force of the water when it reaches the trap is not sufficient to clear paper and soil out, the result being that every fortnight it has to be cleaned out. Owing to the level of the main drain, I cannot get a greater declivity than stated above.—R. A.

[10701.]—**Ventilation.**—What would be the best method of ventilating a public hall 70ft. long by 38ft. wide, 16ft. from floor-line to eaves, and 34ft. from floor-line to ridge? The hall is lighted only by No. 6 skylights on either side of the span roof, each 8ft. square, and having in each alternate skylight a portion to open 3ft. 6in. square. The hall is approached by an entrance 20ft. in length leading from the street. It is surrounded by adjoining buildings on all sides, and but little open space is given at the sides by which to obtain inlet ventilators, such as Tobin's. Would any of your readers who may have used Boyle's ventilators favour me with their experience of them, and state if No. 4 of these were fixed at the top of roof, sufficient ventilation would be promoted, and would they act without causing any resonant sounds and dreadful noises? I wish to use blinds to the No. 6 skylights on the south side, and shall be obliged if some reader will inform me what description would be best, and most effectually block out the sun's rays without obstructing any light. Also, in their opinion, what kind of glass would answer best? It is necessary that the ventilation in this hall should be kept up most in the summer time.—C. W. S.

REPLIES.

[10691.]—**Fascia.**—One mode of fixing the stone fascia to iron girder would be to have copper cramps at intervals fixed to the upper flange of girder, with bent ends in the stone; but without further particulars as to the kind of girder, and how near the fascia is to be fixed to it, one cannot answer. The partition, if well braced or trussed, would do if the floor is not a heavy one.—G. H. G.

[10692.]—**Temple of Minerva at Priene.**—Consult Vitruvius i. 2 and vii. This temple was of the Ionic order, though many of the temples to Minerva were of the Doric order, and the plan would follow the general type of buildings. I think, if memory does not fail me, that the temple of Minerva Polias at Priene was hexastyle. A "Student" would do well to refer to Gwilt if he has not done so.—G. H. G.

◆

Mr. Fenwick, of Windermere, was appointed, on Friday, manager of the Retford gas and waterworks, at a salary of £200, with house, coal, water, and gas provided free.

In the bankruptcy case of William Bulcock, of Tue Brook, near Liverpool, builder, the order of discharge has been suspended for six months, ending May 20 next.

Legal.

CERTIFICATE AND ARBITRATION CLAUSES.

When a building contract contains, as it often does, a clause distinctly making the architect's certificate conclusive in all respects, and a concluding clause referring all disputes to the architect as sole arbitrator, questions of construction may arise that are not readily answered. The object of the certificate clause is to prevent disputes from occurring at all, by making the granting of this certificate by the architect a condition precedent to any enforcible claim by the contractor. It follows that when such a clause is clear and conclusive, it is binding on the parties in regard to all work coming within its scope, and that, therefore, as to such matters, there can be no dispute to submit to arbitration. Indeed, this clause making the architect's certificate conclusive may be described as a clause for the prevention of disputes; while the arbitration clause, if added, is for the settlement of disputes, if any, that may or can arise outside and beyond the scope of the certificate. As to whether or not the certificate is made so conclusive as to be a condition precedent, and thus preventing all disputes from arising, that must depend on the wording of the contract itself. Presuming that it is not so clear as to be legally conclusive of the right of the contractor to dispute the architect's decision as to work or measuring up, then these matters could be brought up for arbitration under the clause by which he is appointed sole arbitrator.

If, however, it is intended that all disputes, including those arising after the completion of the work, as well as those cropping up during its progress, are to be covered by the arbitration clause, this must be widely drawn. Such a clause will always be construed very strictly by the Court, and it has often happened that, though the arbitrator had the power of deciding all disputes arising during the progress of the works, he had no jurisdiction to deal with disputes occurring after their completion, and affecting the true measurement of the work or the price to be paid. It is clear, however, that an arbitration clause cannot apply until a dispute has arisen, and then only to such disputes as are within its scope. For these reasons the certificate clause is frequently so drawn as to make the granting or refusing a certificate by the architect conclusive between the parties, and thus entirely preventing disputes from arising; while, if any questions escape this clause, they are dealt with in a general arbitration clause by which the architect is made sole judge. But he must do so judicially, and he must exercise his office with firmness and discretion, after hearing both sides of the case.

Fred Wetherfield, Solicitor.

1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

Boz.—Arbitrator.—Of course, you have a lien upon the award, and need not give it up until paid your fees. But although it is now generally thought that there is an implied promise to pay his fees, although an award is not taken up, it is better, in the agreement to refer, to get an express promise from the parties to that effect.

Builder.—Certificate.—If the architect does not certify to a sufficient amount, he will not be liable to you as the builder, even though negligence and want of skill are shown, unless you can go so far as to prove some fraud or *mala fides* on the part of the architect, of which there seems no sign in this case.

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Newmilne House, near Perth, at present tenanted by Sir John Millais, R.A., was almost entirely burned down on Monday, but the greater portion of its valuable contents was saved. The fire is attributed to the overheating of a flue.

A new church schoolroom was opened at Bagby' near Thirsk, on Tuesday, by Lady Payne Frankland. The building is capable of accommodating seventy scholars, and has been built by Mr. W. S. Kay, of Acomb, the architect being Mr. M. W. Lewis, of the firm of Lewis and Sons, York.

A public drinking fountain, surmounted by clock tower, &c., is about to be erected in the Market Place at Willenhall, to the memory of the late Dr. Tonks. The structure, which will be 26ft. high, and will cost about £250, has been intrusted for execution to Mr. J. Roddis, of Birmingham.

LEGAL INTELLIGENCE.

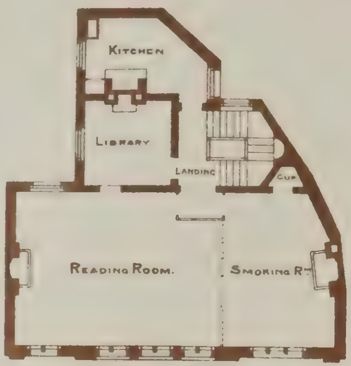
A District Surveyor's Slip.—Messrs. Ray, builders of the Sun Wharf, Wapping, were summoned for erecting that building not in conformance with the Building Act. It was stated the place had been let at £700 a year; and the district surveyor, Mr. Stock, admitted he had not served a notice concerning the defects. Owing to this neglect, Mr. Mead dismissed the summons and ordered Mr. Stock to pay the defendants' costs, £1 10s.

Breach of Building By-laws.—A builder, named John Lawrence, of Wigfall-road, Sheffield, was summoned before the magistrates of that town on the 5th inst. for breaches of the local by-laws. Defendant built six houses in Sharrow Vale, and, refusing to comply with the regulations in respect to his attics, was served with legal notices calling upon him to do so. He complied with the regulations, but afterwards altered the attics back to the former condition. He was summoned in July last for this offence, and was fined £10 and costs. Yesterday he was summoned again for continuing the former offence, and he was fined in all £35 16s., including costs.

Legal Ambiguity as to "New Streets."—Vestry of St. Giles, Camberwell, v. Crystal Palace Company.—In this case, heard by Mr. Justice Day without a jury, at Guildhall, on Monday, the plaintiffs claimed for part repairing a road the plaintiffs alleged the defendant company was liable for as adjoining owners. The Solicitor-General said the road, in respect of which the claim arose, was called the Crystal Palace Parade, and was 80ft. wide, being perfectly straight, and going from end to end of the Crystal Palace. In 1890 the plaintiffs resolved that this was a new street, and, not being paved to their satisfaction, they called upon the adjoining owners to pave the street. After due notice the work was done by the plaintiffs, and they claimed from the defendant company the sum of £2,926 as their share of the cost. These facts were not in dispute, nor was it disputed that the defendant company had, since the passing of their Act in 1883, up to 1884, repaired the road in question at a cost of from £258 to £300 a year. Mr. Reid, for the defence, contended that the road in question was an ancient highway, and not a new street within the meaning of the Metropolitan Local Management Acts, and that, though the defendants had repaired the road in ignorance of their rights, that did not deprive them of their rights in law. Mr. Justice Day said that considerable doubts and difficulties arose in his mind from the unhappy language the Legislature had thought fit to use with regard to the paving of new streets, and, as far as this case was concerned, the best construction he could put upon the statute was that this road in question was a new street, and that it had never been taken in charge and repaired by the local authorities. On this short ground he should give judgment for the plaintiffs, with costs. but directed a stay of execution, remarking that he considered such an application reasonable upon any question of a new street.

Cabinetmakers' Customs.—The hearing of the case against Mr. David Sandground, wholesale cabinetmaker, of Phipp-street, Shoreditch, who was summoned by two men for money due to them on work which they had not been allowed to finish, was resumed at Worship-street on Saturday. We gave some particulars of the case in our issue of Dec. 25, p. 925, last Vol. Evidence was now given as to the custom of the trade—whether the men on piecework were entitled, if they thought fit, to leave their work for a day or two, or longer, and be allowed to return to finish their work. Cabinetmakers, mainly journeymen, were called on behalf of the complainants, to prove that it was the practice for the worker to go off if he felt lazy or wanted a rest, and that, though he might be away any time from half a day to three consecutive days, he was still entitled to go in and finish his contract when he pleased. Many of the witnesses said they had not heard of any man being away four days at a time, but they considered that the master had no right to prevent a man returning if he stayed away so long. For the defendant fifteen or sixteen witnesses, many of them master cabinetmakers, employing 40, 50, or 80 men, were called to give contrary evidence as to custom. They agreed that, though there was no custom, there was a "pernicious habit." Mr. Rose said he had come to the conclusion that there was no custom, properly so called, to justify the claim of the workmen to be absent in the course of their contract work. As the men had had notice of their employer's intention, the defendant was justified in putting other men on to complainants' work. Judgment would, therefore, be for the defendant; but his counterclaim for 37s. 6d. for damages was also dismissed.

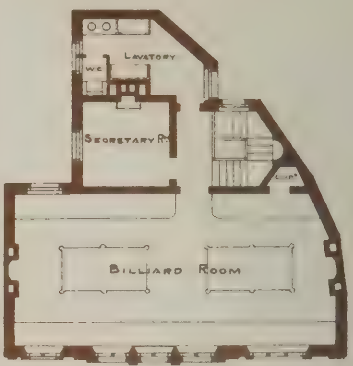
"New Streets" and Compensations to Frontagers.—Reason v. the Mayor and Corporation of Folkestone.—In the Queen's Bench on Wednesday, Justices Lawrence and Wright heard this special case, the question being whether the plaintiff was entitled to compensation for a strip of land which he said that defendants had taken from him to widen the public way. At



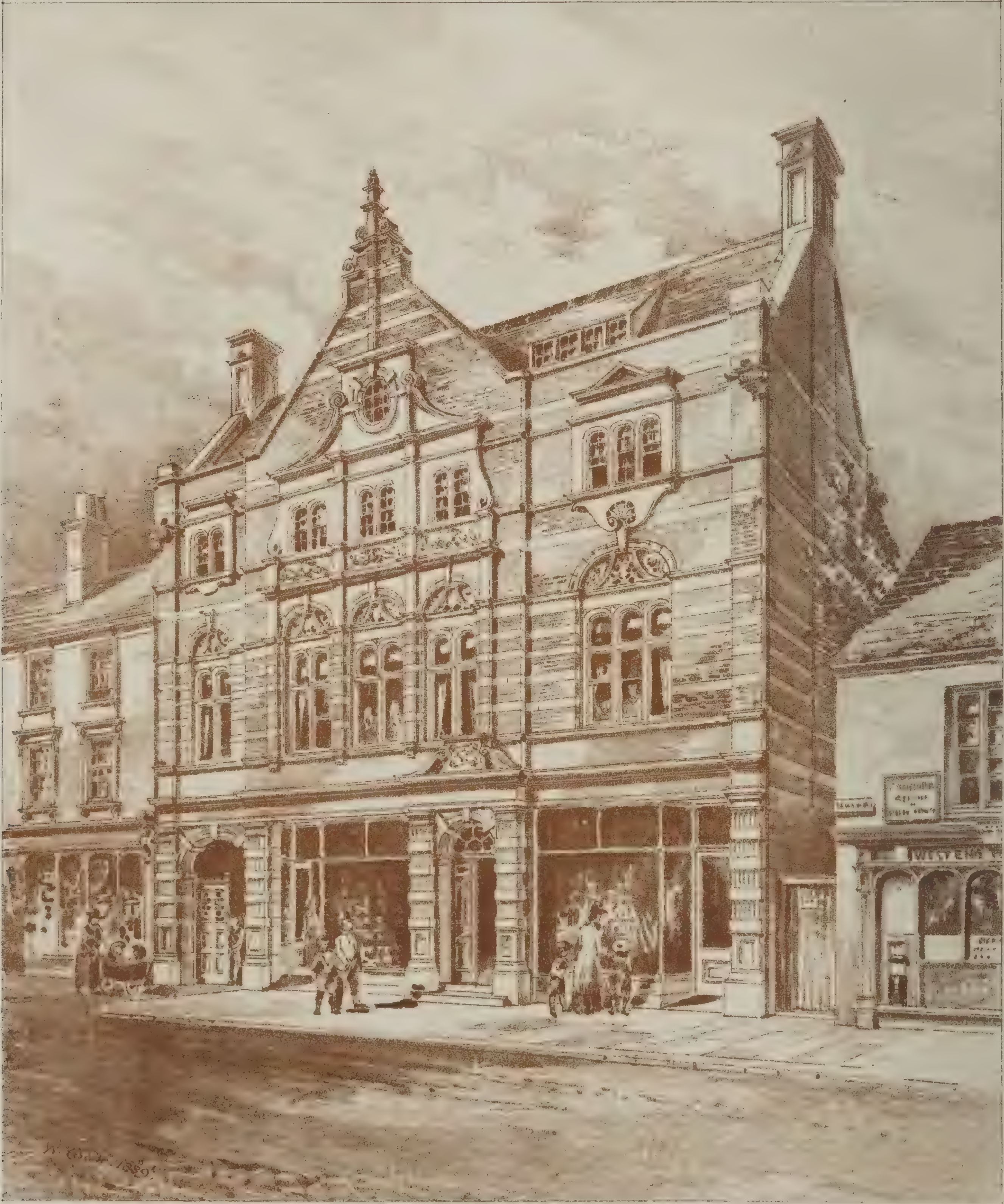
First Floor Plan

THE LIBERAL CLUB, St AUSTELL.

SYLVANUS TREVAIL,
ARCHITECT.



Second Floor Plan



"PHOTO TINT," by James Akerman, [illegible] Queen Square, London, W.C.

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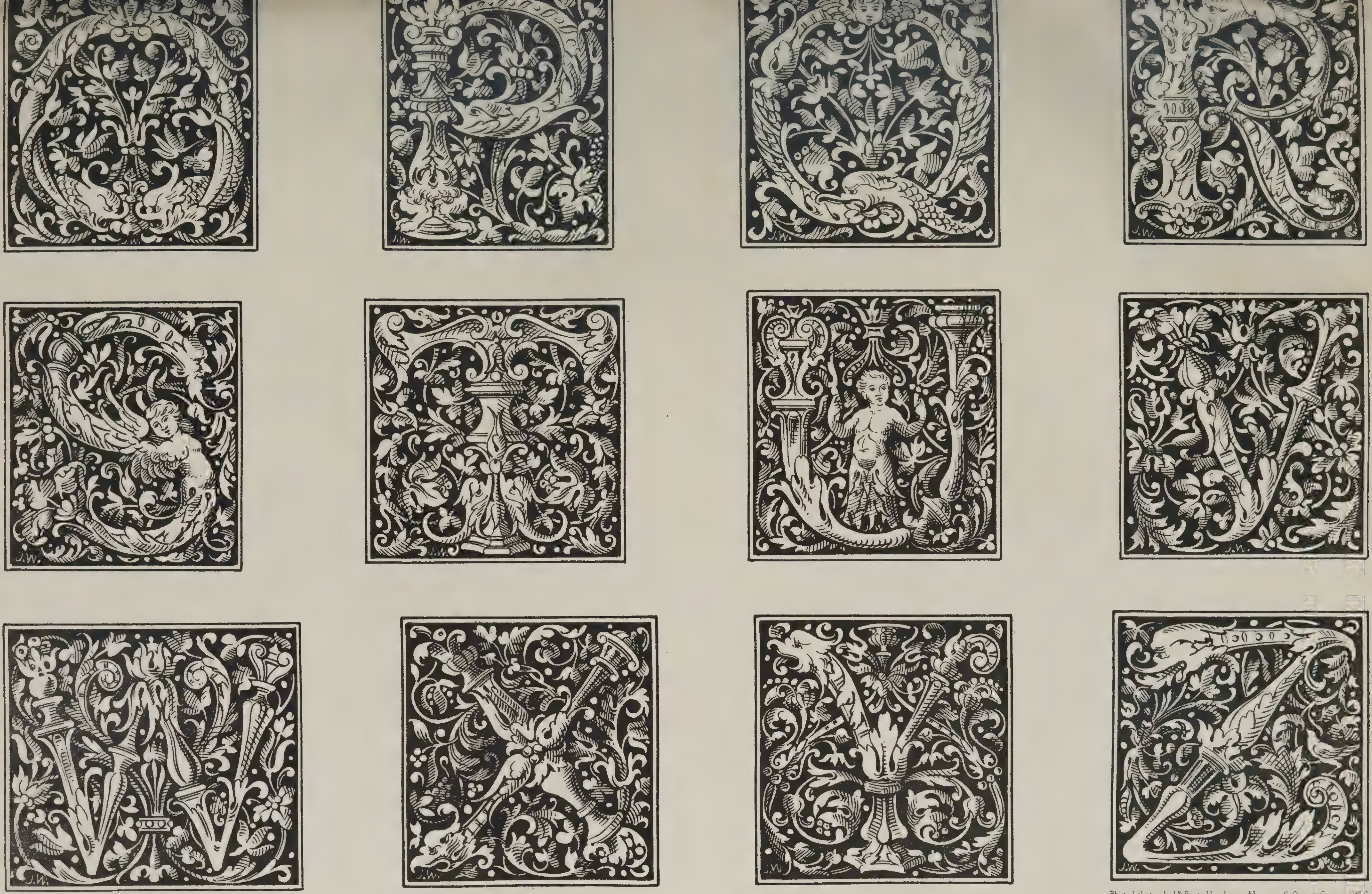

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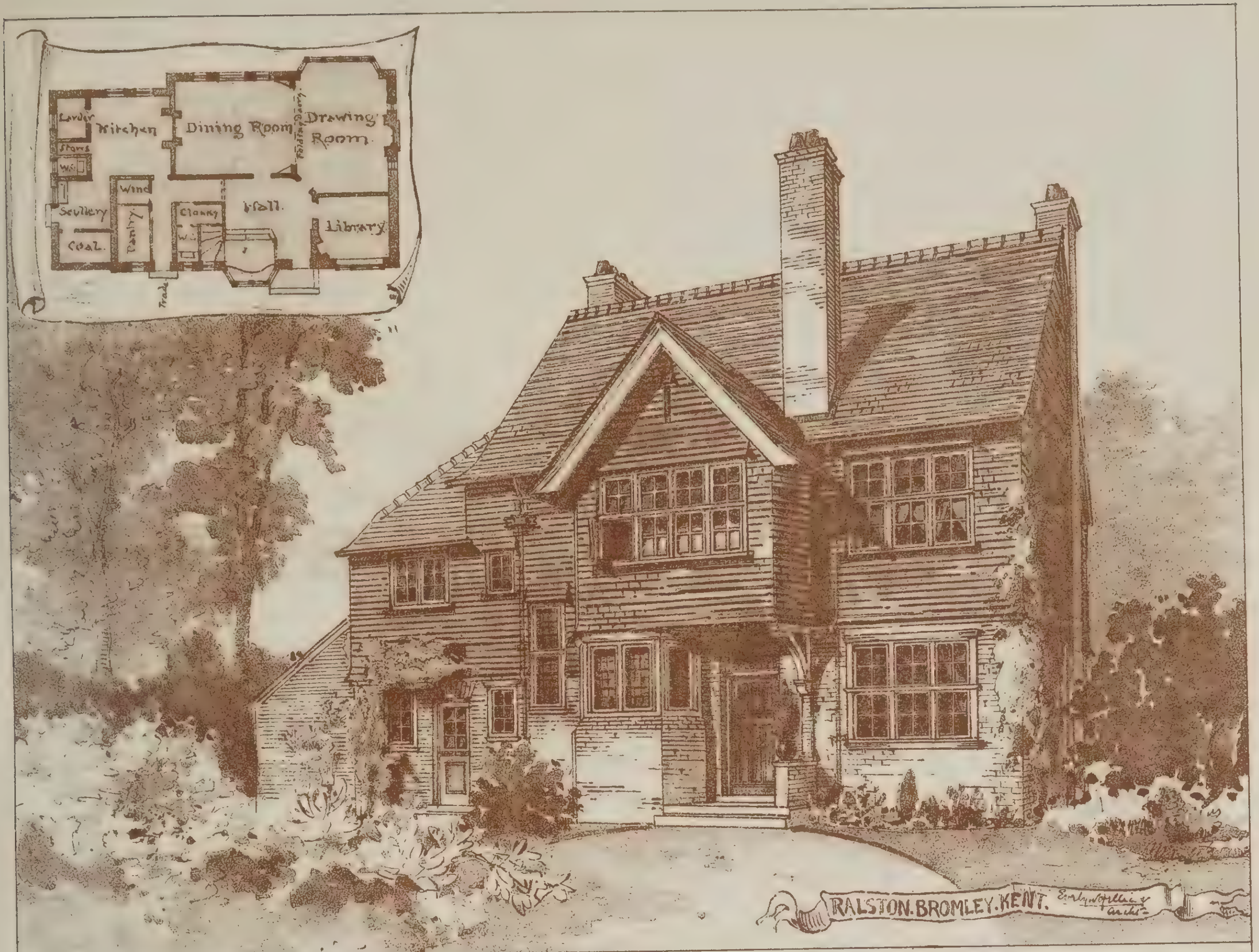
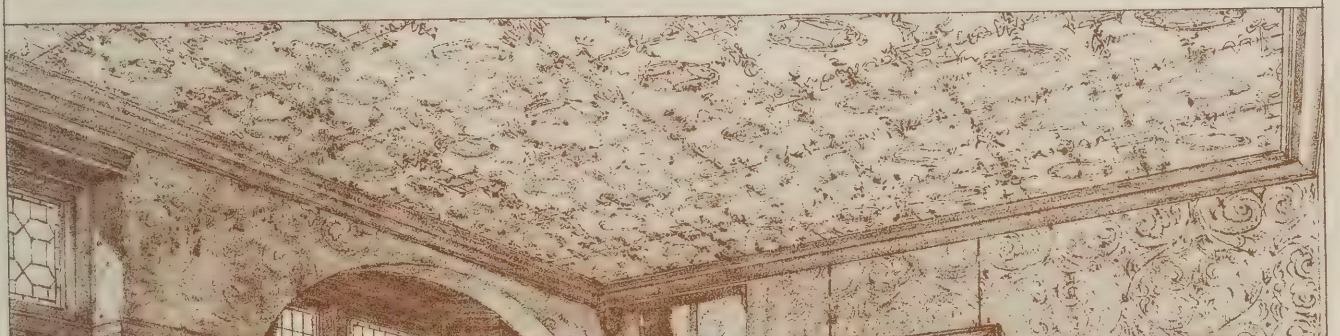
DECORATIVE·ALPHABET IN THE RENAISSANCE·STYLE

DESIGNED BY JAMES WEST·



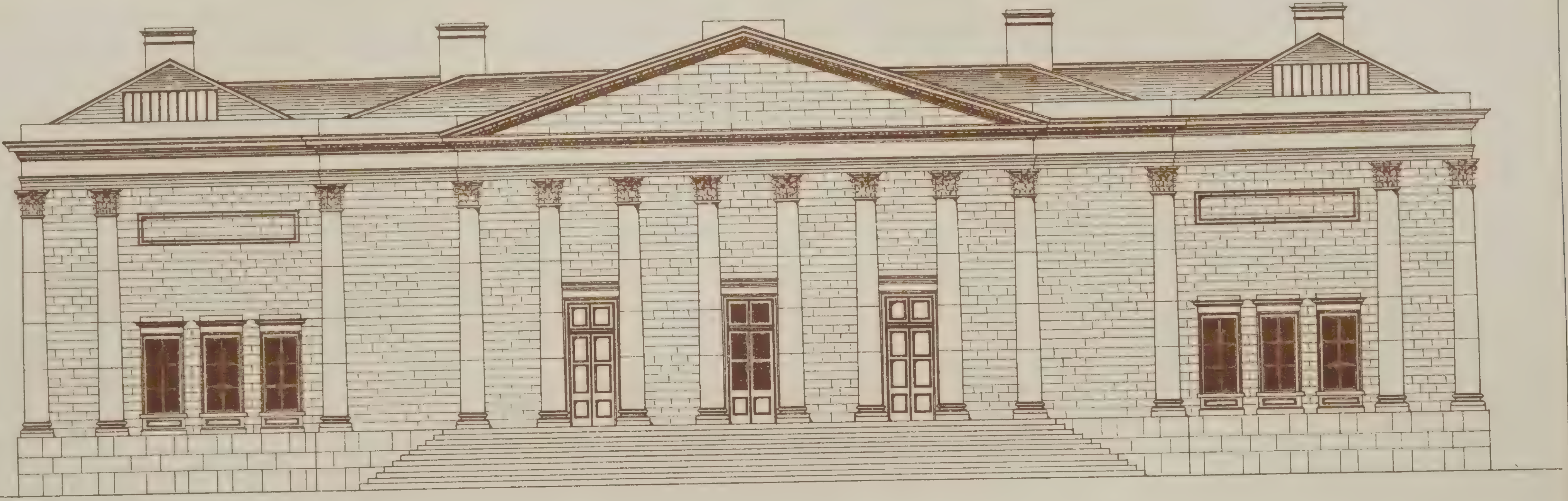
RALSTON. BROMLEY. KENT.


Evelyn Hellicar Archt. Del. 91.

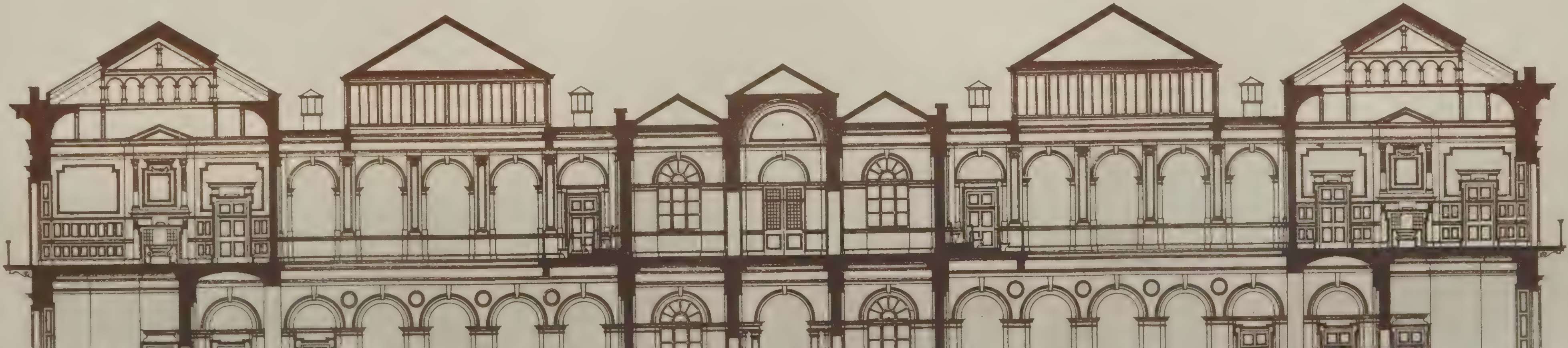
HALL AT RALSTON. BROMLEY KENT.

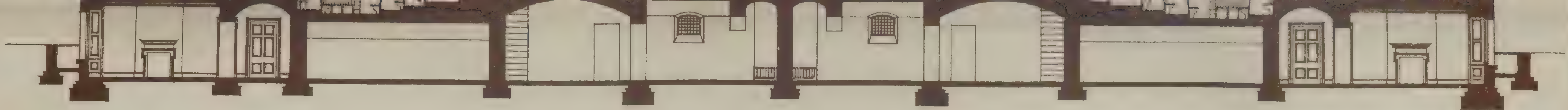
"PHOTO-TINT," by James Akerman, 6, Queen Square, London, W.C.

EVELYN HELLICAR, ARCHITECT.



ELEVATION TO GT. GEORGES STREET





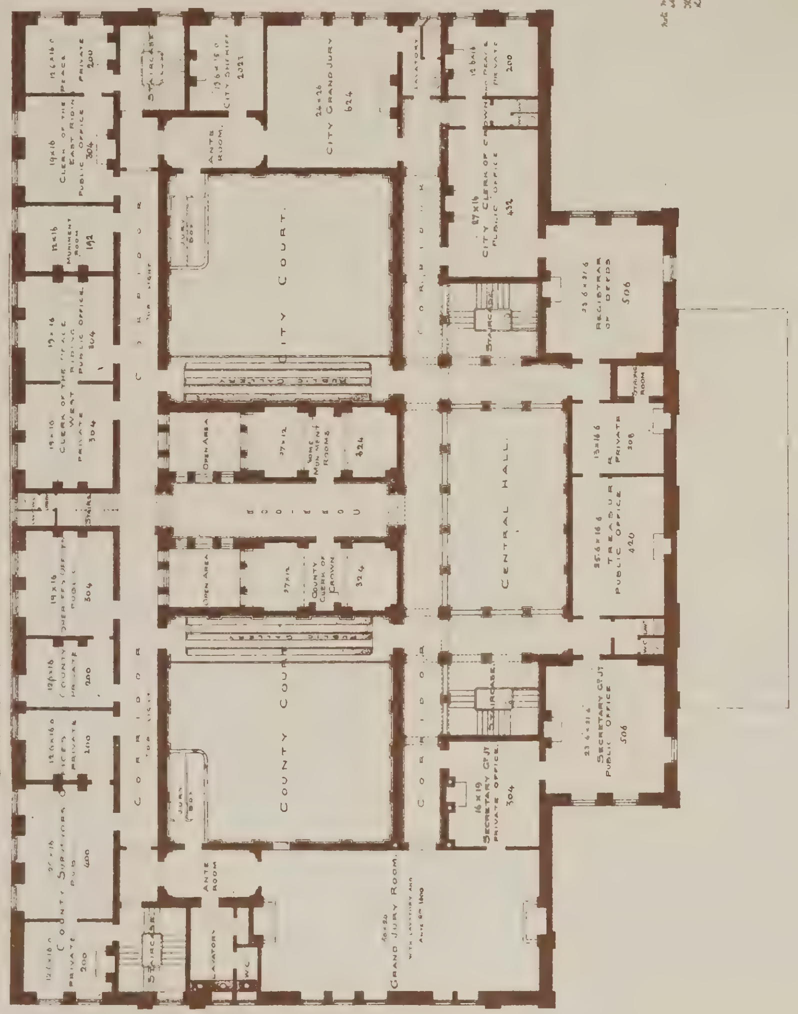
LONGITUDINAL SECTION

SECOND PREMIATED DESIGN
BY SIR T.N.DEANE & SON.

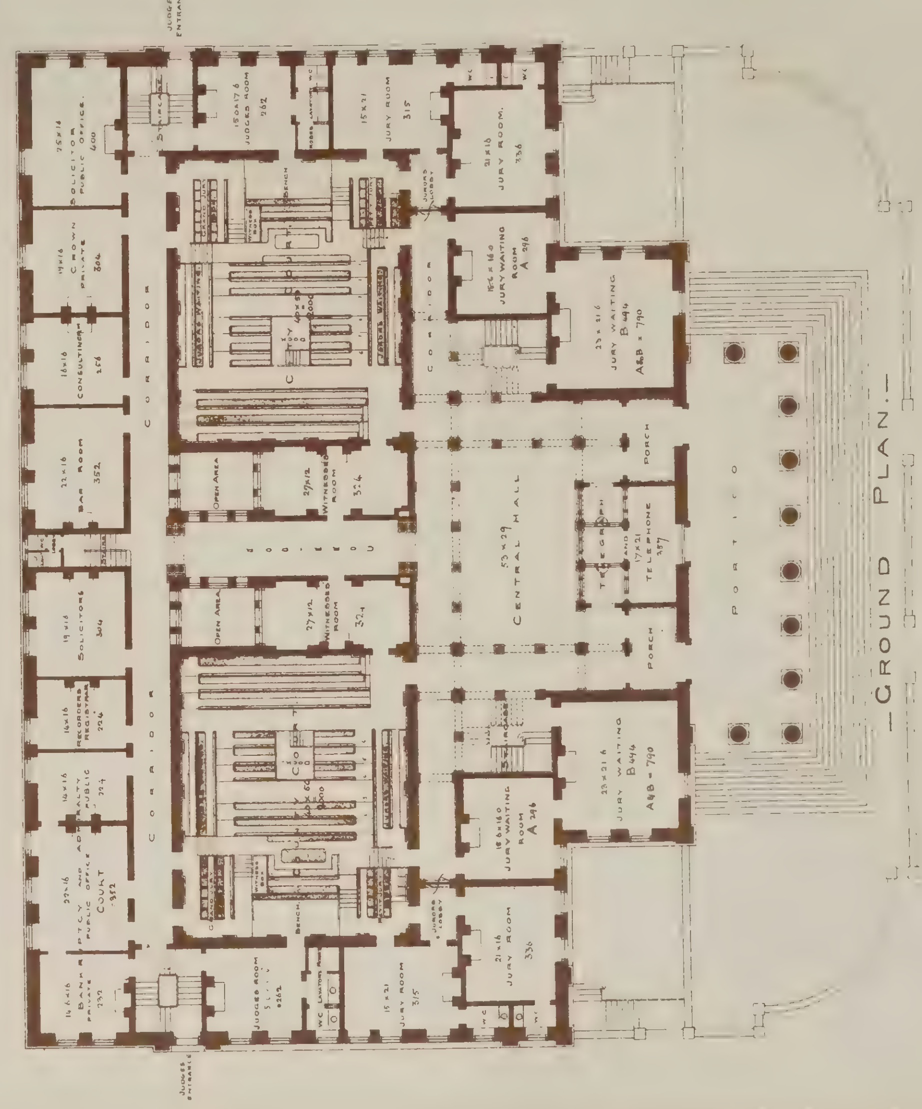
CORK COURT HOUSE COMPETITION.

CORK COURT HOUSE COMPETITION

Note Muniment Rooms are divided about the building
The offices for each front on the floor are top lighted



—FIRST FLOOR PLAN.—



—GROUND PLAN.—

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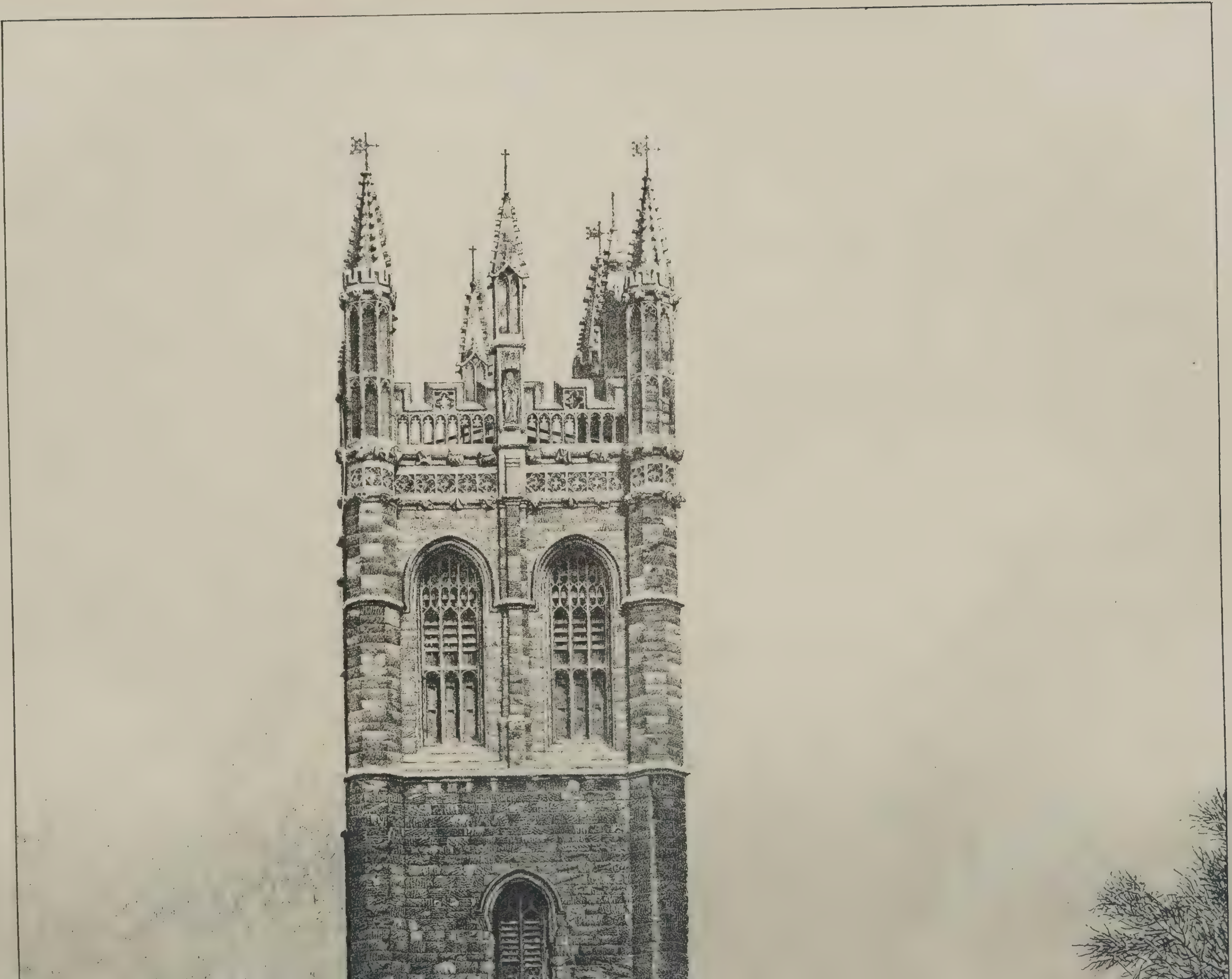

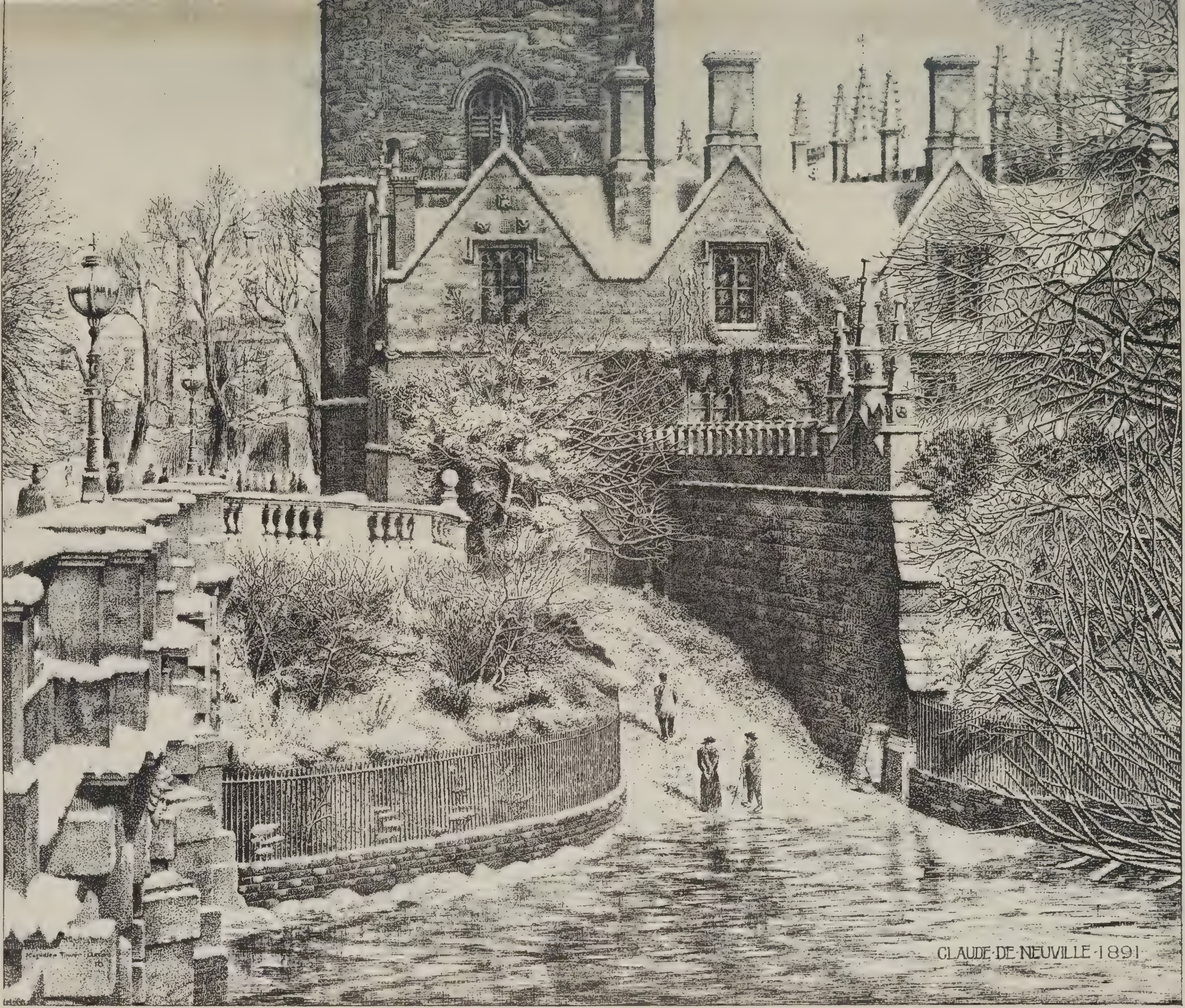

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UNIVERSITY OF [illegible]

kestone there was an old thoroughfare called
ldy-lane, which was about 27ft. wide, and
which there were no houses previous to 1865.
ce then 22 houses had been built there, and
ently the plaintiff built two houses which were
:. from the road, and he began to put up a wall
oining the highway. The defendants, however,
med the right to make him put his wall 13ft.
k, so that the thoroughfare might be made 40ft.
le. This they did under the provisions of their
provement Act of 1855. The question in dis-
e between the parties was whether the thorough-
e in question was an existing street or a new
eet within the meaning of the statute. The
rt held that this was an existing street in 1855,
l though it might be now called a new street
l out, yet the plaintiff was entitled to compersa-
n for his land that had been taken.—Judgment
plaintiff.

VATER SUPPLY AND SANITARY MATTERS.

A Doctor's Defence of Back-to-Back Houses.
At the annual meeting of the Yorkshire Society
Medical Officers of Health, held at Bradford last
ek, Dr. J. F. Bell, of that borough, read a paper
"Artisans' Dwellings in Bradford," in which he
gued that careful examination of vital statistics
owed that in Bradford, at any rate, there was
marked excessive mortality in back-to-back
uses. At Ripleyville, containing 200 well-built
uses of this class, which had never paid 4 per
nt. on the cost, the death-rate was only 11·52
r 1,000, and other districts worked out almost
favourably. He took a census of three kinds
artisans' dwellings, including 2,129 houses, and
habited by 9,819 persons. These he divided
to three classes, and found that the death-
tes for the past five years were 15·8 per 1,000 for
ntinuous back-to-back houses, 16·6 for back-to-
ack houses in blocks of four, and 17·0 for through-
uses, mostly built from ten to twenty-five years
go. He admitted that on no subject was medical
pinion more unanimous than in condemning these
uses, but he pleaded for an impartial re-examina-
on of the facts. A discussion followed, in which
e opinion was expressed that while through-
ouses commanded a higher rental than back-to-
ack houses, the sanitary advantages of the former
ore than compensated for the increased cost. The
enefits of a through-draught and the better venti-
ation which it insured were such that only those
who had studied the subject carefully could appre-
iate them.

CHIPS.

The Newcastle-on-Tyne Corporation have decided
o offer £500 for the best design for a new Town
Hall.

A stained-glass window, having as its subject
he Ascension, has just been placed in St. John's
Church, Wednesbury. Messrs. Hardman, of Birmingham, were the artsts, and the cost was £300.

Col. Luard, R.E., conducted a local government board inquiry, at the Town Hall, Waterloo, Liverpool, on Friday, into the question of granting the Waterloo Local Board power to borrow £1,350 for street improvements in the district.

The town council of Cheltenham have resolved to offer the Montpellier Gardens Company £7,500 for the gardens on the understanding that it includes the whole of the rights relative to the mineral water wells and waters, with the sole right to make and sell the salts manufactured by the company.

At a meeting of the archdeacons and the rural deans at the Old Palace, Lincoln, the Lord Bishop of Lincoln presiding, on Thursday, the 12th, Mr. J. C. Traylen, architect, of Stamford, was elected as ecclesiastical surveyor to the diocese of Lincoln.

A meeting of the Art Workers Guild was held in Barnard's Inn Hall, Holborn, on Saturday evening, to discuss architects from the artists' point of view, where, we understand, some plain speaking was heard, and many humorous points were made.

On Tuesday week the new church of St. Margaret's, Brotton-in-Cleveland, recently erected at a cost of £5,000, was consecrated by the Archbishop of York. The building is in the Fourteenth-Century style, and will accommodate between 400 and 500 persons.

Plans have been prepared by Mr. Richard K. Freeman, Manchester, diocesan surveyor, for entirely rebuilding, at an estimated cost of £3,000 to £4,000, St. Anne's Church, Lancaster. The present structure was erected in 1796.

At the White Horse Inn, Park-street, near St. Alban's, last week, Mr. C. T. Part gave a supper to the employés of Messrs. Boff Bros., builders, of Park-street, in whose hands extensive additions and alterations have been in progress for some time past at Alderman Lodge, Radlett, the residence of Mr. Part, under the superintendence of Mr. C. J. Ferguson, architect, of Carlisle and Westminster.

Our Office Table.

The city council of Manchester have recently rejected two sets of plans submitted to them by firms of architects for new buildings in Albert-square on the ground of excessive height, and also, in one case, that the elevation is not suitable in style and character to the locality. Both buildings were to be 90ft. in height, the one being for the Scottish Provident Institution, designed by Messrs. George Wadsworth and Son, the other also offices and business premises, Messrs. E. and F. Hewitt being the architects. The latter firm have agreed to modify their designs; but Messrs. Wadsworth have argued the point in a remonstrance forwarded to the local press, and to each member of the city council. They point out that the height is within that prescribed by the City by-laws; that Albert-square is extremely open, being 474ft. wide opposite this site; that the building would not interfere with the view from, or the lights of, the town-hall; and that no neighbour's rights would be interfered with. They further remark that lofty buildings are becoming more and more necessary in these days of rapid communication. It will be remembered that 90ft. is the limit to height below cornice level under the Amended Metropolitan Building Act of last session, while in Chicago it is proposed to allow a maximum of 180ft. In the latter city the Underwriters' Fire Association have just vetoed the erection of property exceeding in height one and a half times the width of street, by demanding an extra special insurance on such property.

Reading in *The Globe* of the water in house-pipes freezing, causing explosions and much discomfort, "An Architect" explains how easily and cheaply it may all be avoided. A screw-down stopcock is, or should be, provided at the point where the service-pipe from the water company's mains to cisterns enters the premises; immediately adjoining same, but nearer house, put a screw-down bibcock; before sundown daily, screw up stopcock, then open bibcock, and draw off all water remaining in the pipes. They will then remain empty until next day. In the morning, screw up bibcock, and open stopcock, when the company's water will at once enter the empty pipes and fill the cistern. Again, to prevent the water pipes freezing that supply house from cistern, put a stopcock in the pipe, or pipes, immediately at the junction with cistern, before retiring at night. Screw up stopcock, and draw off all water from the cold-water pipes. They will consequently remain empty until next morning, when open stopcock to fill the pipes. If the cistern is likely to freeze, a small oil lamp left constantly suspended close to the water will prevent it so doing.

The death is announced from Chicago of Mr. John M. Van Osdel, a well-known and successful example of the architect and builder, who has died at the age of four-score years. His father, James H. Van Osdel, removed from New York to Baltimore, where he was for many years a prominent architect and builder, and here John M. was born, July 31, 1811. When he was fourteen years old his father moved back to New York, and the boy studied geometry and architectural drawing, while working as a carpenter on his father's buildings. In 1831 he married, and returned to Baltimore, where he spent a few years as a contractor on his own account. In 1836 he went back to New York, and there received a commission from Mr. William B. Ogden to build him a house in what was then the small town of Chicago. This done, young Van Osdel found congenial occupation in constructing steamboats, then just invented. After spending a short time in New York asassociate editor of a scientific journal, he returned to Chicago, and opened an office as a regular architect. He was the first to exercise that profession in Chicago, and found uninterrupted employment. Many of the finest buildings in that city, such as the Palmer House, the Tremont House, the Oriental Building, the Reaper and the McCormick blocks, and scores of others in the city, the University buildings at Champaign, Ill., and Little Rock, Ark., and many others outside, were designed and supervised by him. He retired some years ago from active practice, but the busiest period of his life was that between his sixtieth and seventieth birthdays.

On the 26th ult. a deputation from the firm of McDowall, Steven, and Co., Milton Iron Works, Glasgow, waited upon Mr. Thomas Ferguson (who for many years had been manager to the firm mentioned), for the purpose of offering suitable presentations on the occasion of his retirement into private life (owing to failing health) after a long and uninterrupted service of nearly half a century. The deputation represented the financial, business, and travelling departments of the firm, and consisted of Messrs. Bathgate, Kelly, and Grimmond. The presentation included a pair of gold spectacles, also an umbrella and walking-stick, both silver-mounted and suitably inscribed. A very handsome silver cigar-case, with suitable inscription, was sent as a token of esteem by Mr. Alexander Ritchie, C.C., of the London House, Steven Brothers and Co., 4, Upper Thames-street, E.C., whose personal and business acquaintance with Mr. Ferguson is of over thirty years' standing. A somewhat lengthy notice of this latter firm and their products will be found in our issue of Jan. 2nd last year. The presentation was made by Mr. Bathgate, who said that all the donors regretted the cause of Mr. Ferguson's forced retirement after so many years' faithful and efficient service, and under whose personal superintendence and from whose plans the "Milton" had been erected. He had had the satisfaction of seeing them gradually develop and added to till they had become what they were at the present day—the largest of their kind in Scotland. These works would be a standing monument to his persistent energy, as well as to the universality of his genuis. Messrs. Kelly and Grimmond paid great tribute to Mr. Ferguson's excellent business and personal qualities, and in the course of a very appropriate reply, the latter said he thanked the donors for their very handsome gifts, and accepted them as a token of the goodwill and friendly feelings cherished towards himself by his late colleagues. His motto, he said, had always been to carry out, in spirit and in practice, the words embodied in his engagement Indenture, "I shall do all that lies in my power to further the interests of my employers."

A Bill deposited in Parliament provides for the incorporation of a new company with powers to construct a line from Whitecross-street, in the City, to Waltham Abbey, passing through Tottenham and Walthamstow. The capital of the company is set at £3,600,000.

Nanhurst, near Cranleigh, Surrey, the residence of Mr. Carbutt, M.P., is now approaching completion. The house was designed by Messrs. Johnson and Gibson, of Newcastle, in a Domestic English style of Renaissance, and its completion and decoration has been superintended by Mr. A. O. Collard, A.R.I.B.A., of Craig's-court, W.C., who has also designed, and is now superintending, the erection of stabling, gardener's lodge, coachman's residence, &c. The house has been fitted, in the more important rooms, with the electric light by Messrs. Drake and Gorham, of Westminster.

The memorials of Sir Walter Scott, preserved in the Advocates' Library at Edinburgh, have just received a valuable accession in certain documents that have been presented by the Marquis of Huntly. These papers are forty-seven instruments of credit, drafts, and promissory notes, all bearing as the signature of the acceptor the clear, regular, and clerkly subscription of Walter Scott. They bear dates ranging from 1819 to 1825, the period during which he produced most of his best works.

Major-General C. Phipps Carey, R.E., one of the Local Government Board inspectors, held an inquiry on Monday at the Town Hall, St. Helen's, Lancs, into an application by the St. Helen's Corporation for sanction to borrow £2,100 for works of water supply and £1,700 for the lighting and ventilation of the town hall and municipal buildings. Mr. D. M. F. Gaskin, water engineer, explained the plans of the water scheme, and Mr. G. J. C. Broom, the borough surveyor, those for the municipal buildings improvements. No opposition was offered.

A limited number of free studentships have been provided for workmen and boys associated with crafts and trades, who by these means may have an opportunity of acquiring a knowledge of drawing and modelling at the Westminster School of Art, held in the Royal Architectural Museum, Tufton-street, S.W., without any charge whatever. Candidates are preferred between the ages of 15 and 25 years of age. Those intending to apply for this really valuable chance of acquiring useful training and knowledge should do so at once, and particulars are furnished in our advertisement columns to-day.

MEETINGS FOR THE ENSUING WEEK.

MONDAY.—Royal Institute of British Architects. Business meeting. 8 p.m.
Leeds and Yorkshire Architectural Society. "The English Renaissance," by J. M. Brydon, F.R.I.B.A. 8 p.m.
TUESDAY.—Institution of Civil Engineers. Discussion on "Weighing Machines." 8 p.m.
WEDNESDAY.—Civil and Mechanical Engineers' Society. "Forced Ventilation by Compressed Air," by H. Coward. 7 p.m.
Society of Arts. "Spontaneous Ignition of Coal and its Prevention," by Prof. Vivian B. Lewes. 8 p.m.
THURSDAY.—Royal Institution. "Greek Sculpture in Relief," No. 1, by Dr. A. S. Murray, of the British Museum.
FRIDAY.—Architectural Association, Lyric Club. Concert at Mona Hotel, Henrietta-street, W.C. 7.30 p.m.

CHIPS.

It has been decided that a recumbent effigy of Dr. Harvey Goodwin, the late Bishop of Carlisle, shall be placed in the cathedral of that diocese, and £1,200 has been allotted to that purpose by the committee.

The reopening of St. Chad's church, Cheetham, Manchester, took place last week. The building has been repainted and decorated, the system of drainage improved, the high altar restored, the side chapels re-embellished, and the organ transferred from the chancel to the Lady-chapel, the total cost being about £1,000.

The monument unanimously decreed by the citizens of Malta to commemorate the 50th anniversary of Queen Victoria's reign has just lately been erected at Valetta. It is a marble statue representing her Majesty seated on a throne. It is of white marble, and was designed and executed by Professor Valenti, of Palermo.

Out of a large number of candidates, Mr. D. H. Roberts, Portmadoc, has been elected deputy surveyor and sanitary inspector for the borough of Conway. The appointment was rendered necessary through the selection of the surveyor (Mr. Farrington, C.E.) as the engineer in charge of the important Cowlyd water scheme, for which he furnished the plans.

Alterations have been made to St. Joseph's Convent, Wolverhampton, embracing the ventilation, which is now carried out on the Boyle system, the latest improved form of the patent self-acting air-pump ventilator being adopted for the extraction of the vitiated air.

In the case of Francis William Abbott, of Milltown, Norwood, late of Barnstaple, builder, the discharge for bankruptcy has been suspended for nine calendar months.

Mr. Hugh Munro, at present superintendent of work at Fife-Keith, and formerly of the Hong-Kong dock, was on Monday elected superintendent of harbour works to the Aberdeen Harbour Commissioners in succession to Mr. James Pirie, resigned. There were 41 candidates.

The city council of Oxford have unanimously decided to grant the premium asked for by the Duke of Norfolk, for the erection of a statue to Cardinal Newman, in the Broad-street of that city.

Mr. W. H. Webber died at his residence in Buckingham-place, Brighton, on Wednesday week. Mr. Webber, who was in his 64th year, went to Brighton to act as manager to Messrs. Patching and Son, builders, a firm in which he ultimately became a partner. The partnership was dissolved about fourteen years ago, since which time Mr. Webber had carried on business as an oven builder.

Archbishop Tenison's throne, in the restoration of which the late Right Hon. G. Cavendish Bentinck, M.P., evinced an active interest, has this week been re-erected in Canterbury Cathedral, the site chosen for it being the south-eastern transept.

The restoration of the ancient Parliament House in Edinburgh Castle, which has been effected at a cost of £15,000, entirely borne by the late William Nelson, the well-known Edinburgh publisher, is now completed, and the ceremony of handing over the key of the restored hall by Mrs. Nelson to the Crown is to take place during this month. The restoration has been carried out under the direction of Mr. Hippolyte J. Blanc, of Edinburgh, who was also the architect for the restoration of the Argyle Tower at the castle, carried out a few years since, also at Mr. Nelson's expense.

The work of decorating the chancel of All Saints' Church, Leek, has been recently carried out by Mr. Gerald C. Horsley. The work consists of three parts—a diaper below the stringcourse, the painting above it, and the roof. The panelling of the sanctuary has been stained and gilded, to bring the whole into harmony.

Colonel Ducat, Local Government Board inspector, held an inquiry at Nelson, on Tuesday, into an application by the corporation of that borough for sanction to borrow £6,000 for the erection of police-courts and cells, £1,400 for the purchase of property for the construction of a thoroughfare connecting two principal streets, and £25,000 for works of private street improvements. The application was unopposed.

A new stone and marble altar has been fixed in St. Mary's R.C. Church, Cresswell Park, Blackheath, from drawings prepared by Mr. A. E. Purdie, architect, of Crownhill-road, Willesden Junction. The work was carried out by Messrs. Boulton and Co., of Cheltenham.

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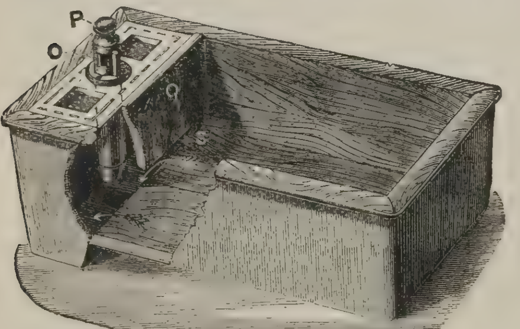

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THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXII.—No. 1933.

FRIDAY, JANUARY 22, 1892.

BRICK AND CONCRETE WORK.

THE rival claims of brick and concrete have to be regarded both from an artistic and a constructive point of view. We do not suppose that if all the restrictions and legal enactments bearing on concrete were removed, and if its manufacture and the facilities for using it were all that could be desired, it would ever supplant old-fashioned brickwork in the affections of the architect. The traditions of the past strongly cling to the older material. The idea of building with blocks of some form, of handling and disposing them, is so strongly engrafted in the mind of the architect with almost a kind of hereditary bias, that any plan of substituting another mode of erection for the traditionary handicraft is scarcely likely to be entertained. To the artistic mind, the instrumentality of the hand in giving form is more valued than a process which supersedes any manual skill. On this principle, all kinds of mechanical methods of performing handicrafts have been regarded with distaste if not with disgust, and among them is to be placed the mode of building by concrete on the frame or filling-in system. This system does not readily lend itself to architectural forms or details, such as those which can be formed in stone or brickwork. Projecting members and features having angles would necessitate moulds and frames of complicated structure, and these appliances would entail increased cost in labour. But there are conditions of employment which favour the use of concrete, and these are found in the construction of retaining walls, dock walls, breakwaters, storage reservoirs, and in the erection of buildings where continnous plain walling and apertures are required, as in warehouses and factories. We are speaking now more particularly of the "frame" method of construction, in which standards or patented appliances are used for incasing the concrete. For plain-sailing wall building, concrete is a material that must very soon take the place of brickwork as being more expeditious, and, where suitable ingredients can be found, more satisfactory and economical. One reason of the slow progress made in concrete construction is that architects have not yet fully mastered the subject, which has been too long in the hands of experts and patentees of appliances. In preparing plans for concrete buildings, it is absolutely necessary that the walls and cross walls with all the openings, windows, and doorways, chimney-jambs, &c., should be carefully figured by the dimensions; thus, the lengths of wall or piers between windows ought to be accurately stated, also the width of openings, so that the carpenter who fixes the frames and uprights may be able to place the standards and panels in the proper positions. These are technical details which are not required on brick buildings, but for the sake of economy, the plan of a concrete structure would be better arranged if it had some regard to the position of standards and the jambs of the openings. If piers at intervals are proposed, these should be spaced, and the wooden casings set out on the plan.

Other points have to be considered in the design and construction of concrete buildings: one is the expansion and contraction of concrete walls, which require that the frames or boards give sufficient room for play instead of being closely fixed to the standards. If we say the linear expansion of concrete is 1 in 2,365, or an eighth of an inch in 24ft.—as stated by Mr. Thos. Potter, a reliable authority—it is certainly proper to arrange that in long walls some means of compensation should be provided rather than that cracks or fissures make their appearance. One method suggests itself, and that is to have a few well-distributed external piers, and that at these, or a few of them, indents be formed, and a kind of vertical wood or iron tongue or "groove-and-tenon" arrangement, by which any contraction may be given freedom. The equal division of the wall by projecting piers—say every 10ft. or 12ft. apart—enables any contraction horizontally at least to be managed, and the number of vertical cracks to be reduced. These piers may be of brickwork, and a pleasing variety of colour thus be introduced. No doubt this drawback of contraction is one of the most serious; we think it is due as much to the matrix as the aggregate, though some authorities attribute the mischief to the latter component. Dycherhoff's experiments prove that expansion of cement takes place; we have also the practical evidence afforded by large pavings of concrete showing cracks, which proves that contraction follows the setting of the cement. With lime concrete, expansion and contraction take place in a much less degree, showing that the matrix is more yielding, for we have seen extensive retaining walls of this kind of concrete without fracture. Much of this cracking of concrete is due to the want of fine-grinding the cement, a quality necessary to the perfect surrounding of each particle of sand and aggregate, but which manufacturers are wont to undervalue, as finely-ground cement is less remunerative. Of course the aggregate should be clean, and of a kind not subject to undue expansion; hence furnace clinker or slag is probably the best.

These requirements, no doubt, have been found hard to fulfil; careful supervision of the cement and the mixing is required, and hence architects lean towards a mode of construction that is not so troublesome. Statutory provisions have also retarded the development of concrete construction in the Metropolis. The rules in force are those referring first to foundation and sites, where the aggregate is required to be of clean gravel, broken hard brick, burnt ballast, or other hard material to be approved by the surveyor, and to be used with fresh burnt lime or cement in the proportion of 1 lime to 6, and 1 of cement to 8 of the other material. A recent by-law makes it imperative that for walls the concrete is to be composed of Portland cement, and clean Thames or pit ballast, or gravel, or broken brick or stone or furnace clinkers with clean sand in the proportion of 1 part of cement, 2 parts of clean sand, and 3 parts of the coarse material, which is to be broken to pass through a 2in. ring. The thickness of walls to be equal to that of brick walls prescribed by the 12th section of the 1st Schedule for brickwork. These by-laws are obviously necessary to insure uniformity, and to promote good construction, but builders and architects who have methods of their own have felt them to be irksome. The by-laws in force in the provinces appear also to have rather favoured other materials. As regards cost, opinions differ. Comparing it with brickwork, it may be said to be cheaper when it is used in bulk, and for great masses like quay walls, warehouses, and foundations, and it may not be far wrong to say that, for large mass work, the cost is 50 per cent. less. Of course, every kind of skilled labour, in casing, frames, standards, or in cores, reduces this percentage, till in ordinary buildings, like cottages, the difference is problematical. Architects often ask the question, but the answers they get are various, and depend on conditions. Generally it may be safely stated that unless a large number of houses of plain character, and being a repetition of the same design or details, is to be erected, the cost of concrete would be rather more than less that of brickwork, especially if cheap and suitable material for an aggregate is not at hand. This last condition is as important as repetition and quantity.

As an example of the engineering value of concrete in large masses, we may mention the fact that the engineer of the new drainage scheme of Melbourne has given his opinion of the advantages of concrete. The question whether they shall be of brickwork or concrete has been the subject of a long report, which has been submitted to the Board of Works of Melbourne by Mr. W. Thwaites, the engineer-in-chief of the Board, in which the relative merits of each material are discussed. When we consider that the total length of the main sewers of that city will be 200 miles, the importance of the material becomes evident. Mr. Thwaites enters into this question by comparing the strength and stability, and the relative cost of these rival materials. He refers to Mr. Grant's series of experiments on Portland cement for the Metropolitan Board of Works in 1858, and the specification for the southern high-level outfall sewers. The resistance to crushing of the superior bricks of Melbourne when laid in neat current is shown to be 133 tons to the square foot. Professor Unwin's experiments on London stock bricks and neat cement give 103 to 177 tons; gault wire-cut bricks and cement, 181 to 237 tons. But these figures are for bricks laid in neat cement. In mortar of three of sand to one of cement, experiments on stock bricks show an average strength of 160 tons per square foot. To prove that mortar made of these proportions has a greater crushing resistance than ordinary stock brick, it is found that a brick made of mortar of one of cement to four or five of sand is equal in strength to the best stock brick. These results are corroborated by tests made on Portland cement concrete for the embankment works on the Watts River, Victoria.

The artistic aspect of the question may be quickly dismissed. When concrete can be used in mass or in bulk in foundations, walling, piers, or for filling-in to walls and floors, there is a strong claim to be made for its use. The construction of vaults and roofs is one of the many ways, we think, in which concrete may be employed with decided advantage, as it can be easily lifted and filled in on light centring or ribs. Brick vaults are costly in cutting and working the groins, and in forming templates and bevels, and even then they exercise a more destructive thrust than a concrete vault. Mr. Gribble adopted concrete in the great domical vaulting at the Church of the Oratory at Brompton with successful results, and for mosaic or decorative treatment it has many decided merits of its own. There is one other direction in which concrete may be employed for plain buildings, and that is in the form of facing blocks, to make an outer casing for filling in, and in these two directions we think architects have possibilities before them.

THE SOANE MEDALLION AND OTHER PRIZE DRAWINGS.

THE subject proposed for competition for the Soane Medallion and £100 was a chapter-house, to be placed on the east side of the cloisters of a cathedral, and approached from them. No style was given. One of the best set of drawings is that of a "Cherub" in a shield, accompanied by a well-drawn India-ink perspective, for which a medal of merit is given. The author is J. Begg, A.R.I.B.A., Bloomsbury. The author shows an hexagonal chapter-house, surrounded by an ambulatory, obtained within the depth of the angle buttresses. There is a cloister approach and vestibule. The style is Gothic, of a Late French or Burgundian type, and in the contruction the author introduces the traditional central shaft, with radiating ribbed, groined roof, the ribs of stone, with red-brick web vaulting. Some very nice detail is shown, and the drawings are cleverly executed. The same shape of plan is adopted by "Plume," the author of which has ingeniously made his angle buttresses triangular in plan, the external angle projecting beyond the face of upper masonry, and terminated by weatherings below the window-level. The moulded members of the arched windows die away against the splayed sides of buttresses. On the upper level of chapter-house they assume the hexagonal form. Careful plans at pendentive, groining, crypt, and roof levels are sent; the style is Late Gothic, with crocketed arches. The hexagonal pinnacles are more ingenious than beautiful.

"Abbotsbury," an able set of designs, shows an octagon chapter-house surrounded by a low aisle-like cloister walk, with apsidal recesses to the sides. A cleverly drawn pencil and shaded Indian-ink perspective is sent. The style is of Late Decorated character, with central pendant to vault. The author, Mr. Heber Rimmer, Chester, takes the Soane Medallion.

"Anno 1891" is the motto of a design which, but for its affected display of archaic Mediævalism in the ink perspective, has talent. The plan chosen is circular, with eight apsidal recesses between the piers, which are strengthened by flying buttresses some distance from the wall. Circular angular piers with conical spirelets accent the external angles of chapter-house, and some clever Early English detail is shown.

"Byzantium" is also an elaborate and richly-coloured mosaic encrusted design, based on Byzantine types, a Greek cross, with domical centre and semi-dome apses. A rather clever design in the Italian style is that with "Griffin" in square, an octagonal structure covered by a dome and internal cupola, the sides pierced by narrow windows, and having a deep carved frieze under cornice. The decoration internally is by frescoes and mosaics. The drawings are slightly tinted. "Sun" and "Ex-Cathedra" are of more commonplace design, the latter very heavy and without a visible roof.

The Tite Prize designs for church steeple, 35ft. square and 250ft. high, are four in number, and show a dearth of ideas. One of these is "Design in Circle," which takes a medal of merit—a massive and well-proportioned tower, surmounted by a square clock or belfry stage, with pyramidal obelisk or spire termination. We do not like the window treatment of the lower part of tower, and the perspective gives the effect of an oblong, rather than a square. "Ashlar" is an attenuated version of Bow steeple, and "Red Lion," to which is awarded the Tite prize, by Mr. G. R. Kitsell, A.R.I.B.A., has a broken octagonal belfry, with spire springing from corner consoles on a rusticated square tower, while "Quis" is below par. Why is it that this yearly competition has so fallen, or that more talent could not have been enlisted? The principles of Bramante, Palladio, or Sir W. Chambers have scarcely been followed, and even Wren has been travestied.

The Measured Drawings Medal and £10 10s. has been responded to by only three candidates. "Nito" is the motto of a carefully-drawn and measured set illustrating George Heriot's Hospital, and is by Mr. R. J. Balfour, Gower-street, who receives a medal. "Pollux" is a set of drawings and details of Castor Church, Peterborough, an interesting structure with Early Norman tower over the crossing, and with Early English and Late Gothic features. "Black Spot" is the motto of a set of drawings of St. Mary's Hospital, Chichester. These subjects are, however, scarcely equal to the expectations. One of the Colleges of Oxford or Cambridge, or some of the monasteries and churches suggested in the list to competitors—such, for example, as the Lady-chapel, Wells Cathedral, or St. Cuthbert's Parish Church, Wells, would have had greater architectural value. The Pugin studentship also, from the conditions of the competition, might have been better represented. We see many drawings and sketches that have before been exhibited, those of Detmar J. Blow, who wins the Studentship, comprising many beautiful coloured and plain sketches from Troyes, Abbeville, Allonne, Dijon, and Beauvais Cathedral, possess considerable merit and interest. Many of them have a Ruskin-like character and feeling, and the huge scale drawings of plan and section of the chapel of St. Joseph, Beauvais Cathedral, have a value of their own. Erskine S. Cummings sends a splendid collection of pencil drawing of sharp accentuated touch, including studies of Dryburgh Abbey, interior of Beverley Minster, Lincoln, Peterboro, Ely, and Durham cathedrals, and of Skelton church. Chas. R. McIntosh sends some colour sketches of doorway at the Certosa, Pavia; and from Santa Croce, Florence; Palermo, Venice, &c., and pencil sketches from Elgin, Glasgow, and Linlithgow. Chas. A. Nicholson's pencil drawings (which take a medal of merit) and coloured sketches of Long Melford and Wisbech churches, Lincoln Cathedral, and the roofs of St. Stephen's, Norwich, and St. Margaret's, King's Lynn, and Wymondham, and the pencil sketches of Percy D. Smith are to be noticed.

The Grissell Gold Medal is represented by only three competitors, for a design for a stone railway bridge, of one span of not less than 150ft., across a river between deep banks. The design, "Jacta est alea," awarded the medal, is accompanied by diagrams showing method of finding centre of gravity of half-arch and surcharge, line of pressure, &c. "Equilibrium" shows vaulted cells constructed above the arch, filling up the spandrelling. Another design, "Fundamentum forte opus sustinet," is also illustrated by diagrams. The drawings for the Scientific Masonry Prizes only comprise two sets, "Saxum" and "Voussoir," for an octagonal turret stone vaulted. The vaulting rests on the exterior walls and a central newel of stairs. A model accompanies the former motto. Drawings are also sent by C. K. Greenslade, of St. Peter Mancroft, Norwich, and Lincoln Presbytery, &c.

The following are the names and addresses of the winners of the Soane Medallion and Institute Silver Medal and other prizes:—

Soane Medallion, design "Abbotsbury," to Mr. Heber Rimmer, Chester. Medal of Merit to "Red Cherub," by Mr. J. Begg, A.R.I.B.A., Bloomsbury.

Pugin Studentship awarded to Mr. Detmar J. Blow. Medal of Merit to Mr. Chas. A. Nicholson.

Tite Prize awarded to "Red Lion," by Mr. G. R. Kitsell, A.R.I.B.A., Bloomsbury. Medal of Merit to "Design in a Circle."

Institute Silver Medal to drawings of Heriot's Hospital, by Mr. R. J. Balfour, Gower-street. Medal of Merit to Mr. Percy D. Smith.

Grissell Gold Medal ("Jacta est alea") to Mr. H. Harland, Brighton. Masonry Prize, £6 6s. to ("Saxum"), Mr. H. S. Wood, A.R.I.B.A., Beckenham. Prize of £4 4s. to ("Voussoir"), Mr. E. S. Cummings, Battersea.

The Godwin Bursary: Locke Worthington, A.R.I.B.A., of Queen Anne's Gate, Westminster, for his drawings, books, and particulars for the study of Model Dwellings of Paris.

Institute Silver Medal Essay on Fireplaces: Chas. E. Sayer, A.R.I.B.A., Soho-square. Medal of Merit to Richard Glazier, A.R.I.B.A., Manchester.

THE ACTION OF HEAT FROM OPEN FIREGRATES, STOVES, AND HOT-WATER PIPES.—II.

By F. Dye.

In the last paper it was explained that an open fire heated the objects near it by radiant rays of heat, and this heat was re-radiated about, and also transferred to the air by contact with the warmed objects. The re-radiation and the convective action of the air ultimately distributing the heat about the room where the first direct rays did not reach. It will be seen from this that the greatest source of heat is the primary radiant rays from the glowing fuel, next the secondary rays (re-radiated from warmed objects), and next and least, warmth imparted to the air by contact with warmed objects. Now, this order of precedence is the great feature of the open grate, it heating a room chiefly by radiant heat, and least by warming the air.

All authorities agree that the plan of heating most conducive to health is to provide a fully sufficient heat to the body, but at the same time to have a cold or cool air to breathe. This can be proved in many ways; for instance, by the ease or actual pleasure with which we can breathe the wintry air, provided the body is warmly clothed (and in health). It might have been more plainly stated earlier that radiant heat possesses the peculiar property of passing through air without increasing its temperature, and only heats objects that it strikes or comes in contact with. It is sometimes a little difficult to grasp this, but the common instance adopted by writers to prove its accuracy is to refer to the atmosphere at some distance from the earth; the atmosphere in high regions is always exceedingly cold (as snow-capped mountains prove), yet these high regions are nearer the sun, the source of heat, than the general surface of the earth is. The sun's rays have no warming effect upon the ai however hot they may strike persons or object upon the ordinary surface of the earth.

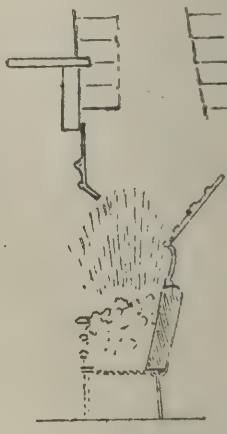

FIG.3

Now, in addition to the fact that the ope grate contributes heat to a room by the mos natural way possible, it has two other good features: first, the cheerful appearance of its fir cannot be overvalued. This one feature is sufficient cause for its still being in favour, without the other advantage just given. In fact amongst the general users of the open grate it hygienic value is not known, and the pleasure tha the sight of the fire incites gives it preference ove other methods of heating. Secondly, there is n more effective (non-mechanical) ventilator tha the open fire-grate. The chimney, with its wid opening into the room, is a most effective fou air extractor, and cause of fresh air inlet. Thi can be instantly proved by holding the hand t the crevice of a door or any point where air ca find an entrance, and a keen inrush of air wi be instantly detected. This inflow of air wholly due to the up-draught in the chimney Let the fire go out, and then close the chimne opening (the register flap), and the draug through the crevices will disappear.

There is no denying that the average grate not capable of giving the effective results th other methods of heating can, and neither do w under any circumstances get such a regular controllable temperature, but, notwithstandin this, the open grate exists, and its existence bea no signs of being terminated, for the improvements introduced of late years have as nearly as possible quite obliterated some of its ill features.

The first attempts in this direction were made with the view of checking the speed at which the fire burnt, and the outcome of this is the many forms of open fire "slow combustion" grates now to be obtained. This is a most desirable improvement, for with the old pattern grates the fire burnt unnecessarily fast when it had once become bright, and the great heat evolved went partly up the chimney, and partly to make the heat of the room too great. This was the usual result. With the modern grates the speed of combustion is greatly reduced, and when the fire is bright it remains so for a longer period, giving out a regular heat and other satisfactory results, with a lessened quantity of coal.

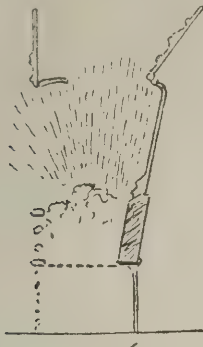
FIG 4.

This is excellent as far as it goes, but some of these grates have the disadvantage of being slow burning at all times, and a slow rate of combustion is a positive source of annoyance when the fire is first lighted, or at any of the times that it may be required to burn up quickly. The fire should, to secure the most agreeable results, be convertible from slow to fast burning, or the reverse, as required. Most grate makers now provide for this in some way or the other, more or less effective.

The next chief improvement effected with the open grate to render it more capable was to prevent such a lavish proportion of the heat passing up the chimney. With the old and common forms of grates there appears to have been an effort made in design to permit of the freest possible escape of smoke and products of combustion into the chimney without regard to the free escape that was thus afforded for heat and such valuable effects. The form known as the "register" grate, with semi-circular flap at back just over the fire, is in section like Fig. 3. Another pattern, usually with hobs, is as Fig. 4 (also in section). In these it will be seen that the castings forming the backs are intentionally made at an angle to give the easiest passage for the products from the fire to the chimney, and the small lines show what a great proportion of the radiant heat is projected into space where it has no useful effect. In quite the majority of open grates the backs, whether iron or firebrick, are made to slope away back from the fire, and this has been found to be totally opposed to good results so far as heat distribution into the room is concerned.

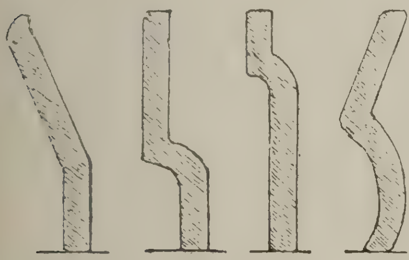
FIG. 5. 6. 7. 8

All modern pattern grates are now furnished with the firebox wholly composed of firebrick (excepting the grating bottom and front bars), and in practically every case the back brick is made to overhang the fire in some way or other. It may be that it gradually slopes forward, or it may project over abruptly at some point. Figs. 5, 6, 7, 8 show some of the forms given these bricks, but hardly two makers have their bricks alike, and each, of course, claims some effective superiority over the other. If we take a brick, as Fig. 5, for example (it is an effective brick, and one that an explanation can be given to simply), the more satisfactory heat in the room is brought about as follows: It must first be explained that radiant heat can be deflected, *i.e.*, turned from the direction it was pursuing, by encountering an object placed at a not too abrupt angle, even if this surface that it encounters be the reverse of polished. It acts in the same way as a beam of light would if it was directed against a mirror placed at an obtuse angle. The light would be caused to take a different direction or line to that which it pursued previous to its reaching the glass. The result of the overhanging brick is, therefore, first, the prevention of heat rays passing into the chimney; secondly, the projection of these particular rays into the room, as Fig. 9.

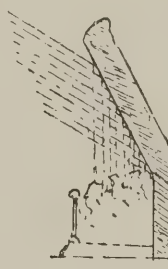
FIG. 9.

The next and as great a gain effected by the brick overhanging the fire is the utilisation of flame heat, a valuable source of heat wholly and utterly wasted otherwise. Flame, for all practical purposes, may be said to heat by contact only. Everyone knows what a little heat is radiated or dispersed from a flame. The hand may be held quite close to it without great inconvenience, but let the hand be just put into the flame (the flame have contact with the hand) its effectiveness is then manifested most obviously. If flame has contact with anything it will contribute heat to it unsparingly (as in a reverbatory furnace), but without contact it will do but very little work.

We have an excellent example of this with the modern forms of gas fires, the source of heat with these being flame pure and simple, and the flame by itself would be very ineffective, but it is made to impinge upon and to heat a firebrick and some hollow balls of an asbestos composition, and by making these of a bright red heat the stove is rendered a success. If we suddenly turn off the gas when one of these stoves is at a bright red heat we shall find that for a moment there is about as much heat radiated from the red-hot materials as when the gas was alight, showing that the gas flame itself contributed but little to the radiant rays of heat which are the cause of the room being heated.

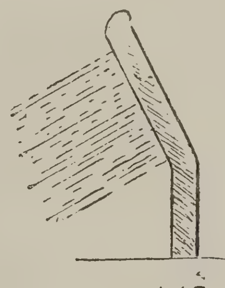
FIG. 10.

From this it will be seen what a valuable use can be made of the flame from a coal fire by causing it to impinge upon the back brick, this being effected by the brick overhanging the fire. We do not get the brick at a bright red heat, as in a gas stove, but it gets most intensely hot when the fire has been alight a little time, and then it sends its rays of heat into the room most freely and successfully, for the rays are projected in a downward direction towards the floor, as Fig. 10.

It is peculiar to note what a number of advantages are gained by having the back brick leaning over the fire. This projection of heat rays towards the floor is a really valuable one. If we succeed in furnishing sufficient heat to the floor of a room, the air which becomes heated by contact, and rises by its convective action, quickly makes the upper part of the room warm. Grates are now made with the fires as near the hearth as possible, chiefly with this object in view. It is easy to imagine what a difference there would be in heating a place with hot-water pipes if we put the pipes up near the ceiling instead of at or beneath the floor. It is doubtful if the place would ever get warm under these circumstances if any effective means of ventilation existed.

The overhanging brick thus sends out heat in two directions at once, that by deflection as Fig. 9, and that by radiation as Fig. 10, both these effects being of a pronounced successful character, and both being results not attainable with the ordinary or old pattern grate already referred to. It may be added that the overhanging brick assists materially in reducing the volume of smoke that would otherwise pass directly into the chimney, and smoke is nothing more or less than unconsumed fuel.

ARCHITECTURAL ASSOCIATION.

THE fortnightly meetings of the Association were resumed on Friday evening. There was an unusually small attendance, and in the absence of the President, who was out of town, and of the Vice-Presidents, both of whom were laid up by the prevalent epidemic, Mr. LEONARD STOKES, Past President, was called to the chair. Donations to the general fund were announced of five guineas for five years from Mr. T. M. Rickman, and of £100 a year for three years from the R.I.B.A., the latter gift being acknowledged by a special vote of thanks from the Chair. Messrs. J. Aldridge and J. E. Van Abbott were elected as members. A vote of condolence with the Prince and Princess of Wales in their bereavement was proposed from the Chair and agreed to, the members silently rising from their seats to testify their acquiescence.

THE DESIGN AND EQUIPMENT OF TECHNICAL SCHOOLS AND COLLEGES.

Professor GARNETT, of Newcastle-on-Tyne, read a paper on this subject, illustrated by plans, sections, and elevations of the Durham College of Science, at Newcastle, now in course of erection in instalments from designs prepared by Messrs. Johnson and Rich of that city. In his preliminary observations the lecturer suggested that it is desirable that the chief technical teacher, and sometimes two or three other members of the staff, should be appointed at the same time as the architect for a proposed technical college. It should be the duty of the teacher, as soon as he is appointed, to advise the governing body with respect to the accommodation required in the several departments, the relations of these departments to one another, and the special appliances required in each. Attention should be specially directed to the relative positions of the rooms devoted to the several departments, so that while each department forms by itself a compact whole, it should be contiguous to other departments to which it is, in the character of its work, most nearly akin; that the appliances of each department may be available to those students and teachers in other departments who are most likely to require their use. For example, a photographic laboratory should be situated as near as possible to the chemical laboratory on one side and the art studios on the other. For similar reasons the metallurgical laboratory should, if possible, be placed between the departments of chemistry and of mechanical engineering, so that all facilities for chemical analysis may be readily accessible on the one side, and testing machines for the systematic examination of the mechanical properties of the metals and alloys may be equally available on the other. On the same principle, the department of electrical engineering should adjoin the engineering laboratory and workshops, for the double reason that steam-power may be available, and because every electrical engineer must be at the same time a mechanical engineer. Students of electrical engineering must also have ready access to the physical laboratory; but it is not desirable that the engine and dynamo-room should be geographically near to the physical laboratory. But while it is desirable that the relative positions of the several departments should be carefully chosen, it is of paramount importance that each department should be compact in itself, so that its work may be conducted by the smallest number of superintendents. The private room of the Professor of Chemistry should be as near as possible to his students' laboratory; if it communicates directly therewith a further advantage will be gained, and his preparation-room should adjoin the laboratory on one side, and his lecture theatre on the other. It very frequently happens that it is not possible to erect at first the whole of the buildings which it is intended ultimately to provide, and the question then arises whether a school or college complete in all its departments should be erected on a small scale, or whether plans should be made for the whole building, as though it were intended to erect the whole at once, and a selected position, representing certain departments only, should be built at first. There is, of course, some inconvenience attending the latter course, pending the erection of the remaining portions of the building, but this inconvenience may be made comparatively small by a careful selection of the departments for which provision is at first to be made. If the former method is adopted, the institution will be complete in itself during the early years of its existence; but when the enlargement is carried out several departments will be partly located in the old and partly in the new buildings, and the conduct of the work of each department will be rendered difficult and expensive. In selecting the departments for which provision should be made at first, it is best to commence with the departments of chemistry, physics, applied mechanics, engineering, and fine art, erecting these departments as completely as the character of the plan for the whole building necessitates. As regards the position of the several departments, it is desirable that in any institution in which popular lectures or any large evening classes form an important feature, there should be a large lecture theatre, as near as possible to the public entrance, and that it should be on the ground floor. This lecture-theatre may be common to several departments, but should be readily accessible from the physical department, as physical apparatus is likely to be very largely used in the theatre, and such apparatus is often very ponderous or very delicate. In this theatre as much length as possible should be given to the lecture-table. For a theatre capable of holding two or three hundred persons a lecture-table 30ft. by 3ft. is not too large, and 3ft. is a convenient height. The table should be carried on its own foundations, the supports being entirely distinct from those which carry the floor, so that any movement of the audience may not disturb the most delicate apparatus on the table. It is generally best to carry brickwork for the support of the table up to within two or three inches of the floor level. The space beneath the table and within the brick wall should be accessible from the lecturer's side, as it may be usefully employed to accommodate resistance-coils and other accessories of the lecture-table. The floor should be carried on walls built a foot or more away from the wall which carries the lecture-table. In the Cavendish Laboratory at Cambridge the lecture-theatre is on the first floor, and the lecture-table is an oak slab carried on an 18in. wall, which forms one wall of the gateway, the floor being carried on brick piers erected for the purpose, a few inches away from this wall, and this arrangement may be desirable when it is impossible to find accommodation for the lecture-theatre on the ground floor. As much space as possible should be left behind the lecture-table for such apparatus as cannot conveniently be placed upon the lecture-table itself, as well as to give a reasonable length for a beam of light reflected from the mirror of a galvanometer or other instrument on the lecture-table, and observed by the audience as it traverses a graduated scale on the wall behind the lecturer. 8ft. is not too much space to leave between the lecture-table and the wall. The gas or other lights in the room should be controlled by a valve or switch fixed underneath the lecturer's table, and readily accessible to the lecturer. Another important adjunct to a lecture-theatre is a platform for the magic-lantern, which, like the lecture-table, is entirely independent of the floor of the room or of the gallery supports. A hollow brick pier standing on its own foundation, and carried up through the gallery without coming in contact with the seats or floor, forms a very convenient support for the lantern. Gas, bottles, and other appliances may conveniently be stored within the pier, and, if an electric lantern be used, the conductors may be brought up from the basement and through the pier, and regulating resistance fixed within the space inclosed by the brick walls, which form an almost fire-proof structure. The windows should be arranged in order to throw the greatest possible amount of light upon the lecture-table, but the room should be capable of being darkened completely. If possible, openings should be made in the ceiling directly over the lecture-table, through which apparatus may be suspended at any height above the table from the floor above. A water-supply and sink should be within easy reach of the lecturer, and a large fume-closet with glass front should be fixed in a position in which the audience can readily see its interior. A chamber heated by a steam-jacket, and provided with a glass front, is a very valuable accessory to a lecture theatre, as it enables electrical and other apparatus to be kept warm and dry and in working order, whatever may be the state of the weather or the hygroscopic condition of the overcoats of the audience. In the Physical Lecture Theatre, at Newcastle, the seats have been so arranged that any person can see the front edge, and therefore the whole top of the lecture-table over the head of a person who, when sitting down, is $2\frac{1}{2}$in. taller than himself. This condition gives a slightly concaved profile to the seats; but the steepness of the gallery is rapidly reduced if the distance between the lecture-table and the first row of seats is increased. It is only when the length available for the theatre is so small that the seats have to be brought very near to the lecture-table that the gallery becomes inconveniently steep. It is imperative that the principal laboratories in the physical department should be upon the ground floor, and that there should be no basement story below them. At least one room should be set apart for exact measurements in electricity and magnetism. The chief tables in this room should be of slate, carried on brick piers, which are built from their own foundations independently of the floor. Professor Ayrton has found it convenient to place slag wool between the brick piers and slate slabs, instead of fixing the slate to the piers by cement, but the risk of vibration being communicated to the instruments depends greatly on the nature of the soil in which the foundations are placed, and on the character of the traffic in the neighbourhood. Other things being equal, that side of the site which is most remote from the public thoroughfares, or traffic of any description, should be selected for the physical laboratory. The side tables throughout the physical department may be conveniently suspended from the walls. A plate of pine 6ft. or 7ft. in height, 6in. wide, and 2in. thick, is fastened to the walls by ordinary engineers' bolts, made of Muntz metal, which screw into sockets made of brass or Muntz metal, and built into the walls. Except in the neighbourhood of the electrical room, iron screws may be employed instead of brass, provided they are carefully protected from rust during the erection of the building by tar, or white lead and tallow. The plates of pine terminate a little above the floor, and to them are mortised brackets suitable for carrying the slab of teak or ash which is to form the table. By this means we not only secure a table with supports independent of the floor, but for a height of 3ft. or 4ft. above the table we have wooden plates, to which shelves or instruments can be attached without interfering with the walls, which in a physical laboratory may with advantage be of bare brick, provided its surface is smooth and hard. With the supports described, and with socket-screws built into the walls in positions suitably chosen, it will generally be found unnecessary to make any other attachments to the walls whatever. In the general physical laboratory gas and water should be provided, and, if possible, a fume-closet. If the building is heated by steam, a few T-pieces, by which flexible tubing can be connected to the heating-pipes, will enable steam at a pressure of 3lb. or 4lb. per square inch to be available for experiments in calorimetry and other branches of physics. When the physical laboratory is on the ground-floor, ordinary wooden tables may be conveniently carried on brick piers, 9in. or 14in. square, carrying stone caps only 6in. square, which project through the floor without touching it, and form supports for the table-legs. The brick piers carrying the tables should stand on foundations independent of those of the dwarf walls which carry the floor joists. When the physical laboratory is on one of the upper floors, the table may be rendered to a certain extent independent of the floors by the contrivance adopted at the Cavendish Laboratory. Here corbels are fixed in the walls 1ft. below the ceiling, and on these rest beams, upon which are fastened blocks, which project through the ceiling and floor to the floor-level of the room above. These blocks support the table-legs, which are thus carried from the walls of the building; but as the floors are carried from the same walls, it is obvious that the tables will not be free from vibration which can be transmitted through a short length of wall. Tables mounted in this way are, however, immeasurably superior to tables simply resting on a wooden floor, and are sufficiently good for nearly all purposes, provided that the blocks on which the table-legs stand remain clear of the floor; but there is a great tendency for these blocks to twist and come in contact with the floor on one side, in which case the whole arrangement becomes practically worthless. In the physical laboratory there should be at least one stone slab, about 3ft. square, placed at the floor-level, but resting on a foundation of its own, so that a kathometer or other instrument may be placed upon it and may be unaffected even by the movements of the observer himself. If it is possible to arrange trapdoors in the floors above the physical laboratory, so that wires or threads may be suspended freely from the roof of the building, such contrivances will frequently be found useful; but where this is not possible, supports should be arranged in accessible positions as high above the floor as may be, either by means of cantilevers fixed to the walls by socket-screws or otherwise, or else by beams carried across from wall to wall. It is generally best to place the chemical laboratory on the uppermost floor, constructing it with an open roof, so as to give as much air as possible. Full descriptions of many forms of benches have been published, notably by Mr. Robins, in his work on "Technical Schools and Colleges," which is unique and invaluable. There are, however, a few points in connection with the fittings of the chemical laboratory to which attention may be directed, and in the first place it is desirable that the use of lead should be avoided as far as possible in the drainage of the benches. The benches themselves are best constructed about 5ft. wide, and of length determined by the dimensions of the laboratory, but so arranged as to give not more than 3ft. 6in. to a junior student, and not more than 4ft. 6in. to a senior student. The depth of the cupboards and drawers from back to front is such as to leave a space in the centre of the bench running throughout its whole length of sufficient width for a man to pass through. This space serves to carry the gas and water pipes and the drainage trough. The latter may be made of 1in. or $1\frac{1}{4}$in. red deal boards, jointed so as to form a V-trough about 6in. in depth. The trough is thoroughly caulked with a mixture of pitch and tar, put on hot, and this trough serves to collect the drainage from the sinks and deliver it into a sludge-box or small settling-tank, through an overflow on one side. The overflow from the sludge-box is delivered into a similar trough laid in a chase in the floor, which conveys it to the down-comer outside the wall. In place of V-troughs, semicircular troughs cut from the solid in red deal may be employed. These semicircular troughs are largely used in chemical works, and avoid the joint of the V-trough. For the down-comer best stoneware pipes, salt glazed, may be employed, but cast-iron pipes coated with preservative compound will last a very long time, and some experiments will probably be made shortly upon the stability of enamelled cast-iron pipes for this purpose. Rectangular troughs have no advantage over V-troughs, and only offer a much larger surface for the acid liquids to act upon. The chases in the floor, which may carry gas-pipes, water-pipes, pipes for distilled water, compressed air for the blowpipe, and vacuum for filtration purposes, in addition to the drainage troughs, should admit of being opened throughout their whole length for the purpose of inspection. Fume-closets are generally more conveniently placed upon the walls than upon the working benches, and this arrangement simplifies the removal of the fumes without incommoding the laboratory with exhaust pipes to the ventilating shafts. Special fume-closets should be provided in the walls for the conduct of evaporations which occupy much time, and in these closets both gas and steam should be available for heating purposes. The water-supply to the benches should be at a low pressure. Ten pounds on the square inch is more than sufficient, and ⅜in. taps are quite large enough. In many laboratories it is necessary that the same benches should be used by two different students at two different times. In such cases the bottle-racks should be sufficiently large to accommodate two sets of re-agents, and each set should be provided with a locking-bar or frame, so as to be available to only one student, who will then be solely responsible for their purity. The balance-room is an essential appendage to the chemical laboratory, and, while readily accessible therefrom, care should be taken that it does not communicate directly therewith. The chemical laboratory and the balance-room will generally be on the first or second floor, and in that case the balances should be carried on the walls by brackets. If a separate sulphuretted hydrogen chamber is provided, it should be as far as possible from the balance-room. A separate room should, if practicable, be set apart for gas analysis and for other operations which require the use of considerable quantities of mercury. The floor of this room should be of asphalte, in which a shallow channel of circular or other convenient form is made for the purpose of collecting any mercury which may be spilled, and conveying it to an iron receptacle, whence it is collected and redistilled for future use. When mercury is spilled on a wooden floor, unless the joints are exceptionally close, a very large portion is lost, and accumulates between floors and ceilings. It will generally happen that the same lecture-room will have to be used by several departments; but it is very desirable that separate lecture-rooms should be provided for the departments of physics and chemistry, though each of these rooms may be used for lectures on any other subjects. For lectures on chemistry and physics a large amount of apparatus is frequently required, and sometimes it is desirable that the same apparatus should remain properly adjusted on the lecture table for several lectures in succession. This is notably the case with galvanometers and electrometers, some of which require much time for their adjustment. The engineering laboratory and the principal workshops must be on the ground, and, when land is available, they are best placed in a one-story building, with a "ridge and furrow" roof, separate from the main structure, but communicating directly with it. When it is necessary to place the engineering laboratory and workshops on the ground-floor of the principal building, the floor above should be of concrete, and the principal shafting should be carried on A frames, or other supports independent of the structure of the building. The engineers' drawing-office should be readily accessible from the workshops, so that the superintendent of the department may supervise both, as it will not generally be possible, or even desirable, to employ separate staffs of teachers for the drawing-office and workshops, though in commercial works the drawing-office staff is clearly differentiated from the shop foremen and managers. The biological department may with advantage be located on the highest floor, so as to command the best possible light and ventilation. A good range of windows on the north side coming within 3ft. of the ground is, perhaps, the chief desideratum in a biological laboratory. Sinks, a good water-supply, and tables which are strong enough not to yield to the pressure of the hand, because perfect steadiness is required for microscope work, with gas connections for table-lamps on every table, are also important desiderata. The uppermost story is specially fitted to meet the requirements of the department of fine art. An open Mansard roof constructed with steel principals, which are stiffened by gusset stays so as to avoid the necessity for tie bars, which might throw a shadow on a chart, seem most suitable for roof construction in this department. Lastly, with regard to the general arrangements of the building, a corridor of ample width should be carried on the ground floor throughout the whole length of the building, but in many cases through corridors will not be necessary on all the floors, provided that there are sufficient staircases to allow ready access to each department. It is difficult to carry corridors through a building on every floor without interfering with the access of light to the rooms, and in order to permit of the lighting of the rooms from both sides it is sometimes worth while to dispense with the through communication. In the college at Newcastle the first and second floor corridors extend for only one-quarter of the length of the building, so that the chemical laboratory and adjoining rooms, the physical lecture theatre, the apparatus rooms, the first-floor physical laboratory, and the optical laboratory occupy the whole width of the building, while the through corridor on the ground floor is built like the side aisle of a church as an annexe to the main building, but the roof being a lead flat and the corridor only 9ft. high, while the ground-floor rooms are 16ft. 6in. high, it has been possible to construct windows above the roof of the corridor to afford a cross light to the ground-floor rooms. When steam-power is required in the workshops or laboratories, it is most economical to employ low-pressure steam for the heating of the building, and to adopt engines which admit of efficient working with a back pressure of 4lb. or 5lb. per square inch on the exhaust, so as to enable the heating-pipes of the building to be employed as a surface condenser. If the building is lighted by electricity, the utilisation of the exhaust steam becomes an important consideration, as when the whole of the building is lighted, the exhaust steam from the electric-light engines is about sufficient for the heating on a very cold day. For example, a room of a floor area of 1,200sq.ft., and 16ft. in height, may be brilliantly lighted with high efficiency lamps, by the expenditure of two electrical horse-power. To develop this amount of power by non-condensing engines of 20 or 30 horse-power, and of moderate efficiency, will require about 75lb. of steam per hour. A much greater efficiency may, of course, be obtained with larger engines, or with high-speed engines coupled directly to the dynamos, and specially constructed for electric lighting. Seventy-five pounds of exhaust steam in condensing and cooling in the pipes will give about 40,000lb.-centigrade units of heat, and this will raise about 10,000lb. of air through 16° C. This quantity of air is equivalent to 130,000c.ft., and the capacity of the room being only 19,200c.ft., the air might be changed about seven times in an hour, which is more than twice the frequency required for class purposes. The ordinary allowance of electric light is one 60-watt lamp for 64sq.ft. of floor, reducing the quantity of steam for such a room to rather less than 60lb. per hour. As the corridors and some other parts of the building do not require to be illuminated as brilliantly as the classrooms, and as the ventilation will be continued in many of the rooms when the lights are not burning, it will be found that if boilers are laid down for the supply of the electric-lighting engines they will suffice, and not be much too large for the heating of the building in cold weather. When the engines are not running, the heating coils will, of course, be supplied directly from the boilers through a reducing valve. It it is necessary that any section of the building should be heated by a low pressure hot-water system, and if steam boilers are provided for the electric lighting and steam-heating of the remainder of the building, it seems undesirable that a special boiler fire should be kept up for the one section, especially if that section of the building to be heated by hot water is remote from the boiler room. In this case the hot-water circulation may be maintained by a coil of steam-pipe carried through a tank to which the hot-water circulating pipes are connected, the tank being placed, like a circulating boiler, at the lowest level available, and the steam supplied from the main boilers and drained back to the hot well. For the conduct of steam-pipes, return hot-water pipes, gas-pipes, cold-water pipes, electrical conductors, and, with some systems of ventilation, of the exhaust air-shaft, it is desirable that a subway, or basement corridor, should be constructed throughout the length of the building. From this corridor access may be obtained to the space beneath the floors of all ground-floor rooms whose floors are boarded in the ordinary way. As to ventilation, it has been pointed out by Prof. O. J. Lodge that when the air is warmer than the walls or other objects in the room there is a tendency for the dust in the air to be deposited on the colder surfaces, and this is generally associated with an unpleasant feeling of "stuffiness." Hence, heating by heated air is a dirty method, unless steps are taken to cleanse the air before it enters the rooms. This may be done to some extent by causing it to pass through a sheet of water produced by a "spreader," but the method is somewhat expensive. Any attempt at filtering the air through wool or other material introduces an amount of resistance to the current which is practically fatal. On the other hand, if the incoming air is cold, and the room heated only by radiation from the steam pipes, it is very difficult to avoid currents of cold air, with the practical certainty that the inlets will be closed by the persons occupying the rooms. A compromise between the two methods leads in some cases to satisfactory results. By boxing-in one half of the steam pipes with wooden casing, and allowing air to enter through the walls beneath the windows, and to pass over the hot pipes, and thence diffuse through the room, the whole of the entering air may be suitably warmed, while one half of the steam pipes remains for the heating of the walls and furniture by radiation. If radiators instead of steam-pipes are used in the best rooms, care should be taken in selecting the type of radiator to see that the castings, if such be employed, are so designed that it is impossible for unequal heating to cause strains of such a nature as to produce fracture of the casting. If two terminals are connected by three or more tubes forming one casting, it is possible to arrange such a distribution of temperature as to necessitate the fracture of at least one of the tubes. If the castings are held together by light wrought-iron ties which are external to the steam-tubes, so that their temperature is raised very slowly, the ties are liable to be strained beyond their elastic limits during the rapid heating of the castings, and to require frequent screwing up in order to keep the radiators steam-tight. There are types of radiators in the market which avoid all these difficulties. With regard to the removal of the exhaust air, there is little doubt that mechanical ventilation is most effective, and air propellers of the Blackman type, driven by a gas-engine or electric-motor, have proved very successful, even when the air has had to be drawn through a couple of hundred feet of tubes. The propeller may be inserted in a wall at the top of the principal staircase, or in some other convenient position, and the corridors may be used as air-ways, the air entering the rooms as above described, and passing through the opposite walls into the corridor. The system, perhaps, offers the least resistance to the air-currents, and a large propeller, driven at a comparatively slow speed, will do its work without noise or vibration. An electric motor may be directly coupled with the fan, whatever its position, or the fan may itself be wound as a motor; but if a gas-engine is employed, the power should be transmitted by a belt outside the building. It is clear, however, that the chemical laboratory, or any other rooms in which the noxious fumes are produced, must be cut off from this general system of ventilation, and be treated specially. If it can be arranged to erect the boiler chimney-shaft within a few feet of the chemical laboratory, the exhaust from the fume-closets, as well as the general ventilation of the laboratory, may be carried into the shaft, at the cost of somewhat reducing the steaming power of the boiler. It is very undesirable that any attempt should be made to carry the whole exhaust from the building into the boiler-shaft. If the chimney-shaft is not available for the chemical laboratory, it is best to provide a special fan for the exhaust of the fume-closets and the laboratory generally, conducting the air to the fan along a system of carefully-constructed tubes. In small laboratories the general ventilation may be effected by ventilators in the roof, and the exhaust of the fume-closets may be carried out by ordinary chimney-flues, in which an upward current is maintained by a gas-burner, but when it can be employed the fan gives by much the best results. It should be borne in mind that any system of air-conduits will serve also as tubes for the transmission of sound, so that rooms, like workshops, in which noisy operations are carried on, should be provided with separate ventilation. It must also be noticed that when a fan is driven at sufficient speed to exhaust through a great length of narrow tubes, it will necessarily be noisy, and the sound will be carried to every room which communicates with the ventilating system. Where rooms of different capacity communicate through independent tubes of different lengths, with the same exhaust chamber, the diameter of the tubes should be proportional to the fifth root of the square of the quantity of air to be removed per hour, and to the fifth root of the length of the tube. The great expense incident to efficient ventilation lies in the heat required to raise the temperature of the entering air in very cold weather. For example, suppose a building to contain 1,000,000c.ft. of air, and this is to be renewed only once an hour on the average of the whole building, and that the entering air must be heated through 27° F., or 15° C. The weight of 1,000,000c.ft. of air will be about 77,000lb., and its specific heat being ·24, the number of heat units required to raise this quantity of air through 15° C. is 277,200lb.-centigrade units. This will involve the condensation of 504lb. of dry steam, and the combustion of about 60lb. of coal; but this allows nothing for the cooling of the air within the building, which, in a brick or stone building, takes place mainly through the windows. If we adopt the usually-accepted principle that the amount of carbon dioxide in the air should not be allowed to exceed ·06 per cent., and that the supply of fresh air should, therefore, be at the rate of about 3,000c.ft. per hour for each individual, and three times that amount for each ordinary gas-burner (but nothing for electric lights), we find that for 1,000 persons in a building lighted by 333 gas-burners 6,000,000c.ft. of air per hour will be required, necessitating the combustion of 360lb. of coal per hour on an exceptionally cold day. If, however, electric light were substituted, current for 333 sixteen-candle lamps would require only 120lb. of coal per hour for its production; but if the gas-burners are so arranged that the products of combustion escape immediately, there can be no need for the double supply of air, and if the products of combustion mix with the air they will supply more than half the heat required to warm it. In the above sketch, arrangements have been suggested suitable for a building of considerable size, possessing, for instance, a capacity of 1,000,000c.ft. In the case of small schools, the same guiding principles may be adopted, though it will be impossible to obtain the same degree of specialisation in the appropriation of the rooms. Where the teaching of special local industries is necessary, the first thing to be done is to acquaint oneself with the machinery and methods employed in the factories or workshops where the particular trade is practised, and then to learn precisely the extent to which these appliances should be introduced into the technical school. In teaching purely technological subjects, the classes for which consist wholly of members of one particular trade, it is most important that the instruction should be under the general direction of a committee consisting wholly of members of the trade —masters, foremen, and operatives being all duly represented. Such a committee will do more to inspire confidence among apprentices and workmen in the practical character of the teaching than the most distinguished governing body; and there is no danger that under such direction the teaching will sink to pure empiricism if the teachers on the permanent staff of the institution are men of the right stamp.

Mr. Paul Waterhouse, in proposing a vote of thanks to Professor Garnett, remarked that it was not easy to give suggestions to architects proposing to build technical schools, because very much depended on the individual views of the staff of professors who would be engaged in the building. Mr. Garnett had, therefore, done well to lay stress at the outset of his paper on the advisability of a consultation between the architect and the head of the college before the plans were determined upon. The lecturer had given them some sound general principles to work upon in designing buildings of this class. In schools on a small scale, the preparation-room might very well serve also as a small lecture theatre, or might also be usefully fitted up as a laboratory. As it was desirable to keep the walls of a lecture room as low as possible, he should like to know of the relative position recommended for the lecturer's platform, and the lowest tier of benches. The drains under the desks of a chemical laboratory could very well be constructed in wood, but the larger ones would have to be formed in channels in the floor, and he had been informed by lecturers that stoneware was not always to be depended upon as a material for drains where chemicals were used. He should like to know what material the lecturer recommended for the top of a table in the chemical theatre—slate, hard teak, or lead.

Mr. C. H Brodie seconded the motion. He agreed with the lecturer that where funds did not admit of completing the entire scheme at once a technical college should, like a church, be designed on a comprehensive basis, and built in sections. He had found the Blackman propeller an excellent apparatus for removing fumes from chemical laboratories. Had the plenum system of ventilation been abandoned of late years, as he had not heard so much of it?

Mr. W. J. H. Leverton inquired what was the best form for a lecture theatre. A practical difficulty in the way of building the platform and magic-lantern supports in a lecture theatre on isolated piers was the risk of dust, rubbish, or small articles falling into the space between these piers and the general flooring.

Messrs. W. H. White and E. Sizer having spoken, the vote of thanks was carried by acclamation.

Professor Garnett, in acknowledging it, explained that the problem of preventing small articles and dust getting down the space between isolating piers and the general flooring was solved by slightly raising the general level of floor close up to the pier, so as to form a hood all round which nearly touched the brickwork; the pier itself was corbelled out at the floor level so as to overhang. By adopting this plan, screws and bolts would roll away from, and not down, the space next the pier, and little dust would find entrance into the space. For tables where great steadiness was required, and which had to sustain great weights, a slate top on a solid brick foundation was best, but for other purposes the lecturers' tables should be of teak, occasionally oiled, and provided with supports devised by Professor James Thompson. There was, of course, no difference between a plenum and an exhaust system of ventilation; the one was a pumping in of air, the other a drawing out by fan; the former system was intended to prevent draughts of cold air, but if rational inlets were provided there need be no draughts. The semicircular and horseshoe, were very convenient forms for lecture theatres; but in most architects' plans the space allotted to the lecturer was too limited.

THE SURVEYORS' INSTITUTION.

THIS society is one whose membership covers such a wide range, including as it does every class from the land agent to the quantity surveyor, that it is not surprising if sometimes papers are read at its meetings which, while they are no doubt of very great interest to the country members, are too purely bucolic in character to concern our readers. That read by Mr. Morris, of Chirbury, Salop, last Monday, treated of the "Four Course System of Cultivation," and, so far as it is possible for a purely non-agricultural mind to judge, dealt ably with the very important question to tenant farmers of the terms under which they hold their land from the owners. It seems that in many parts of the country a system of cultivation—*i.e.*, a certain rotation of crops—is insisted on in the farm leases. The object is to prevent impoverishment of the soil by the too-frequent repetition of certain crops, which, at the end of a tenancy, might leave the land unproductive; but, as Mr. Morris pointed out, any hard and fast rule of the kind, in every district or on any soil, is an injustice to the tenant, and a positive cause of depreciation in some cases of the value of the land. He quoted the opinion of Mr. Clare Sewell Read that the cost of agricultural labour had risen, from increased wages and decreased efficiency, 50 per cent. during the last fifty years, and said that the statistics from many parts of the kingdom corroborated this statement. The whole question of the present unprofitableness of agriculture seems to have a more distinct bearing than would at first sight appear on the interests with which our readers are concerned. Labour is, in rural districts and for purely farming purposes, so badly paid, and the profits of the farmer show so very little hope of a rise in wages, that the ranks of the ordinary labourer in towns (in the building and other trades) are swelled by a number of candidates, who, even if they are ready to take very low wages, are totally unskilled, and therefore probably unprofitable at any price. The whole question is one of the deepest concern to us all as a nation, to every particular trade as a craft, and to the great bulk of the inhabitants of our towns and rural districts, as seriously affecting the prices of necessaries and the general welfare of the entire population.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A PRIVATE business meeting of the Institute was held last Monday to make the annual award of prizes for essays and drawings, a list of which we give elsewhere. Mr. James Brooks occupied the chair, and proposed letters of condolence to be sent to the Queen and Prince of Wales in respect to the death of the Duke of Clarence. This was seconded by Messrs. Alfred Waterhouse, R.A., and J. J. Stevenson, F.S.A. The following gentlemen were elected members:

As Fellows: Oliver Caldwell, Victoria-square, Penzance; George Baines, 4, Great Winchester-street, E.C.; Robert Cochrane, Office of Public Works, Dublin; Charles William Lovett (Associate), 20, King William-street, Strand, W.C.; William Bakewell, 38, Park-square, Leeds; Robert Alexander Briggs (Associate), 2, Devonshire-square, E.C.; John Hatchard Smith (Associate), 41, Moorgate Station Buildings, E.C.; John William Taylor, 33, Westgate-road, Newcastle-upon-Tyne, James Thoburn Cackett, 24, Grainger-street West, Newcastle-upon-Tyne; Charles Stanley Peach, 8, John-street, Adelphi, W.C.; William Howard Seth-Smith, 46, Lincoln's Inn-fields, E.C.; Eustace James Anthony Balfour, M.A., Cantab, 10, Buckingham-street, Strand, W.C.; William Alfred Pite (Associate), 5, Bloomsbury-square, W.C. (Mr. Horace Field withdrew his name from the list of candidates.)

As Associates: Arthur Henry Moore, 25, Avenue Villas, Cricklewood, N.W.; Alfred Hayles Clark, 28, Paddington-green, W.

As Hon. Associate: Henry Trelawny Boodle, 53, Davies-street, Berkeley-square, W.

As Hon. Corr. Members: Carl König, architect, professor of architecture at the Imp. and Roy. Polytechnic High School of Vienna, Vienna; Otto Wagner, architect and "K. K. Baurat," Rennweg 3, Vienna, III.; Max, Baron von Ferstel, architect, Ungargasse 12, Vienna, III.

The discussion on the paper of "Amended Suggestions for the Conduct of Architectural Competitions," adopted by the Council, was postponed "on account of the death of the Duke of Clarence." The declaration of the poll for the election of Mr. Seth-Smith, the President of the Society of Architects, as a Fellow was received with much applause.

SHADOWS IN PERSPECTIVE.*—I.

By Arthur Vye Parminter.

THE science of putting in shadows in perspective drawings, or rendering the effect, as it is called, may well be studied after that of geometrical shadows. The student who has followed the recent articles on the latter subject will find the former study all the more interesting as combining the rules of geometry with those of perspective.

On the Continent, "Shadows" form an important subject of study in the science and art schools. In England, unfortunately, little importance is attached to this subject, and the ordinary draughtsman puts in any necessary shadows at his own sweet will and taste, with very little regard for rules or fitness. How often may we see a well-drawn elevation or perspective completely spoiled by an unscientific attempt to draw in the shadows! Observe a geometrical drawing, got up by a French student, and notice how well "the effect" of the building or object is arrived at; the projecting portions seem to stand out from the paper, and the receding portions to fall back into the distance in due proportion to the scale. Each shadow is first carefully drawn in, then neatly coloured, the greatest care being given to the proper gradations in the scale of light and shade and distance. For this reason a Continental architectural drawing is always clear and correct in tone; the tints and washes always clean and fluid; in this manner the details stand well out, and the general effect is neat and artistic.

Shadows in perspective follow to a degree the same rules as for geometrical shadows, combined with the rules of perspective.

In geometrical shadows, we have always taken the sun as being the source of light, the rays of light parallel to each other, and arriving at a fixed angle of 45° with the horizontal and vertical planes.

In perspective shadows, however, the case is

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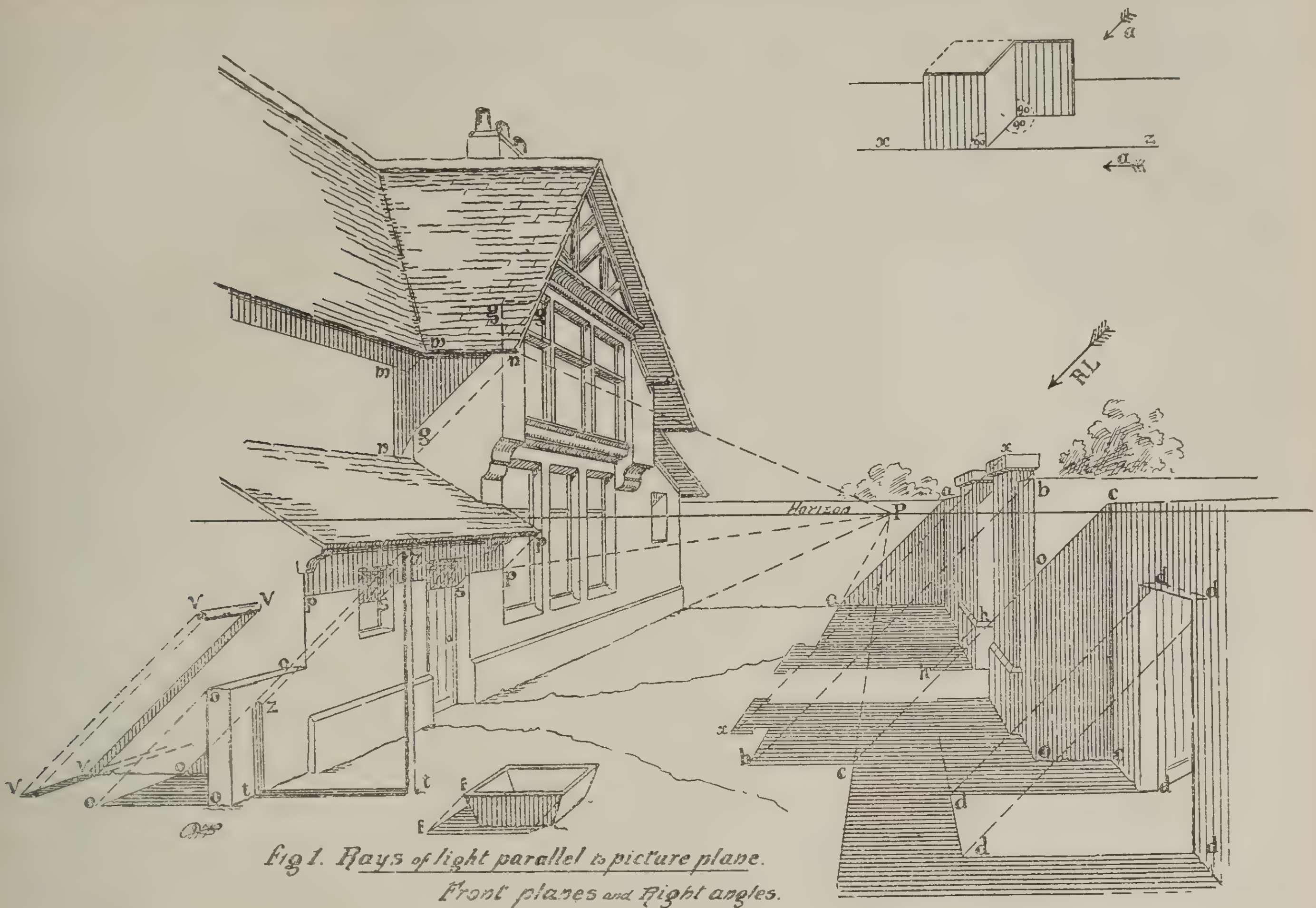


Fig 1. Rays of light parallel to picture plane.
Front planes and Right angles.

different. We will still take the sun as the source of light, but the direction of the rays may be varied according to the nature of the perspective and the taste of the draughtsman. We will take three cases for the direction of the rays of light: 1. The rays of light arriving parallel to the picture plane. 2. The source of light being before the observer. 3. The rays coming from behind the observer.

For each of these three cases we have to study the portion of the objects on which the rays of light fall. 1. On front planes and right angles. 2. On oblique planes and vertical lines. 3. On oblique planes and oblique lines. 4. On inclined planes.

We will take the case in which the rays of light arrive *parallel to the picture plane*, as indicated in elevation and plan by the arrows *a a* parallel to *x z*. Also the case of *front surfaces and right angles*, as indicated by the figure.

We wish to put in the shadow of Fig. 1. It is drawn in parallel perspective, with one vanishing point at P; the planes before the observer are parallel to the plane of the picture, and the general angles are right angles. The rays of light arrive at any angles we may desire to the horizontal plane, but they are at the same time parallel to the picture plane and front planes of the drawing—let us say the direction R L. The planes directly facing the source of light are, of course, brilliantly lighted; for instance, the gable of the house, the surfaces turned against the source of light, as the walls of the courtyard, are in natural shadow. The planes facing the spectator and parallel to the picture planes receive the ray of light, but are less brilliantly lighted.

From the angle *a* of the wall of the courtyard we draw the shadow line *a a* parallel to the direction of the rays of light R L. This shadow is intercepted by the ground line at the point *a*. From the point *a* we draw indefinitely a line *a b* from the vanishing point P. The shadow line from the angle *b* and its intersection with the line *a b* gives us the point *b*, where the shadow *a b* of the crest of the wall *a b* terminates. A horizontal parallel to the horizon line from the ground point *o* of the angle *b* should also meet the line *a b* at *b*, thus further assuring us of the correctness of this point. From the angle *c* we draw the shadow line *c c*. The shadow is cast on the front surface of the wall as far as the point *o* on the angle *b o*, the point of the intersection *c* with the line *c b* parallel to the picture plane gives us the shadow of the point *c* on the ground; a continuous line from the vanishing point though *c* determines the shadow of the crest of the wall. The opening or doorway *d d* allows the light to pass; from the points *d d* on the outer portion of the soffit of the doorway where the light strikes, the parallels to the direction of light, and the points of intersection with the ground line from *d d*, determine the surface of light, *d d d d*, allowed to pass through the open doorway.

For the shadows of the building, parallel to the direction R L, from the points *m*, *p*, *s*, *g*, &c., will determine the shadows thrown against the walls by the projecting eaves. From these points obtained lines must be drawn to the vanishing point. For the shadow of the projecting portion of wall *o o*, we draw the shadow line *o o*, the intersection with the ground lines, and the line drawn from the vanishing point determines the shadow. From the base of the post *z t* we draw parallels to the picture plane *t t*, meeting the wall ground line at *t*; the intersection of the vertical raised from *t* with the shadow lines from the summit of the post at *z* will give us the shadow on the ground and wall. Similarly for the projecting beam *v v*, the rays of light from *v* on the wall meet the ground line at *v*, the intersection of the line drawn from *v* to the vanishing point, and the shadow lines from the projecting end of the beam determines the shadow of *v v* on the ground and wall planes. The remaining shadows, as the opening and capping of the gateway at *x* and *h*: the box *f f*, &c., are left for the ingenuity of the student. It will be noticed that the shadows follow the same laws of perspective as the building, the shadows always converging to the vanishing point P. The student should, for practice' sake, vary the angle and direction of the rays of light R L, as far as regards the horizontal plane, respecting, however, for the present, the parallelism to the picture plane.

Palais des Beaux-Arts, Lille.

STREET CABLES.

CABLE railways are multiplying fast in America, and the cable-rope is now a large industry, generally $1\frac{1}{4}$in. in diameter, made of six strands of wire round a hempen core, which latter increases the flexibility of the rope. In Chicago, one grip is used to drag a train of cars, and the wear of the cable is very great. The cable in winter time often breaks, and has to be spliced to present a smooth surface to the gripping apparatus. The life of cables varies; in one case—the Temple-street cable road at Los Angelos, Cal.—the record shows for a cable 12,380ft. long a period of 3 years and 2 months; in San Francisco it shows 1 year 8 months for 106,225 miles, and 2 years for 119,153 miles run; and this latter record has been about the life of cables in Kansas City and Denver. The average is about 14 months, with from 70,000 to 80,000 miles of service. The longest rope in London is that just laid between Kennington-gate to Telford Park, Streatham, the company desiring to obtain powers to carry their cable system to Streatham Common, in which case it would be the longest single rope in the world, for from Kennington to Streatham Common is about $5\frac{1}{2}$ miles. The track has been laid by Messrs. Dick Kerr and Co., and the tunnel or channel is made of concrete and cast-iron tube frames, to which frames the slot-rails are bolted. The tube is 19in. deep from road-level, and $9\frac{1}{2}$in. wide. The tubes or channels are formed between the frames with boards, and then the concrete is thrown in outside. Under the bottom of the channel is laid a 6in. clay pipe, which will drain the tube. There are recesses which receive the pulleys for supporting the cable. At Birmingham four systems are in use, and the working expense of the cable system compares favourably with other modes of traction, or about 50 per cent. of the gross receipts.

* * *

A new coach factory in St. George's-road, Bristol, has been opened this week. It was illustrated in our issue of the 4th ult., and has been built from the designs of Mr. Edward Gabriel, architect, of Bristol, Mr. August Krauss, of the ame city, being the contractor.

CONTENTS.

Brick and Concrete Work ... 121
The Soane Medallion and other Prize Drawings ... 121
The Action of Heat from Open Firegrates, Stoves, and Hot-water Pipes.—II. ... 122
Architectural Association ... 123
The Surveyors' Institution ... 126
Royal Institute of British Architects ... 126
Shadows in Perspective.—I. ... 126
Street Cables ... 127
Our Illustrations ... 128
West Hartlepool ... 128
Competitions ... 128
Architectural and Archæological Societies ... 128
The Building News Directory ... 129
Wayside Notes ... 149
Building News Designing Club ... 150
Notes on Building Prices.—XX. ... 151
Statutory Provisions against Fire ... 152
Books Received ... 153
Building Intelligence ... 153
Correspondence ... 154
Intercommunication ... 154
Legal ... 155
Legal Intelligence ... 155
Statues, Memorials, &c. ... 156
Water Supply and Sanitary Matters ... 156
Our Office Table ... 157
Meetings for the Ensuing Week ... 157
Trade News ... 158
Tenders ... 158

ILLUSTRATIONS.

THE SECOND PREMIATED DESIGN FOR THE NEW MUNICIPAL BUILDINGS AT BATH.—HOUSE FOR PROFESSOR HUXLEY AT EASTBOURNE. — HOUSE FOR SIR JOSEPH HOOKER AT SUNNINGDALE.—WOOD CARVINGS FROM THE NEW FOREST, LENT BY DR. ALLINSON. — WESLEYAN CHURCH, ST. LEONARD'S-ON-SEA.—A LONG OAK SETTLE, FROM LEEDS. —DESIGNS FOR A SMALL HOUSE FOR AN ARTIST.

Our Illustrations.

BATH MUNICIPAL BUILDINGS.

We published the plans, view, and elevations of the selected design for these buildings in our issue for January 8, and to-day we give similar illustrations of the second premiated design by Messrs. Burgess and Oliver, architects, of Gray's Inn. The plans show how skilfully the problem of working-in the existing central portion has been managed, and the view exhibits a clever treatment of the façade. The second pediment at a lower level in the return front seems open to objection architecturally. We have now published all three of the prize designs in this competition, as we gave drawings of the third premiated composition in the Building News for December 18th last.

HOUSE FOR PROFESSOR HUXLEY, F.R.S., AT EASTBOURNE.

This house has been lately erected at the junction of Staveley and Buxton-roads at Eastbourne. It is heated by Norwegian hot-air stoves, and lighted throughout by electricity. The walls are of red brick, and the roof is covered with Broseley tiles. The contractor for the work was Mr. J. Harding, of Eastbourne. The architect was Mr. Fredk. W. Waller, 17, College-green, Gloucester, and 8, John-street, Adelphi, W.C.

HOUSE FOR SIR JOSEPH HOOKER, C.B., F.R.S., AT SUNNINGDALE.

This house is situated on rising ground, above a mile and a half from Sunningdale station. It is built of red brick, with Bath-stone dressings, and the roof is covered with Broseley tiles. The contractor for the work was Mr. A. Estcourt, of Gloucester. The architect is Mr. Fredk. W. Waller, 17, College-green, Gloucester, and 8, John-street, Adelphi, W.C.

WOOD CARVINGS OF THE PASSION.

These curious wood carvings are from the well-known church of Stalshund in the Black Forest. They were shown last at the Crystal Palace Photographic Exhibition by Dr. T. R. Allinson, L.R.C.P., to whom we are indebted for the loan of the originals, as also for that of the altar piece we illustrated a few weeks since.

WESLEYAN CHURCH, NEW PARK-ROAD, ST. LEONARD'S-ON-SEA.

This church is at present being built by Mr. H. E. Cruttenden, the contractor, and will be finished and opened during Easter of 1892. The materials used for the exterior are Bath-stone dressings and local blue facings, and green slates for the roof. Bath stone has also been freely used in the interior for nave columns, &c. The building is being carried out from the designs and under the superintendence of Mr. P. H. Tree, F.R.I.B.A., St. Leonard's-on-Sea.

OAK SETTLES FROM THE OLD ARCHERY CLUB, LEEDS.

These two interesting long settles, forming part of the club's furniture, were recently sold by auction. The upper one on our illustrated sheet sold for £6 15s., and the lower one for £9 9s. They measure about 6ft. in length, and both are nearly the same height—viz., 3ft. 9in. from floor to top of back. The seat of the upper one is provided with a long flap, which lifts to admit to a locker. The carving in both is of an unusual and interesting character. We are indebted to Mr. F. Mitchell, of Leeds, for the loan of his measured drawings from which the perspective sketches were made. On May 7, 1886, we published a drawing by the same contributor of a chair which formed part of the same club's furniture.

"BUILDING NEWS" DESIGNING CLUB: A SMALL HOUSE FOR AN ARTIST.

(See description on p. 150.)

WEST HARTLEPOOL.

This town is rapidly coming to the front, as from the minutes of the recent Council meetings it would appear that it is making very rapid strides in its population, and that the Council is fully alive to this, and is making improvements and extensions in every direction, A large outfall sewer for the northern district has recently been completed. A new cemetery, twenty acres in extent, with boundary wall and specially designed drainage, is now in progress, and is expected to be completed shortly. New abattoirs are to be erected immediately a suitable site can be obtained. A large central depot and stable yard has been completed, with stabling for all the Corporation horses, cart sheds for forty carts, steam-roller house, special machinery for cutting chaff and grinding corn for the horses, also a station for the Fire Brigade, with special drying tower for the hose pipes. A new façade to the public market, composed of six large three-story shops and offices, is to be built at once, designs and plans for which were approved at the last Council meeting. Two new intercepting sewers of large dimensions are to be proceeded with at an early date, one along the Burn Valley, as an outlet for the Park district, which is rapidly developing, and the other as an outlet for the entire western section of the borough. New streets at an estimated cost of many thousands of pounds are also in hand. A large scale plan of the borough has been made, and a survey of the whole of the sewers in the borough is in progress, which will give the position, direction of flow, size, kind, depth, and condition, together with the manholes, ventilators, and gullies.

Mr. I. W. Brown, A.M.I.C.E., F.G.S., the borough engineer, who has designed and is carrying out the whole of the above works, would appear to have his hands full at present.

◆

The death occurred, last week, of Mr. A. W. Blacker, proprietor of the Royal Marble Works, St. Mary's Church, Torquay.

Mr. Alfred Porter, F.R.I.B.A., of Grange-road, Bermondsey, and formerly of Norwood, died on Thursday in last week, aged 55 years. Mr. Porter was a life member of the Institute of British Architects, which he joined as an Associate in 1856, becoming a Fellow four years later.

New public offices are about to be erected at Merthyr Tydfil. Mr. E. A. Johnson, of Abergavenny (whose design was selected in competition for a much more extensive scheme some time ago), has been instructed to prepare the necessary plans. The revised scheme will embrace a vestry hall and county court, together with accommodation for the various local governing bodies and public officials.

The river Teign divides Teignmouth and the pretty villages of Shaldon and Ringmore, the latter place having one of the most interesting and complete 13th-century little churches that the large county of Devon can boast of, with an east window that commands the admiration of all who see it. It has been found necessary to build a separate church for the larger place, Shaldon, for which Mr. Edmund Sedding, of Plymouth, has been asked to prepare plans.

COMPETITIONS.

Manchester.—The Council of the Whitworth Institute received 23 complete sets of drawings in reply to their advertisements. After examination of these drawings, the Council invited Mr. Alfred Waterhouse, R.A., to act as their professional referee and adviser. His award as to the three designs to be selected for distinction has now been made. Mr. Waterhouse has certified that, in his opinion, the drawings of "Terra-cotta (No. 2)," by Messrs. J. W. and R. F. Beaumont, Manchester; "Floreat Mancunium," by Mr. Archibald Neill, Leeds; and "Three Sisters," by Mr. Geo. Freeth Roper, Manchester, should be so distinguished, and in this order of merit. The council will arrange for the exhibition, to any competitors who care to inspect them, of the whole series, and will announce the time shortly.

Shrewsbury.—At the last meeting of the town council of Shrewsbury a long and animated discussion took place as to a report from the watch committee as to the designs received for the new police-station. The committee stated that, in conjunction with the assessor, Mr. R. Knill Freeman, of Bolton, they had most carefully considered the competitive plans sent in, and had no hesitation in recommending that the first premium of £24 be awarded to the author of the design sent in under motto "Well Considered," and that the second premium of £15 be awarded to "Nota Bene," providing "Well Considered" and "Nota Bene" undertook that, if required, the whole of the work could be carried out for a sum not exceeding £3,000. Several members of the council demurred to the acceptance of this report on the ground that the assessor had originally placed the design under motto "Night Watchman" first, but disqualified it, as the author estimated the cost at £3,100. An amendment having been moved that the recommendation be referred back, Mr. Knill Freeman's report was read, and stated that, while in order of merit he placed the designs thus: "Night Watchman," "Well Considered," and "Nota Bene," he had no alternative but to make his award thus: 1st, "Well Considered"; 2nd, "Night Watchman"; and 3rd, "Nota Bene." The amendment was rejected by a large majority, and the committee's recommendation adopted; and it was further decided to appoint the author of "Well Considered" architect for the building, the premium to merge in the usual commission. The sealed envelopes containing the name and address of each competitor were then opened. "Well Considered" turned out to be Mr. John Johnson, Queen Victoria-street, E.C. (the architect for the new baths at Shrewsbury); "Night Watchman" was the *nom de plume* of Mr. A. E. Lloyd Oswell, Shrewsbury; and "Nota Bene" that of Messrs. Grundy and Son, Ulverston.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

Leeds and Yorkshire Architectural Society (Incorporated).—A general meeting of this society was held at their rooms, Albion-place, Leeds, on Monday last. The president, Mr. W. H. Thorpe, F.R.I.B.A., in the chair. Mr. J. M. Brydon, F.R.I.B.A., read a paper entitled "The English Renaissance."

Manchester Society of Architects.—One of the leading objects of the reconstruction of this Society was to afford facilities for the study of architecture, other than such as are found in ordinary office routine. This has now been to some extent accomplished by the formation of two classes for instruction in (1) History and Development of Architecture, and (2) Materials and Construction, which will be open to students whether members of the society or not. Mr. H. E. Stelfox, A.R.I.B.A. (Ashpitel Prizeman, 1888), has been appointed lecturer. They will be held weekly, having been commenced on Monday last. In addition to the above, classes of Design (senior and junior), and for Sketching and Measuring have been arranged for members only.

York Architectural Association.—A meeting of the members of this Association was held at the Church Institute on the 14st inst., when Mr. George Benson read a paper, entitled "Wanderings in Paris." A number of illustrations were shown by means of lantern-slides. The chair was occupied by Mr. W. G. Penty.

THE BUILDING NEWS DIRECTORY.

At the request of many advertisers it has been determined to commence with 1892 the weekly publication of a BUILDING NEWS DIRECTORY, to which Architects may easily refer when in search of the makers and vendors of Architectural and Building Specialities.

The large Advertiser is, of course, to a considerable extent independent of such help. By his judicious iteration of the merits of his specialities he effectually impresses the mind of the constant reader with his claims to attention. But he will find it to his interest to avail himself of our new help to publicity; and besides, there are hundreds of Manufacturers who never advertise in the ordinary way, or who, if they do so, only advertise one or a few of the articles they make and supply, and who yet essentially need *constantly to remind Architects of their existence.*

It may be urged that the Trade Directories and Price Books to a certain degree supply this want; but when it is remembered how limited, comparatively, is their circulation, and how swamped the comparatively few that are wanted are for the most part amongst hundreds of thousands of other names and addresses in which Architects have no interest, and among which they are seldom likely to search for what they require, it will be seen at once how advantageous in a Journal like THE BUILDING NEWS will be the introduction of the feature we contemplate.

We propose, therefore, to devote space *in the body of the paper, immediately preceding and following the Illustrations*, and not among advertisements, or on the inside pages of the outer sheet, to a carefully-arranged *Directory of Makers and Vendors of Architectural Specialities and Builders' Appliances*, under generic and suggestive heads which will naturally suggest themselves to Architects and others in search of Advertisers' addresses.

It will be evident, of course, that many Manufacturers will desire to have more than one entry in the list, because they supply more than one speciality. For the majority possibly one entry will be ample, and that we undertake to make and to repeat weekly in every edition for the sum of ONE POUND PER ANNUM, payable strictly in advance, and expiring on the 31st of December in each year. We cannot undertake to charge for parts of years in connection with this matter, so that entries should at once be forwarded, accompanied by the necessary subscription, that they may appear throughout the whole of 1892.

Clients who may desire to have more than one entry under different heads can do so to any extent they please by payment of *One Pound each* for every additional entry.

All payments *must be made in advance*, as this feature is not introduced as a remunerative one to the Publisher in itself, and the small charge made will barely defray expenses, and will not allow of booking. Name and address must not exceed one line.

The following firms have already entered their names. We cannot keep the list open long, so those desirous of being included should *send in their instructions at once*, as when the allotted space is full no more names will be received this year.

ARCHITECTURAL DESIGNERS—
Finsbury Tracing and Drawing Office, 113, Pavement, E.C.

ARCHITECTURAL PHOTOGRAPHERS—
Bedford, Lemere, and Co., 147, Strand, London, W.C.

ARCHITECTURAL TERRACOTTA—
Gibbs and Canning, Ltd., Tamworth.

ARTISTS IN STAINED GLASS—
Bourne Swaine, 61, King Edward-road, Birmingham.

ASPHALTE—
Avelines Sicilian Asphalte. Joseph Bernays, 96, Newgate-street, E.C.

BATH STONE—
Bath Stone Firms, Limited, Bath.

BLINDS—
Williams, G. A., and Son, Queen's-road, Bayswater.

BOOKS—
B. T. Batsford (Professional), 52, High Holborn, London, W.C.

BRICKS—
Accrington Brick and Tile Co. (Facing Bricks, Plastic and Semi-Plastic), 8, St. James-street, Accrington.
Gibbs and Canning, Ltd. (White Glazed), Tamworth.
Heather Brick and Terracotta Co., near Ashby-de-la-Zouch.

BRICK AND TILE MACHINERY—
Clayton Howlett Co., Woodfield-road, Harrow-road, W.

BUILDING & QUANTITY SURVEYORS—
Anderson, A. E., 36, Victoria-road, Northampton.
Flew, J., 11, Popplewell Chambers, Bradford.

BUILDING COMPOSITION—
White, W., Great Western Works, Abergavenny.

CASEMENTS AND WINDOWS—
Burt and Potts, 38 and 65, York-street, Westminster, S.W.
Wragge, Geo. (Wrought Iron, Steel, and Gunmetal), Wardry Works, Chapel-street, Salford.

CEMENT MANUFACTURERS—
Rugby Portland Cement Co., Rugby.

CEILING DECORATIONS—
Heaton, J. Aldam, 26, Charlotte-street, Bedford-square, W.C.

CONCRETE—
Fambrini and Daniels, Excelsior Art Concrete Works, Lincoln.

CURTAIN BLINDS—
Heaton, J. Aldam, 26, Charlotte-street, Bedford-square, W.C.

DECORATORS—
Campbell, Smith, and Co., 75 and 78, Newman-street, London, W.
Lamb, J. (Specialist), 14, Marlbro'-road, Turnham Green.

DEVONSHIRE MARBLE—
Goad, J. and E., Phœnix Steam Marble Works, Plymouth. (See Brompton Oratory.)

ELECTRIC BELLS—
Gray, J. W., and Son, 113, Leadenhall-street, E.C.
Teale and Somers, Electricians, Leeds.
Wright, Archibald J., 7, Beaumont-road, Hornsey-rise, London, N.

ELECTRIC LIGHT APPLIANCES—
Macfarlane, Walter, and Co., Saracen Foundry, Glasgow.

FANLIGHT OPENERS—
Osborn, David, High-street, Berkhamsted.

FIBROUS PLASTER—
Plastic Decoration and Papier Mache Co., Ltd., 21, Wellington-street, Strand, London, W.C.

FIREPLACES—
Edwards, F., and Son, 54, Great Marlborough-street, W. (see advt. p. V.)
Teale Fireplace Co. (Teale and Somers), Leeds.

FIREPROOF FLOORS—
Lindsay Neal, W. H., and Co., 15, North Wharf, Paddington.
Phœnix Fireproof Flooring Co., 9, Oxford-street, Manchester.

FIREWOOD SPLITTING & BUNDLING MACHINERY—
Glover, M., and Co., Patentees and Saw Mill Engineers, Leeds.

FURNITURE—
Foster and Cooper, 63, Long-row West, Nottingham.

GASFITTERS—
Beaven and Sons, 38, Eastgate-street, Gloucester.

GRANITE MERCHANTS—
Webb, Percy C., 41, Eastcheap, London, E.C.

GRATES—
Edwards, F., and Son, 54, Great Marlborough-street, W. (see advt. p. V.)

HEATING APPARATUS—
Boyd, Jas., and Sons, Paisley.
Edwards, F., and Son, 54, Great Marlborough-street, W. (see advt. p. V.)
Grundy, J., 30, Duncan-terrace, City-road, London, N.
Teale Fireplace Co. (Teale and Somers), Leeds.

HORTICULTURAL BUILDINGS—
Boyd, Jas., and Sons, Paisley.
Gloucester Railway and Carriage and Wagon Co., Gloucester.
Macfarlane, Walter, and Co., Saracen Foundry, Glasgow.

HYDRAULIC RAMS—
Blake, John, Oxford-street Works, Accrington, Lancashire.

INTERIOR WOODWORK—
Foster and Cooper, 63, Long-row, Nottingham.

IRON AND STEEL GIRDERS—
Walmsley, B., 15, Mawdsley-street, Bolton.

JOINERY—
Brock, W., and Sons (and Woodwork of all Descriptions), Albert-road, Bristol.
Elliott, Saml., Albert Joinery Mills, Newbury.
Gloucester Railway and Carriage and Wagon Co., Gloucester.

JOINER'S OILSTONES—
Whittle Hill Hone Co., Charley Forest, near Loughboro'.

LIGHTNING CONDUCTORS—
Gray, J. W., and Son, 113, Leadenhall-street, E.C.
Morris & Gold, Wardrobe Chambers, Queen Victoria-st., E.C.
Teale and Somers, Leeds.

LIFTS AND CRANES—
Waygood, R., and Co., Falmouth-road, Gt. Dover-street, S.E.

LIME BURNERS—
Rugby Portland Cement Co., Rugby.

LOCKS—
Colledge and Bridgen, Wolverhampton.

MARBLE WORKERS—
Emley and Sons, Ltd., Marble Works, Newcastle-on-Tyne.
Patteson, J. and H., 36 and 38, Oxford-street, Manchester.

MOSAIC WORKERS—
Patteson, J. and H., 36 and 38, Oxford-street, Manchester.

PAINTS—
Torbay and Dart Paint Co., Ltd., Dartmouth.

PAPERHANGINGS—
Land, J. and H., 93, Cannon-street, E.C.

PASSENGER LIFTS—
Waygood, R., and Co., Falmouth-road, Gt. Dover-street, S.E.

PAVEMENT ROLLERS—
Gilchrist, Alex., 25, Eglinton-street, Glasgow.

PERSPECTIVES—
Finsbury Tracing and Drawing Office, 113, Pavement, E.C.

PHOTO-LITHOGRAPHY—
Whiteman and Bass, 236, High Holborn, W.C.

PIPES—
Gibbs and Canning, Ltd. (Glazed Stoneware), Tamworth.

PLUMBERS—
Beaven and Sons (Sanitary, Hot Water, and General), 38, Eastgate-street, Gloucester.

QUANTITY LITHOGRAPHERS—
Pettitt, T., and Co., 22 and 23, Frith-street, and 50, Old Compton-street, London, W.

RAIN WATER SEPARATORS—
Roberts, C. G., Haslemere, Surrey.

SANITARY APPLIANCES—
Gibbs and Canning, Ltd., Tamworth.
Macfarlane, Walter, and Co., Saracen Foundry, Glasgow.

SANITARY ENGINEERS—
Sanitary and Domestic Engineering Co., Principal: Irwin C. Wallas, The Sanitary Works, Kilburn, N.W.

SCULPTORS—
Read, Herbert (and Church Fitting Maker), St. Sidwell's Art Works, Exeter.
Roddis, J. (and Church Fittings), Aston-road North, Birmingham.

SINKS—
Gibbs and Canning, Ltd. (Cane-colour Glazed), Tamworth.

SPEAKING TUBES—
Gray, J. W., and Son, 113, Leadenhall-street, E.C.

SPECIAL ENGINEERING BRICKS—
Accrington Brick and Tile Co., 8, St. James-street, Accrington.

STAINED-GLASS—
Adam, Stephen, and Co. (formerly Adam and Small), Glasgow.
Camm, T. W., High-street, Smethwick, Birmingham.
Worrall, W., and Co., 75, Endell-street, London, W.C.

STABLE FITTINGS—
Macfarlane, Walter, and Co., Saracen Foundry, Glasgow.

STEEPLE JACKS—
Morris & Gold, Wardrobe Chambers, Queen Victoria-st., E.C.

STONE—
Fielding, J. (Alton Stone, Red, White, and Mottled), Alton, Staffordshire.

STONE WORKING MACHINERY—
Powis Bale, M., and Co., Appold-street, London, E.C.

STOVES—
Edwards, F., and Son, 54, Great Marlborough-street, W. (see advt. p. V.)
Teale Fireplace Co. (Teale and Somers), Leeds.

TELEPHONES—
Gray, J. W., and Son, 113, Leadenhall-street, E.C.
Teale and Somers, Leeds.

TERRA-COTTA—
Accrington Brick and Tile Co. (and Ornamental Brickwork) 8, St. James-street, Accrington.
Pulham, J., and Son, 50, Finsbury-square, and Broxbourne, Herts.
Thompson, Jabez, Northwich, Cheshire.

TILES—
Carter and Co. (Encaustic, Mosaic, and Faience), Poole, Dorset.

TRACINGS—
Finsbury Drawing and Photo-Copying Office, 113, Pavement, E.C.
Marshfield and Co. (Photo-copied), 5, Little Queen-street, Westminster, S.W.

VENTILATION—
Acme Ventilating and Heating Co., Liverpool and London.
Blackman Ventilating Co., Ltd., 63, Fore-street, London, E.C.
Buchan, W. P., R.P., S.E., 21, Renfrew-street, Glasgow.
Gibbs, John, and Son, 27, South John-street, Liverpool.
Howorth, Jas., and Co., Victoria Works, Farnworth, Bolton.
Teale Fireplace Co. (Teale and Somers), Leeds.

WATER CLOSETS—
Bostel and Son, 73, Ebury-street, S.W.

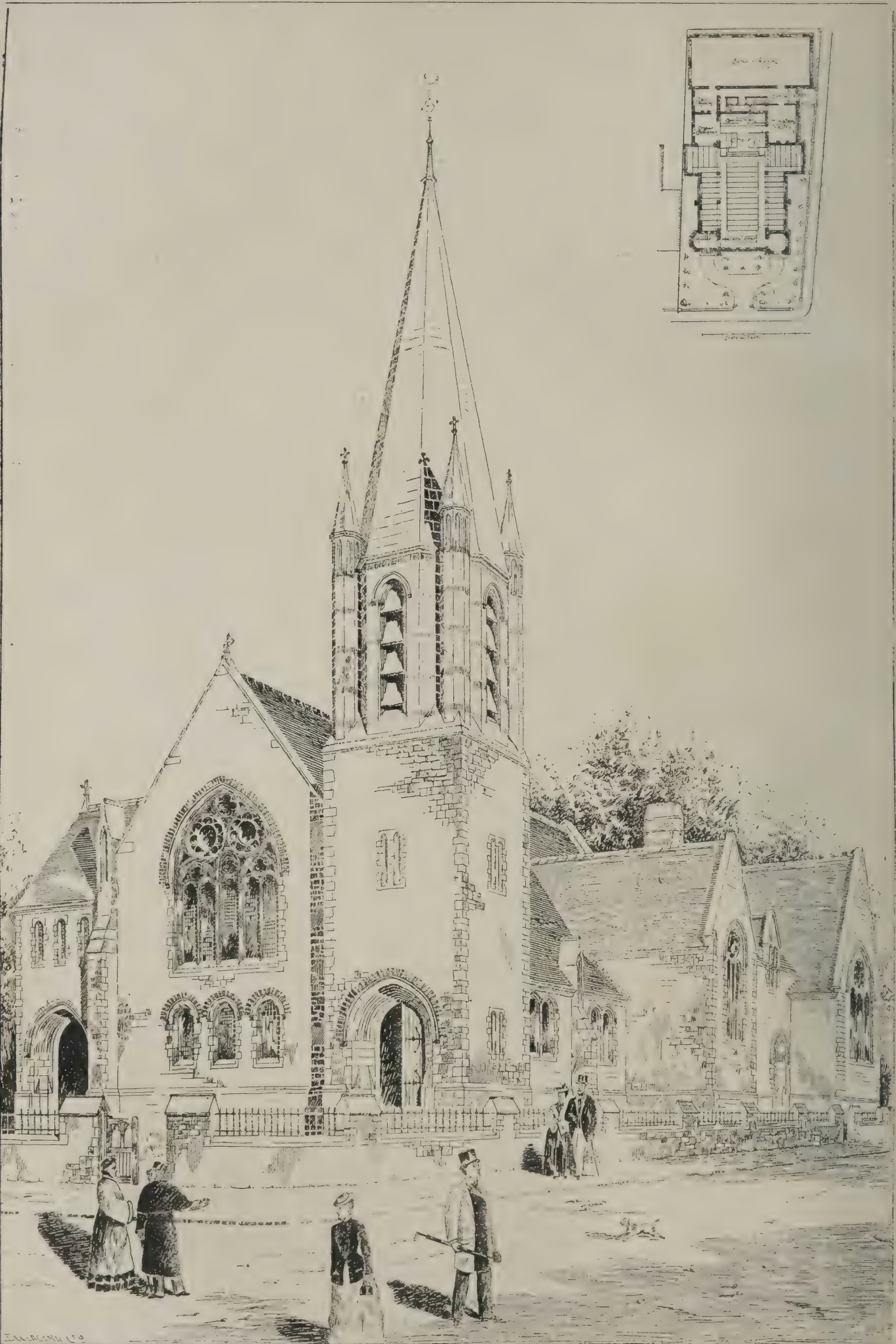
WOOD BLOCK FLOORING—
Gregory, T., and Co., Station Works, Clapham Junction, S.W.
Lowe, Roger L., Worsley-road, Farnworth, Bolton.

WOOD CHIMNEY PIECES—
Foster and Cooper, 63, Long-row, Nottingham.

WOOD-WORKING MACHINERY—
Butler, Sydney, Park Works, Langley-lane, Vauxhall, S.W.
Reynolds, F. W., and Co., Acorn Works, Edward-street, Blackfriars-road, S.E.

WROUGHT-IRON GATES, GRILLES, &c.—
Teale and Somers, Leeds.
Worrall (Specialist), Byrom-street, Liverpool.

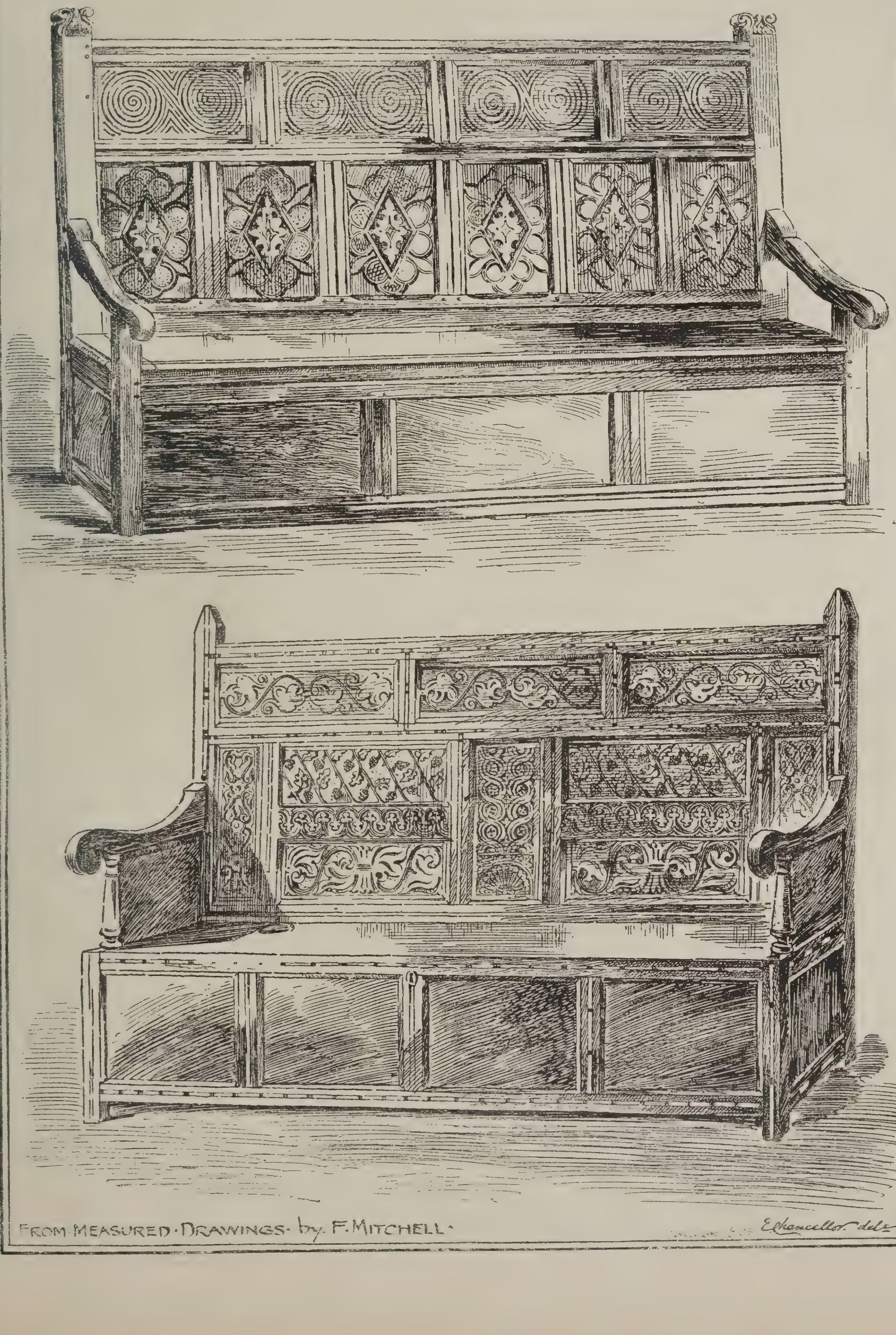
ZINC WORKERS—
Thomerson, Chas., 263 and 265, Hackney-road, N.E.



PROPOSED WESLEYAN CHAPEL, NEW PARK ROAD ST LEONARDS-ON-SEA.

PHILIP H TREE FRIBA
ARCHITECT

Long · Oak · Settles ·
from · "Ye · Olde · Archerie · Clubbe" · Leeds ·
Recently · Sold · by · Auction ·



FROM · MEASURED · DRAWINGS · by · F. MITCHELL ·

E. Chancellor del.

WAYSIDE NOTES.

AT last we are to have what has been all along wanted in connection with a great question of the day—the London water supply. This is to be a royal commission, whose business it will be to deal with the matter in a broad aspect. We have had enough of the pettinesses relating to the *control* of the supply. It is more than probable that the present London companies know their own business in this way, and that we should not benefit by any mere transference from private hands to public corporations. There may be persons anxious to get the control of the water in certain quarters, but the public do not care—at the present juncture—two straws about this matter. So much of the B.P. as is informed on the subject know that the important problem requiring solution is the *supply itself*. Is it sufficient, and will it be so in the near future? Is it pure and wholesome, and likely to remain so? These are the drastic points in the matter; and if, as we imagine, they cannot be satisfactorily answered, there then presents itself the question of a new and copious supply of undeniable purity.

I think, considering our manners and customs, we should be thankful that no worse epidemic than the present prevalent one fastens upon London. Not to refer again to the extraordinary system of allowing crude sewer-gas to escape into the streets night and day, without ceasing, at innumerable points, it is sufficient to reflect how we turn our sewage into our once noble river and draw our drinking-water from the same stream! Let us thank a long-suffering Providence that we only get influenza; and if we have an opportunity at hand for remedying the evils of a contaminated water-supply, let us grasp it while we may.

Mr. Ritchie's letter to the Chairman of the County Council points to exactly the sort of information required respecting this question, and I look hopefully to the appointment and labours of the commission. An exhaustive inquiry into the nature and scope of the present supplies in the two watersheds of the Thames and Lea, and an investigation of future prospects, will give the statistical information required. We know that a general impression has gained ground that the sources of supply are yearly becoming more taxed, and the contamination of many of the metropolitan waters is annually demonstrated by analysis. It is, moreover, a necessary result that overdrawn supplies must mean increase of contamination in those reservoirs supplied from the Thames and Lea. Even if it were only with a view of obtaining a purified supply, the appointment of the commission is most desirable; but over and above this would be the blessing of an *increased volume* of water if the commission should find a new source of supply necessary.

In March, 1874, in *Good Words*, Charles Kingsley wrote a most interesting article on a new water supply. In it he drew a pen-picture of an old Roman emperor rising from his grave and visiting the site of London under the guidance of a minister of state, and among the comments of the august shade was the following:—"But if you wish me to consider you a civilised nation, let me hear that you have brought a great river from the depths of the earth, be they a thousand fathoms deep, or from your nearest mountains, be they five hundred miles away, and washed out London's dirt—and your own shame." And, further, Kingsley's own expressed sentiments:—". . . . I think we, the people, will have our fountain, if it be but to make our governments, and corporations, and all public bodies and offices, remember that they all —save her Majesty the Queen—are all our servants, and not we theirs; and that we choose to have water, not only to wash with, but to play with, if we like. And I believe—for the world, as you will find, is full, not only of just, but of generous, souls—that if the water supply were set really right, there would be found in many a city many a generous man who, over and above his compulsory water rate, would give his poor fellow-townsmen such a real fountain as those which ennoble the great square at Carcasonne and the great square at Nismes, to be 'a thing of beauty and a joy for ever.'"

I was much interested in your very sensible leader on "Competitions with the Latest Improvements." All you say will be seconded and acknowledged as substantially correct by competing architects of experience. The dual system is certainly delusive in many respects, particularly as to the saving of labour. The 1-16 scale drawings of the preliminary competition are merely reproductions by one-half of 1-8 scale drawings. Competitors know that this will be so, and in consequence draw their plans like a steel engraver; and I expect many a piece of work of this kind has been executed magnifying-glass in hand. Practically, it therefore amounts to a photo-reproduction of a larger drawing; and indeed, I recollect that some years ago a friend suggested to me the idea of drawing competition plans to one-eighth scale, and having them reduced by process or photo-lithography to one-sixteenth, and then sending in these reproductions to the competition. I don't see why this should not be done if the competitor thinks he will gain thereby, and does not mind the expense and trouble. An assessor could hardly put the exhibit out of court for the act. Personally, I should prefer drawing to one-sixteenth, as, having been brought up in a fine-line school of draughtsmanship, it is no trouble to me. To some persons, unfortunately, small drawing is found impossible on account of weakness of eyesight, and such persons are at a great disadvantage where a small scale is enforced.

The remedy for the waste of time by laborious preparations of small-scale drawings is undoubtedly to be found in the direction you suggest—viz., that sketch-plans be made really so. Unfortunately, as in many other things in life, it is not so much the finding of the remedy as its application, that baffles reform. How can one compel competitors to prepare a sketchy set of plans, even if he knows all others will do the same? It may be that the media employed for the drawings will help us a little. If *pencil sketches* only were asked for, and other media rigorously forbidden by the rules of the competition, much might be done. With the pencil so much might be effected in such a short time that, in point of speed, it is not to be compared with pen-work, and, moreover, excessively fine work is useless, it not being effective with pencil. Such a course would absolutely necessitate the employment of a competent assessor, for the reason that with the benefits come drawbacks, chief of which is the ease with which ordinary people may be deceived by showy pencil drawings, particularly if cunningly tinted. I think I would have *colour* excluded altogether in such preliminary sketches, but on this point there is something to say on both sides. With the assessor, perhaps, it might safely be allowed.

If it be impossible to make reforms in this or any way, then one might urge that if architects trained up their pupils in the way they should go, they would the easier be able to cope with fine pen drawings. Education in fine line drawing would enable them in after life to draw finely; but so often young men are taught—or teach themselves—to draw in a coarse manner, under the delusion that thereby they are gaining the much-coveted "artistic touch," that fine work is impossible to them. Fine lines and accuracy are at the bottom of all good draughtsmanship. It may be irksome, when a pupil, to be told of every minute inaccuracy of line and tint in one's work; but it is such training that alone forms a sure foundation for after-life. It is true that if the young apprentice has not in him the stuff to make an artistic draughtsman, he will never be able to get rid of an engineering method of drawing; but I submit that he will be infinitely better off with his neat work than with an affectation of broken lines, dots, dashes, and twirligigs, and the generally coarse, rough method acquired in endeavours to gain an artistic touch. On the other hand, if he has the makings of a good architectural draughtsman, the "touch" will come of its own accord. As well put the infant to copy the handwriting of the grown man as the architectural pupil to imitate his master's idiosyncrasies of drawing. The copper-plate pot-hooks must come first. All this must be taken *à général*; for I do not want to be thought to advocate eye-straining drawing in any way, and particularly in competitions. I only say that it is as well for all to be properly prepared for possibilities, and able to draw finely as coarsely. It is much to be hoped that the reforms you advocate can be brought about, to the relief of the already much-tried eye of the architect.

I am glad to see that the President of the Society of Architects, Mr. Seth-Smith, who consented to allow himself to be nominated a second time as a Fellow of the Institute, after the not very creditable tactics of some of the members of that body which some time back resulted in his rejection, was elected last Monday amid hearty signs of satisfaction on the part of all present. Fellowship of the Institute can add very little to the well-deserved esteem in which Mr. Seth-Smith is held by the profession, and more especially at the Society of Architects, where his courtesy and high character have so often, advantageously, but not noisily, manifested themselves; for Mr. Seth-Smith is as modest as he is energetic, but it can and does mark the willingness of the official head of the newer body to work in all unity with the Institute in all matters which affect the general welfare of the Profession. Mr. MacVicar Anderson ought to return the compliment by putting himself in nomination for the Society now, and if he and Mr. Seth-Smith could change presidential chairs when their respective terms of office expire, I am sure no sensible member of either body would be aught but pleased.

By the way, I expect a very few days—perhaps hours—will elapse before you will make an announcement of the highest importance with regard to the position of the Society of Architects. If I am rightly informed, something is taking place which will almost certainly double the membership of the Society as soon as it is made known, and not the less speedily because it is more than possible that the official recognition of the high status the Society has won, after an existence of little more than seven years, may be shortly followed by the right to prefix the word "Royal," as well as something else. I am not a great stickler for "Royal" societies myself; but just as we have a Royal Academy and a Royal Institute of Painters, so it will be only fair and fitting that there should be a Royal Society as well as a Royal Institute of Architects. The abbreviation "M.R.S.A.," moreover, will avoid any possible confusion with the "M.S.A." of the gentlemen who join the Society of Arts—of course, with nothing but the most laudable desire to encourage the praiseworthy, if somewhat comprehensive, efforts of that body to help on the interests it has at heart.

GOTH.

CHIPS.

The town council of Heywood, near Rochdale, decided at their last meeting to invite competitive plans for a proposed technical school, and to offer premiums of £20, £10, and £5 for the designs placed first, second, and third.

The town council of Guildford have decided to adopt a sewerage scheme prepared by Mr. Lailey, C.E., and to invite tenders for its execution. The estimated cost is £35,000.

The Bishop of Peterborough has issued an appeal for £4,000 for the completion of the restoration of the cathedral, by the repair of the transepts and eastern chapel.

M. Ernest Christophe, the well-known Parisian sculptor, died on Sunday last. A pupil of Rude, his chief works are the bronze figure of "Fatality" in the Luxembourg, executed in 1885, the "Comedie Humaine" in the Tuileries Gardens, and "l'Eternelle Enigme," exhibited in the Salon of 1889.

The Bristol City Council have been anxious for some time past to develop the corporation estate at Portishead, and the question of the manorial rights having been satisfactorily settled, application has been made to the Local Government Board to enable the committee to grant leases of building land in perpetuity instead of for 75 years, as at present. About twelve acres have been released, and applications from builders for plots of land in this area have been considered.

An unpleasant incident is reported from the Nottinghamshire County Council. At the last meeting of the council a report was brought up from the highways committee pointing out that a certain firm of contractors for the supply of road material had had some of their supplies condemned by the county surveyor, whereupon they had sent the surveyor a letter of explanation, and inclosed for his acceptance, in accordance with what they termed their "usual custom," a postal order for £1 5s. As a matter of course, the matter was laid before the highways committee, and the contract was cancelled.

"BUILDING NEWS" DESIGNING CLUB.

AN ARTIST'S HOUSE AND STUDIO.

SMALL houses furnish always exceedingly popular subjects for essays in design, and we are not surprised at the large number of drawings sent in response to our invitation for plans. Two things we regret—first, that the designs are not, as a whole, better in style and planning; and, secondly, that we are unable to specially describe every design for the benefit of the authors. We have made our choice, and publish the two first selected plans. "Vulcan" ranks first, "Smilash the Goth" comes second, and "Cotonopolitan" may take the third position, though "McGinty" runs him rather close.

The conditions for the contest were as follows:—A small house for an artist, with a spacious studio, having a large window facing the north. Cost of building to be about £800. Accommodation to comprise a good living room, measuring somewhere about 18ft. by 14ft., a small square-shaped hall, and staircase 3ft. 6in. wide. Kitchen and offices. Four bedrooms, bathroom, and w.c. on first floor, and the studio on the top floor, with a small property or box-room leading out of it. The upper flight of stairs may be 3ft. wide, and it is to be remembered that pictures have to be brought down from the painting-room. Site to be a suburban one, 35ft. wide and 110ft. deep, one of a row. Frontage line 12ft. from fence line. Style suitable for cement-faced walls, with stone dressings to the front and side windows. Scale 8ft. to the inch. Three elevations, one section, and three plans with sketch.

"Vulcan" hardly makes his treatment for plasterwork sufficiently characteristic; so far as the general façades go, they might equally well be done in brick or stone. The quietness displayed is good, and the building is fairly representative of its purpose. The hall and staircase would be dark; but the removal of the inner door and screen at the entry would modify this objection. In so limited a hall such a lobby is undesirable, and may well be left out. Two doors to a small living room are not an advantage; see how the sideboard has to be thrust up in the corner. If the pantry had been made a service lobby with a hatchway over the buffet, and the coal-place converted into a pantry, the arrangement might have been improved. The absence of a way into the garden save past the scullery window is an objection, and the way in which the house is shown set down in the middle of the width of the site furnishes no satisfactory explanation, because with no windows in it the right-hand wall had far better come on the boundary line, and give more space to the other side. The tradesmen would have to go right round to the back of the kitchen overlooking the garden patch, and spoil its enjoyment by the family. The plan shows care and ingenuity: the rooms are square and the administration is concentrated. There is no waste of expense on fussy features. "Smilash the Goth" draws a little carelessly, which is no gain. His design is more ambitious, but his plan is distinctly clever. In so small a house the porch, lobby, and hall, when put together as so many feet super., make up a considerable area, which is a trifle expensive way of making the most of the available space. It is, however, a great merit to have the staircase out of sight of the front door, and a roomy hall is always an advantage. We do not call the kitchen well arranged with the door next the fireplace, and the copper should be in the scullery. The coal-place is in a very awkward position, while the scullery would be all the better for an outer door. The kitchen window, if not immediately overlooked by that of the next house, should have had its window in the right return wall, and not so placed as to command the garden. An inclosed space here would have got over nearly all these objections. The elevations are made to recognise the use of cement facings in the treatment, but for £800 are much too cut up and elaborated. The idea is original and rather striking, but the perspective does not help to realise it to advantage. "Cotonopolitan," the third man, sends a design which would look nearly all roof, and be better adapted in general lines to a lodge in some gentleman's country park than an ordinary suburban site. Questions of head room and the proportions of the rooms are matters which seldom trouble the aspirant for artistic honours; they belong to the mere constructional architect, the professional man, not to the "pilgrim of art." As, however, we are building houses for people to live in, do let us try and be practical, and plan bedrooms with spaces for beds out of the draught and not so that the beds will block up the fireplaces. There is much in this design which is meritorious and full of simple, well-restrained fancy. The studio is a big one, but the author gives all the other elevations except the one showing how the big window would be managed outside. The section and plan hardly help one, and raise doubts as to good construction. "M'Ginty" spoils his otherwise skilful plan by the muddle he has made of the staircase coming over the hall fireplace. The plans do not show really the whole truth about this muddle; but it is evident enough on closer inspection that it must be so, and if the contributor has deceived himself he has not misled us. The plan in other respects is good enough, though the elevations are overdone rather, and not cheaply contrived. "Jean" gives us a house with not a few points of merit in it. He devotes too much room, however, to the hall and landing over it in such a dwelling, and, effective as the angle turret window bay is, £800 would not nearly allow of its being included in the contract. The conservatory at the rear of the hall leading to the garden would form a useful purpose better if we did not have to pass the kitchen door so closely on our way. "Q. E. F." puts his kitchen in the front; but as the house faces the north, there is something to urge for this arrangement, as the living-room by this means leads out into the garden and obtains the southern aspect. It is a mistake, however, to locate the scullery in the middle of the house, and to make it necessary to pass through the scullery to reach the kitchen. Upstairs the rooms are nice enough, and the studio is L-shaped, with two windows instead of one big one. We place this design in this place chiefly by reason of its elevations, which are really very good, and suitable for a plaster treatment. "Symbol" is one of the best for his capital living-room, spacious kitchen, well-lighted staircase, and big studio. The elevations are passingly good, but overwindowed in the upper part to the detriment of artistic effectiveness. Light, however, in this country is always valuable. "Red Lion" makes his house one of a terrace, and his front elevation looks well in the geometrical drawing. The perspective spoils it. The plan has been carefully worked out, and there is a good, well-lighted, square hall. The staircase is too much in evidence. "Ayrshire's" design has a Scotch flavour about it, designed with dignity and reserve. The studio window would never do: there is far too much masonry about it, excluding the light where it is most wanted. The plan is well arranged, and would be practical if walls came over walls instead of mid-air in some cases. "Black Prince" believes in half-timber work, and has sent a fairly pretty design a little high-shouldered looking in the view. The plan is better than some, and shows that H.R.H. is on the right track. Pray let him give up scribbled ornamentations such as figure in these gables. "Orient" has an ingenious hall, and keeps a way into the garden, which shows thought, and so does the way in which he keeps the kitchen and scullery in subordinate positions. The front would look better in execution with the ornament here indicated left out. The studio window looks like business. "Nil Nisi Bonum" sacrifices everything in the upper stage of his façade to this latter idea, and there is no actual reason why a studio window should be made repulsively ugly. The lower part of this design is not half bad, so that the falling-off displayed above is all the greater pity. The hall would be very dark, and three doors into the living room spoil it. The plan otherwise has merit about it. "Spider" fancies cusped Gothic windows favour studios, but this is not so. He has put a row of top lights, which a painter would find very difficult to control, especially when there are six of them lighting three flat ceiling lights stuck in at the collar level. The plan has had considerable care expended on it evidently, but the people using the w.c. under the stairs would have sparse head room, and the back stairs is hardly necessary. The plan, broadly speaking, is too cut up. "Firefly" gives us a pretty façade, and he has good taste, but divides his studio into two comparatively small rooms, which might do for "black and white" work, but not for painting. This contributor should do better than this, and we shall expect him to do so. "Sweet Auburn" is another man of whom the same may be said. The heavy console at the entrance verandah shows his want of skill in matters of detail, and the superficial area of his house would make it come out, if cubed up at about 2½d. or 3d. per foot, speaking off-hand. It is too big for the money. The south elevation is very ugly. "An Old Hand" has boldly endeavoured to let us see that he knows how to use plaster, and he does so in a plain, straightforward manner—we fear a trifle commonplace, and not in a telling way. His plan corresponds in merit, but his third and fourth bedrooms are exceedingly inconvenient, as would be the iron ties in the studio, the window of which is badly managed. The skylight is not always wanted, and would make the room fearfully cold. "Pen" gives us a pleasing, well-balanced elevation, which would have been improved had the lower pediment been left out. It competes now with that over the dormer to the studio. The plan pleases us, and no doubt "Pen" will do good work if he keeps on as he has commenced. "Black and White," careful to a fault, has improved since we last saw his handiwork under another motto. We do not like the servants' w.c. under the stairs; the larder is too small, and the bath-room combined with the w.c. is not a good arrangement. The living-room is too cut up, but probably it would be a pretty room with the side windows dodged up high. Jointing up the cement work to imitate ashlar work is not the best style to adopt with scratched lines; rusticated work, as in old examples, is different, and seems to suit plaster. "Norman" gives us too big a house, which, however, he has planned well, but spoilt its effect externally by a very poor perspective. "B" in a circle gives us a stone-fronted house, with stepped gables and an embattled porch—a villa type of house of not the best kind. It would cost quite twice the sum we stated. "Cyclist" is much more within reason and our means. The studio is badly lighted, however. The elevation in the lower part is pretty, and the plan shows attention to our comfort—that is, it would do so if we contemplated living in the house. The entry is poor. "Pastime" cubes his plan up at 5½d., like the design placed first, and brings the cost out at £794. The lead-covered shaped bay could not be taken at such a price, neither could the roofing, hipped and gabled as it is. The author seems to spare no pains, and has given the artist a very good house for convenience, though possibly not for artistic merit. "Unitate Fortior" goes in for thick walls needlessly, and his plan is crude, but we like the simplicity of his elevation. It does not in the least indicate a painter's studio, however. "Forward" looks as if he had gained inspiration from a "model vicarage house in the Tudor mode" done in cement about forty years ago. This is not going "Forward." The studio appears an after-thought stuck up in the roof. "Hales" is simple enough, and puts his kitchen in front and a good square living-room behind. It would be rather dark with the verandah, and so would the cramped landing upstairs, else the plan is worthy of commendation. "Red Brick" is neat, but his façade looks high-shouldered at the summit and top-heavy. How the main outside wall to the studio is to be carried over nothing is beyond our powers of conception as here limited. "Sphinx" has lost nothing by having finished his design before he understood what was intended. We put him in this place just the same on his merits, which are not in this case very considerable. "Nimrod" is poor, with good parts and very bad ones, such as the trunk shaft to light the bath-room, which would get clogged up with snow! "The Useless One" is not altogether so, but he has much to learn before he changes his name. One thing to begin with is that 18in. walls are not necessary for the internal walls of a small house costing £800. The remaining designs are thus grouped in merit:—"Mica," "Tyro," "Ilex," "Ray," "Albyn," "Plan," "Hilarius," "Pendragon," "Goblin Grey," "Gradatim" (Stockport), "Western," "Sanitas," "La Cigale," "Hut," "The Idler," "Grandison," "Nodrah," "Mars," "Sector," "Love's Labour," "Forward" (Ipswich), "Kentish Rag," "Koko," "Sunset," "Jamrach," "Gobo," "J." in a circle, "Yorkshire Tradition," "Hubby," "Tempus Fugit," "Punch,' "John Jones," "Filiolus," "Old Postage Stamp," "Hardwick," "Gradatim" (Ipswich), "Sniktaw," "Wit," "Herbert,' "Progress C" (drawn on too big a sheet, see rules), "Terra Cotta" (no name or address), "Ich Dien" (ditto), "Peterborough," and "Devil's Chimney."

NOTES ON BUILDING PRICES.—XX.

By JOHN LEANING.

MARBLE MASON.

THE marble used in a building, if in large quantity, is nearly always the subject of a separate contract, and if not so treated by the architect, the builder sublets it.

Its use for such purposes as counter tops, steps, and wall linings is extending; but for chimneypieces, except in the form of slips in combination with other materials, is decreasing.

Chimneypieces should be selected by the architect from a manufacturer's stock, and if not, the surveyor should see the invoice at the settlement of accounts.

The independent valuation of marble is rarely required on the part of the surveyor, except for steps, lavatory tops, or counter tops.

Lavatory tops always cost more when supplied by the sanitary specialist, and some surveyors, when preparing quantities, make a point of separating them from the basins and inclosures. Sometimes the specialist, when his particular apparatus is prescribed, refuses to supply it without the top, in which case the builder is involved in a larger expense than he estimated for, and will claim the extra amount.

The following are a few of the current rates for Sicilian veined marble of the best quality at the merchant's yard, to which must be added the cost of delivery and fixing:—

Unpolished Slabs Sawn to Sizes:—

		s.	d.
1in. lavatory or counter tops....	per ft. sup.	1	9
1¼in. " "	"	2	3
1½in. " "	"	3	0
1in. by 7in. plain skirting	per ft. run	1	1
Mitres to ditto	each	0	6
Moulded ends....................	"	0	8
2in. by 12in. step, square edges, rubbed, but unpolished, not exceeding 6ft. long	per ft. run	4	0
2in. by 12in. ditto, exceeding 6ft. long	"	4	6
Polishing	per ft. sup.	0	9
Polishing edges of 1in.	per ft. run	0	2
" " 1¼in.	"	0	2¼
" " 1½in.	"	0	2½
" " 2in.	"	0	2¾
Polished rounded nosing to 1in.	"	0	5
" " 1¼in.	"	0	6¼
" " 1½in.	"	0	7½
" " 2in.	"	0	10
Polished moulded edge to 1in.	"	0	7
" " 1¼in.	"	0	8
" " 1½in.	"	0	9
" " 2in.	"	1	0
" " 3in.	"	1	2

	Rounded edge.			Moulded edge.	
	s.	d.		s.	d.
Polished quadrant corners, 1in.	0	4½	..	0	7
" " 1¼in.	0	5	..	0	7½
" " 1½in.	0	6	..	0	9
" " 2in.	0	8	..	1	0
" " 3in.	0	9½	..	1	2

		s.	d.
Basin holes, with rounded and polished edge, or rebated and polished edges, 1in.	each	3	0
" " " 1¼in.....	"	3	3
" " " 1½in.....	"	4	0
Holes for taps, 1in.	"	0	6
" " 1¼in.	"	0	7
" " 1½in.	"	0	9
Sinkings for soap	"	1	0

Spandrel steps with moulded nosings, and rebated and splay-rebated joints rubbed but not polished, cost 10s. per foot cube at yard.

The valuation of the fixing will be conducted on the principles of the other masonry, if pinned into walls; but this is rarely the case except for steps. A slab is generally laid on a rough deal top prepared to receive it. Skirtings are fixed with copper screws, or brass cups and screws, to plugs in walls.

As polished marble has always to be packed in a case, the expense of it must be allowed for.

The manufacturer's charge for a case is always exorbitant, but as two-thirds of the original charge is allowed if returned, this does not so much matter. The railway companies make a very small charge for their carriage; but this and conveyance to the railway-station must be allowed for.

Comparative Values of Marble.—Next to Silician marble, St. Anne's is most frequently used. The labour and material may be taken as equal.

For Sienna marble the labour may be taken as equal to, the material about three times the price of, Sicilian.

Name.	Size.	Number required to cover a square.		Number of squares covered by 1,200.		Weight of 1,200.		Number of nails per square.	
		2½in. lap.	3in. lap.	2½in. lap.	3in. lap.	1st quality	2nd qlty.	2½in. lap.	3in. lap.
	in. in.					Cwts.	Cwts.		
Duchesses	24 by 12	112	115	10·75	10·50	60	70	224	230
Marchionesses ...	22 by 12	124	127	9·75	9·50	55	65	248	254
Ditto small........	22 by 11	135	138	8·93	8·70	50	60	270	276
Countesses	20 by 10	165	170	7·28	7·08	40	50	330	340
Ditto	20 by 12	138	142	8·75	8·50	50	60	276	284
Viscountesses ...	18 by 10	186	192	6·45	6 25	35	45	372	384
Ditto	18 by 9	207	214	5·80	5·62	30	40	414	428
Ladies	16 by 10	214	222	5·62	5·41	30	40	428	444
Ditto	16 by 8	267	277	4·49	4·33	25	30	534	554
Small ladies	14 by 12	209	219	5·75	5·50	32½	40	418	438
Ditto	14 by 7	358	375	3·35	3·20	20	22	716	750
Doubles :.........	12 by 8	379	400	3·17	3·00	18	20	758	800
Ditto	12 by 6	506	534	2·37	2·25	12	14	1012	1068

The weight of marble is generally 160lb. to 170lb. per foot cube.

SLATER.

The work of the slater is frequently sublet by the contractor, though more often in London than in the country. But whether in town or country, it is rarely the case that work is done by the builder's men so cheaply as by subletting. The allowances made for cutting are a compromise between the waste of slates and the extra labour; they usually more than cover the waste of slates. The practice of deducting nothing under 5ft. superficial in area is another small advantage.

The practice of allowing superficial quantity for extra labour is the survival of an old custom, which is inexact and inconsistent with the modern surveyor's methods in other trades.

In London, Welsh slates are those generally used, and are sold by the thousand of 1,200 when bought of local dealers, when purchased by the truck load at the quarry 1,260, the 60 (5 per cent.) being an allowance for those likely to be broken.

Most of the slates of the common designations are supplied of a first and second quality, and the very large ones, as Queens and Rags, are sold by the ton.

The Westmoreland slates are occasionally used in London, and are sold by the ton. They are prepared in promiscuous sizes which the slater sorts when laying, using the largest at the eaves and the smallest at the ridge, the gauge and width of slate consequently gradually diminishing from the starting point. A larger allowance for cutting and eaves is often claimed than that on Welsh slating, and it is necessary to state in a bill of quantities what allowance has been made when ton slating is measured. The sorting in sizes to regulate the diminution also slightly increases the cost.

Stone slates are commonly used in various parts of the country. Some of the oolitic limestones are stratified in very thin layers, and are used under this name. They are found among other places in Northamptonshire, Staffordshire, Oxfordshire, and Gloucestershire. Similar roof coverings are found in Sussex in the neighbourhood of Horsham.

The cartage of slates from local quarries is generally done cheaper by the quarry owner than the builder can do it, and the price agreed should include delivery.

The local allowances for cutting on stone slates is commonly 2ft. for Valleys and 1ft. for Eaves.

Stone slates at Horsham cost delivered 30s. per square; Ditto at Cheltenham cost delivered 25s. per square (about one thousand).

A constant for their laying may be calculated from that for countesses after averaging the sizes of the slates. To this should be added per square slater and boy ·075 for the extra trouble of sorting to diminishing sizes.

Waste.—When the slates are bought by the truck-load, the 5 per cent. allowed at the quarry is sufficient for waste caused by breaking. If bought of the merchant, a further allowance of 5 per cent. should be made. All the other waste is allowed for by the recognised modes of measurement. The waste of nails will vary with the quality of the supervision, but 5 per cent. is a reasonable average. The following table shows the number of slates and nails required for a square of each kind of slating. The existing tables vary, but when the lap is known, the calculation is easy enough, and any doubt can be readily solved.

Taking Countesses, 20in. × 10in. with 3in. lap, as an example, we have 8½in. gauge, then 8½in. gauge × 10in. wide = 85in. surface; then 100 feet × 144 inches ÷ 85 inches = 170, nearly, to each square. The number of nails is two to each slate, and consequently 340. A simple calculation will show the number of squares which 1,200 of the same slates will cover: 85in. × 1,200in. ÷ 14,400in. = 7·08 squares. The designation of the slate is not enough to define its size; it varies with different quarries. The size should always be stated in dealing with slates.

The weights are close approximations, but will vary; they are, however, quite near enough to calculate the cost of carriage and cartage.

Nails—These are commonly of zinc or copper, and are sold by weight. The prices of both vary slightly with the prices of spelter and copper; some of the trade lists quote a price per cwt. beyond the current price of zinc or copper sheet. The price of nails decreases with the increase of length. Sometimes in specifications the nails for slating are described both by their length and their weight per thousand, as "1¼in. copper nails, weight 7lb. per thousand." The following is the weight per thousand of the nails commonly used:

	1¼in.	1½in.	2in.	
Zinc	3½lb.	4½lb.	7¼lb.	per thousand.
Copper	5¼lb.	9½lb.	11¼lb.	" "

The present net price in London for slating nails is as follows:—

	1¼in.	1½in.	2in.	
Zinc	26s.	24s.	23s.	per cwt.
"	2¾d.	2½d.	2½d.	per lb.
Copper	87s.	84s.	84s.	per cwt.
"	9¼d.	9d.	9d.	per lb.

The current prices of first quality Port Madoc slates delivered in London, are as follows:—

	£	s.	d.
24in. by 12in. per thousand of 1,200......	14	17	0
22in. by 12in. " "	13	0	0
22in. by 11in. " "	11	14	6
20in. by 10in. " "	9	8	6
18in. by 10in. " "	7	13	6
18in. by 9in. " "	6	17	6
16in. by 10in. " "	6	10	6
16in. by 8in. " "	5	2	6
14in. by 12in. " "	6	6	6
14in. by 7in. " "	3	12	0
12in. by 8in. " "	3	2	6
12in. by 6in. " "	2	4	6

First quality Bangor slates cost about 10 per cent. more; second quality slates cost about 20 per cent. less than first quality, and are frequently used. It is rarely the case that the specification "best Bangor Countess slating" is carried out.

Delivery.—The prices of slate merchants are usually quoted exclusive of delivery. The weights of roofing slates are to be found in the table relating to the various sizes. The weight of slate slab is easily remembered, as 150ft. supl. of inch thick weighs a ton, and the other thicknesses are in regular proportion,—for instance, 50ft. of 3in. weighs a ton. (The weight will be necessary for the calculation of cost of cartage; see also section Cartage). When there is a load, the slate merchant can generally deliver it as cheaply as the builder can do it himself, and can often be induced to do so free of charge.

Cost per square.—The cost of slating, if sub-let, will vary with the quantity, the larger quantities being done at a less rate per square than the smaller ones.

Labour.—

Slater, per hour..............................	9d.
Boy, ditto	3d.

The cost of a square of Port Madoc Countess slating, laid to a 2½in. lap, with two 1¼in. copper nails to each slate, would be as follows, assuming that the slates were purchased at the current rate in London, allowing 5 per cent. for waste on slates and nails.

	£	s.	d.
165 + 8 = 173 slates at £9 8s. 6d. per 1,000 of 1,200	1	7	2
330 + 17 = 347 copper nails, 1⅝lb. at 9¼d.	0	1	5¼
Slater and boy, preparing and laying, ·200 days at 10s.	0	2	0
Cost per square	£1	10	7¼

With slates smaller or larger than Countesses, the constant may be increased or decreased by a simple proportion, which gives a result very near the truth. Taking slates 12in. by 8in. as an example, the calculation would be 165 : 379 : : ·200 to the constant required, ·459.

For slates larger than Countesses, add ·050 to the constant for Countesses, for extra trouble of handling.

For slating to steep roofs, like Mansard or curb roofs, add to the constant ·050. Sub-contractors charge 6d. to 9d. per square extra.

The same method of proportion may be adopted to apportion the labour of preparing slates for laying,—that is, sorting them for thickness, marking them, and making the holes for nails, constant for Countesses, ·095 days slater and boy.

The calculation for a square of slating, similar to the last, but laid to a 3in. lap, would be as follows. The slate merchant increases his price by about 1s. per square.

	£	s.	d.
170 + 9 = 179 slates at £9 8s. 6d.	1	8	1¼
358 copper nails, 2lb. at 9¼lb.	0	1	6½
Slater and boy (constant increased by proportion) ·206 days at 10s.	0	2	0¾
	£1	11	8½

Spaced Slating.—In open or spaced slating, the spaces vary from 2 to 4in. The difference in quantity of slates may be calculated in the same manner as before. The saving of slates is commonly reckoned as one-third.

Taking as an example Countess slates 20in. by 10in., with 2½ lap and 4in. spaces, we have for the surface covered by a slate 10in. + 4in. × 8¾in. = 122½in.; then 100ft. × 144in. ÷ 122½in. = 118 slates nearly. This, compared with the calculation for continuous slating, is $\frac{118}{165}$, about ¾, a saving of one-quarter. The value of a square would be calculated as follows:—

	£	s.	d.
118 + 6 = 124 slates at £9 8s. 6d. per thousand of 1,200	0	19	5¾
248 nails, weight 1¼lb., at 9¼d.	0	0	11½
Slater and boy preparing and laying, ·193 at 10s.	0	1	11
Cost per square	1	2	4¼

The last constant is arrived at by the proportion 165 : 118 : : ·200 to the constant required—i.e., ·143, and we add ·050 = ·193. It is a common assumption that spaced slating is worth about four-fifths of the price of continuous, and circular one-third to a half more.

Circular slating is valued by the application of the foregoing methods. It is always necessary to use smaller slates, and their size must be regulated by the radius of the curve; and this radius should be stated in the bill of quantities. Much of the circular slating is ill done in a circular roof to a spire or an apse. The perpends should radiate regularly from the apex, and this involves the maximum of cutting. This is frequently avoided by the introduction of slates here and there as closers, and the slating is as a consequence more cheaply done. As circular slating most frequently runs up to a point, the best work is that in which several sizes of slates are used, diminishing from eaves to top, and their selection involves increased labour. The following may illustrate the mode of treatment, assuming a third of the space covered with each of the following sizes, and laid to a 2½in. lap.

Per thousand of 1,200	£	s.	d.
Ladies...... 214 at £6 10s. 6d.	1	3	3¼
Small Ladies 209 at 6 6 6	1	2	0¼
Doubles .... 379 at 3 2 6	0	19	9
3)802	3	5	0½
268	£	s.	d.
268 + 27 = 295 slates at £3 5s. for 802	1	3	11
(In the foregoing has been added a further 5 per cent. for waste in cutting to graduated sizes).			
590 nails, weight 3lb., at 9¼d.	0	2	3¾
Slater and boy preparing ·170, and laying and cutting 281 = ·451 at 10s.	0	4	6
Cost per square	1	10	8¾

All the preceding examples are for slating, exclusive of cutting, and, as before mentioned, these, by custom, are paid for by an allowance of superficial quantity. For valleys the allowance is, for each lineal foot, 6in. on each side, or 12in. in all. The valuation of this may be illustrated by Countess slating laid to a 2½in. lap.

Adopting our calculation for Countess slating, 30s. 7d., the allowance would amount to 3¾d. per foot run. Adopting the market price, 25s. 6d., the allowance would amount to 3d. per foot run.

In slating with a 2½in. lap, the length of cut edge of slates of a single thickness on each lineal foot of raking-line of roof is 3¼in. + 12in. + 11¼ + 2½ = 30in. The slate may be taken as half the width of a Countess slate, 5in.:—

30in. + 5in. ÷ 200in. = ·75 of a slate at £9 8s. 6d. per thousand	1¼d.
Constant for cutting, per foot: 2½ft., slater and boy, ·002 at 10s.	¾d.
Per foot run	2d.

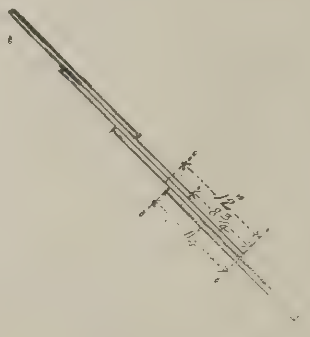
To a valley or hip this calculation would be doubled, and, consequently, 4d. per foot run.

For cutting and double course to eaves, the allowance on Countess slating at 30s. per square, as before, would be equal to $\frac{10}{12}$ of a foot = 3d. per foot run; at the merchant's price (25s. 6d.), 2½d., or—

12in. × 10in. ÷ 200 = ·60 of a slate at £9. 8s. 6d. per thousand	1d.
1ft. cutting = ·002 at 10s.	¼d.
Per foot run	1¼d.

Slating in Bands.—When slating is arranged in bands of different colour and quality it is most conveniently dealt with by finding out the relative proportion of each kind and valuing them separately. The extra labour of arranging slating in bands would commonly be covered by ·10 on the constant for the particular kind of slate described.

Vertical Slating to Walls.—When the gauge is determined on the proportional constant for fixing, and the number of slates may be calculated as before, the preparation of the slates would be equal to that for a roof. The fixing is worth more, averaging about 50 per cent. If a gauge of 8¾ inches be adopted and Countess slates used, the constant would be calculated thus (see example of Countess slating):—



	Slater and Boy.
Preparation	·095
Fixing	·105
Add 50 per cent. on last	·53
Per square	·253

Torching—is the term used to describe pointing inside with lime and hair. For the lime and hair, adopting the calculation for the cost of mortar in Bricklayer, 14s. 4¾d. per cubic yard, and adding thereto the cost of 14lb. of hair at 8s. 6d. per cwt. = 1s. ¾d. = 15s. 5½d. per yard cube.

	s.	d.
The constant is ·200 day of bricklayer per square at 7s. 6d.	1	6
The constant is ·066 day of labourer per square at 4s. 9½d.	0	3¾
⅔c.ft. of lime and hair at 15s. 6d. per cubic yard	0	4¾
	2	2½

(*To be continued.*)

STATUTORY PROVISIONS AGAINST FIRE.

CERTAIN new statutory precautions against the extension of fire, and the means of escape, are suggested by the Building Act Committee of the London County Council in connection with the Building Law Consolidation Bill. These appertain to provisions to give ready access to the roof in case of fire by a dormer window, trap-door, and step-ladder, or other means; to the regulations of factory chimney-shafts, the width and construction of staircases, passages, and doorways of churches and chapels, the regulation of timber-yards and firewood stores, so as to diminish the risk of fire, and other details. Some important amendments are introduced in the rules as to the separation of buildings and limitation of their areas, but the question is whether they are sufficient. Under the present section (xxvii.), separate sets of chambers or rooms tenanted by different persons shall, if contained in a building exceeding 3,600sq.ft., in area, be deemed to be separate buildings, and be divided by party-walls or by party-arches or fireproof floors. This clause has been proposed to be altered by the committee. Subsection (*b*) now reads: "Separate sets of chambers or rooms tenanted by, or *constructed and adapted* to be tenanted by, different persons, shall, if contained in a building exceeding in area 25 *squares*, be deemed each to be a building, and be separated by party-walls or by proper party structures comprising arches and floors of fire-resisting materials." These alterations will, by the words we have emphasised by italics, apply not only to buildings actually tenanted, but also to those built for the purpose of letting to tenants of the area named. The area, too, is reduced by 1,100sq.ft.—an area that will make the clause applicable to a far larger number of buildings let in separate sets of rooms. Under subsection (2) the Council is empowered to exempt buildings used for the manufacture of machinery and boilers of steam vessels beyond the distance of three miles of St. Paul's Cathedral, provided they be of one floor only, and constructed of brick, stone, iron, or other incombustible material, and do not contain more than 216,000c.ft. The Council also reserve power to deal with buildings that the superintending architect and chief officer of the Fire Brigade report have proper arrangements of lessening the danger from fire, and to give consent to additional dimensions; but such warehouse or building is not to contain a number of cubic feet exceeding 450,000, or any less number allowed without being divided by party walls. Such consent, however, is not to be given to any warehouse or building exceeding 60ft. in height above level of street. So far good. According to subsections (*c*) and (*d*), sect. xxvii., of the present Building Act, when any building in one occupation is divided into tenements, each with a separate entrance and staircase, every such sub-tenement is deemed to be a separate building; and any warehouse or other building used wholly or in part for any trade which contains more than 216,000c.ft. is to be divided by party-walls, so that each division shall not exceed that number of feet. Now, these clauses have been, and are still being, transgressed whenever different premises have been acquired and united, and the question is, What provisions of the proposed Act will apply to them? Subsection (2) of section 16, the purport of which we have quoted above, appears to meet this case; but, it may be asked, what are the "proper arrangements" upon which the Council will give consent to additional dimensions? A cubic space of 450,000ft. is very large, and it is questionable whether, even with the limit of height of 60ft., there is not great risk. We would certainly call the attention of the committee to those amendments before they are finally adopted.

We have in our mind a large class of premises which are acquired for trade in every part of the Metropolis. The course is to purchase or lease a number of adjoining houses or shops, and to open communication through the party-walls by means of wide openings, so as to form large showrooms. The several staircases are removed, and only one or two left at the ends. In this united block of buildings a large inflammable kind of trade is carried on. The whole of the ground floor usually is turned into one large shop filled with, say, drapery and combustible articles, and the upper floors are divided into dormitories and corridors of match-boarded partitions, with combustible wooden stairs, often very narrow. The recent fatal fire in Battersea, by which two young girls in a large drapery establishment were burned to death, is a sad exemplification of this kind of conversion of premises, and, as the evidence shows, the means of escape were grievously inadequate, one of the two staircases having been demolished to increase the floor space, while apparently as a result of the substitution of a rolled-iron joist toed into the party-walls for the original partitions on ground-floor, the whole building collapsed twenty minutes after goods caught fire in the shop window.

In the more disastrous fires at Garrould's premises in Edgware-road, some time ago, the same inadequate means of escape were found, and the sections of the Act to which we refer were infringed; for there was not only a much larger cubic space left between the party-walls, but the means of exit were only two windows, inclosed by wooden partitions, and the staircases had been removed to make room for one large shop. The law at present is a dead letter, as it is certainly doubtful if the clauses of the existing Act can be enforced in the case of large stores or shops which do not come under the rules for warehouses. Under the provisions of the new Factory Act, which came into operation on the 1st inst., sufficient exits must be made in case of fire where over forty persons are employed; but in the great majority of these drapery establishments, formed by uniting adjacent shops, and removing one or two staircases, the number of assistants is from a dozen to thirty. This is an anomaly which ought to be rectified at the earliest revision of the Factory Act.

BOOKS RECEIVED.

Electricity up to Date for Light, Power, and Traction, by JOHN B. VERITY, M.Inst.C.E. (London: Frederick Warne and Co.), is a very opportune little manual, designed to furnish the general reader with a popular account of electricity and its several applications. Mr. Verity prefaces his work with a description of the different modes of producing electricity by chemical action, by heat, by friction, and by induction. Of these various modes, that by the dynamo or magnetic induction has been most generally employed. The description of the dynamo is illustrated by a view of the Elwell-Parker continuous-current dynamo, which is a good type. The motive power for driving by water power (a very economical means), by steam-engine, by gas and oil engines is discussed, preference being given to the three first methods. The arc and incandescent lamps are explained and illustrated, and the author refers to several recent arrangements. As he observes, there is still an opening for the invention of a really good arc lamp of small candle-power, the 1,000 candle-power lamps being too powerful for small streets. The "Sunbeam" lamps, to some extent, can be substituted for the arc lamp. These are made from 100 to 500 candle-power. How electricity can be stored by accumulators or secondary batteries is explained in a simple and popular manner, by comparing the accumulator to a gasometer. The Electrical Power Storage Co.'s accumulator cells are illustrated and described, and the author says that in the "best accumulators energy may be stored with a loss on discharge of only about 20 per cent." The very important question of "wiring" a house is worth the attention of architects in specifying. Many useful hints about conductors and their insulation are given. One of the best insulators is indiarubber or jute steeped in a bituminous compound. The rubber is usually vulcanised. The best insulation it undoubtedly is if not adulterated; but this is one of the evils that has to be guarded against. The mode of casing the wires is important, and a section of a wood grooved casing, moulded outside, is given. Care is necessary not to bury the wires in inaccessible places, and perhaps a dado or cornice moulding is the best means. The avoidance of damp is urgent, and every joint must be damp-proof, or leakage of the current will ensue; therefore the wires should be placed in the dryest positions. Other faults are referred to, such as small wires, which are attended with risk by becoming overheated. The need of experience in this work is therefore evident, and the author cautions the reader against "short circuits," or leakage of current from one wire to another, and points to faults that are often met with. The chapters on the arrangement of a private installation, the public supply of electricity by various systems, and the descriptions given of the public supply companies are valuable additions. The Board of Trade regulations follow, and every technical term is explained in a glossary. The other applications of electricity as a motive power and to traction are briefly dealt with in this useful little guide, which should be studied alike by architects and consumers.——We have received a copy of Clarke's *Pocket-Book*, which has just been published by R J. Bush, of Fleet-street, a well printed and neat little book suitable for the waistcoat pocket. A large portion of the contents is quite new matter, and is devoted chiefly to tables and memoranda and calculated results for plumbers, architects, and sanitary engineers. These tables and data have been compiled and calculated by Mr. J. Wright Clarke, the plumbing instructor to the Polytechnic. In addition to the usual tables of weights and measures, proportions of circles, the physical properties of metals, there weight and contraction, the linear expansion of metals, lightning conductors, fluxes for brazing and soldering, sizes and weights of lead pipes, velocities of flow through pipes, sizes and contents of cisterns are given, and many notes and data furnished about water supply and plumbers' work, on which the ordinary architects' and engineers' hand-books are silent. The useful memoranda are full of results that will be of every day use to the architect, surveyor, and engineer, as they have reference to all the building trades, to hydraulics, heating, and sanitary engineering.——*The Hydropathic Establishment and its Baths*, by ROBERT OWEN ALLSOP, Architect, author of the "Turkish Bath, &c." Illustrated (London: E. and F. N. Spon).—The useful and interesting series of articles which appeared in the BUILDING NEWS on this subject has been republished by the author, who has revised the matter and brought it up to date. Mr. Allsop's works on Baths supply a place in the literature of this particular class of buildings, for the subject is one that cannot be said to be hackneyed. We have had more books about houses and cottages than we know what to do with, more, certainly, than ever ought to have been published for the reputation of their authors. But the Turkish bath and hydropathic establishment are matters about which little practical knowledge is known by the ordinary architect. The text is well illustrated by plans of many of the principal baths. It would be superfluous here to notice in detail the work, it having been so recently given in our pages. Mr. Allsop makes some very useful and cogent remarks in the first chapter on the hydropathic establishment. Such an establishment, he says, should be rurally situated; it must not be a mere hotel with baths tacked on, but combine the comforts of a residence and a sanatorium. Many of the establishments used for this purpose have not been planned on any system; old residences or hotels have been converted into these institutions, without any suitable accommodation. In a well-considered design the residential apartments must be arranged in relation to a set of baths. Each suit of bath-rooms must be self-contained for its particular use. The Scarborough Hydropathic Establishment, of which a plan is given, is an example of a complete building for a certain site. The author points out what are the conditions of success, and the faults of arrangement and management observed in many establishments, which are mere make-believes, and have done incalculable injury to the true system of hydropathy. The practical requirements are clearly pointed out and examples given. The arrangement and details of baths and their appliances, vapour and Russian baths, douche room; massage and electrical treatments, with plan of a bath house; pulverisation and the Mont Dore cure, inhalation, and the sun bath, with plans for each treatment, are discussed. Mr. Allsop's little book will be found of value to architects and others engaged in designing or establishing baths of this description, and the medical profession cannot fail to derive many useful hints from its perusal. The plans are well drawn to a readable scale.

At a meeting of the architectural section of Glasgow Philosophical Society on Monday, in the rooms, 207, Bath-street, Glasgow, Mr. J. B. Sutcliffe read a paper on the warming and ventilation of public buildings.

At the meeting of the London County Council on Tuesday, a letter was read from the Local Government Board confirming the announcement already made, that it is intended to appoint a Royal Commission to consider the question of the London water supply. Satisfaction was expressed at the Government having adopted that course.

Building Intelligence.

ADLINGTON. — New branch premises have just been completed at Adlington for the Williams Deacon and Manchester and Salford Bank, at a cost of £2,500. The premises occupy a commanding corner site in Church-street, facing the Market-place. The building is Classic in style, and constructed of Yorkshire stone parpoints with polished stone dressings. The spacious entrance-hall opens into the banking-room and the consulting-room. Below the banking-room is the strong room, which is fitted with patent fire and thief-proof door and frame, and paved with encaustic tiles, and also a lavatory. From the banking-room an internal doorway leads to the residential part of the premises, which have also a separate entrance from a side street. The doors and windows to the entrance-hall, and banking and consulting-rooms, are of American ash, the internal window linings having walnut panels. The entrance-hall and customers' portion of the banking-room are laid with mosaic pavement. The remainder of consulting-room and banking-room are paved with oak blocks laid on concrete. The whole work has been carried out from the designs, and under the superintendence of, Messrs. Jolly and Buckley, architects and surveyors, of Chorley, Lancs. The work has been executed by local tradesmen.

ST. PAUL'S CATHEDRAL CLOCK.—After much consideration of plans, the Dean and Chapter have just commissioned Messrs. John Smith and Sons, Derby, the well-known clockmakers, to make a new clock to replace the old one in the south-west tower of the cathedral. The old clock strikes the hours on the old "Phelps" bell, but the new one will strike upon "Great Paul," which is nearly seventeen tons weight, with a hammer weighing 680lb. The quarter-chimes will be struck much the same as before, but provision will be made in the clock so that chimes on four bells may be added at a futnre time. The two dials, which are 16ft. diameter, will be unaltered, except that the central part will be arranged for illumination at night. The clock movement will be a very large piece of machinery, designed by Lord Grimthorpe, and it is guaranteed by Messrs. Smith and Sons to keep time with very great accuracy. There will be special precision apparatus, whereby the first blow of the hours will fall within one second of Greenwich time, and the first blow of the three-quarters will also strike with the same accuracy. Some idea of the great size of this clock may be formed when it is known that the hammer which strikes the bell is 680lb., while the hammer which strikes "Big Ben" at the Houses of Parliament is about 450lb.

SHEFFIELD.—New board schools in Gleadless-road, Heeley, were opened on Monday. The schools, which have been built by Messrs. W. Ives and Company, contractors, of Shipley, are erected from the designs of Mr. C. J. Innocent, of 17, George-street, Sheffield. The plans present several new features. In the school for boys and girls each department has a large room and five other rooms, which can be used for class teaching, with an arrangement by which a number of them can be thrown together for general purposes, and thus obtain an assembly hall. There has been accommodation provided for 420 boys 420 girls, and 360 infants. The infants occupy a separate building, and here the general school-room and class-rooms have been arranged on an entirely new plan. In each department there are two rooms set apart for the use of the teachers. The cost of the site, which occupies 7,580 square yards, is £2,530; and the cost of the building, including the furnishing, is £11,170, making a total cost of £13,700. As the accommodation is for 1,206 children the cost per head for the site amounts to £2 2s., and for the building and furnishing £9 5s. 2d., the school thus costing per head £11 7s. 2d. Mr. Cartwright has acted as clerk of works.

The Duke of Connaught is carrying out some important improvements in the gardens and park of Bagshot House. The immediate surroundings of the mansion are being laid out by Mr. H. E. Milner, but the remoter portions of the grounds will be dealt with so as to preserve their natural character. On the Windsor side a new approach is to be made.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. Passmore Edwards.

TERMS OF SUBSCRIPTION.

One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 0d. (or 6dols. 30c. gold). To France or Belgium, £1 6s. 0d. (or 33fr. 30c.) To India (viâ Brindisi), £1 10s. 4d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front Page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No front page or paragraph Advertisement inserted for less than 5s.

Situations.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is One Shilling for Twenty-four Words, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., L., LI., LIII., LIV., LVIII., LIX., and LX. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

Received.—M. W. L. Co.—H. E. D.—C. J. Fothergill.—B. and R. Co.—J. T., Manchester.—R. L. G.

* * *

Correspondence.

ANIMALS FROM THE OUTER WALL, CARDIFF CASTLE.

To the Editor of the Building News.

Sir,—Please correct errors that have appeared in the Building News for Jan. 1 and 8, 1892. In your notice of the illustrations of the animals upon the outer wall of Cardiff Castle, the late Mr. Burges's name is given as architect, and Mr. T. Nicholls, sculptor. The latter name is correct, the former is not. Mr. Burges had nothing whatever to do with any portion of this work, which was carried out entirely by—Yours, &c., William Frame, Architect.

Cardiff, Jan. 12.

ADVERTISERS' TRADE RIGHTS.

Sir,—In your advertising columns of last week's Building News there appears an advertisement relating to infringement of the advertiser's trade rights, and offering a reward of two hundred pounds sterling to any person furnishing evidence of any such infringement that shall secure the conviction of the guilty parties.

Without commenting upon this advertisement in any way, I shall take its reference to the Merchandise Marks Act in the general application, and not as one specially referring to the merchandise of a certain individual only, for an illustration of what I wish to bring before your readers.

The question I desire to propound is this: Is the Merchandise Marks Act so inefficient, and commercial morality so debased, as to require the stimulus of such large rewards to induce purchasers to give their aid in protecting the rights of others? I will not venture a reply to this query, but will only refer to certain matters which come weekly before the public through the advertising columns of many papers, and before architects especially through the medium of trade catalogues furnished to them by manufacturers of building and other appliances, and offer at the same time a suggestion by which a large amount of "fradulent substitution" might be prevented.

During the course of a limited experience in connection with the building trade, I have had opportunities of observing the introduction of many useful inventions in varied designs, and have noted that where these have been patented, registered, or guarded by trade marks, there has been a certain amount of protection afforded to the inventor, designer, or manufacturer to reward him for his labour, in so far that unscrupulous parties were deterred from infringing so closely upon these patents or designs as to bring them within the grasp of the law, and have confined themselves to imitations as near as it was possible to come without risk, hoping by holding out the bait of lower prices to have their imitations substituted. When not so protected, however, I have likewise noted that there has been no scruple in copying inventions and designs to the minutest detail, and in some cases with very slight, if any, modifications. Such copies have been put before the public as the advertiser's own design and invention, patented and registered, and sold with patent labels affixed, when neither the form of patenting or registration had been gone through, nor any fees paid for such.

Such shamefaced piracies as those referred to, which rob the inventors and designers of the reward of their labour, do not deserve the patronage of the public; yet they obtain it simply because they are sold cheaper, and it is probably unknown that they are not original patented inventions or registered designs. Still, it is observable that they are, if not altogether, very close imitations of other people's goods.

I have an idea that the architectural profession can do much to strengthen these trade protective Acts, put a stop to many of these malpractices, and aid the honest inventor. I grant it is their interest to obtain as cheap and reliable appliances for their clients as it is possible to find, and these goods are usually put before them as improvements upon the real patents and designs; but the honourable character of the profession stands clearly out against the encouragement of such dishonourable practices, and they can, by their discrimination, become powerful and influential factors in the interest of the genuine inventor and manufacturer.

It must not, however, for a moment be supposed that I make the slightest suggestion that the members of the architectural profession have not hitherto given their discouragement to such practices when they have been observed by them; but it is possible that they may, in many instances, without being aware of it, have given their patronage in their favour, and this suggestion may lead to inquiry.—I am, &c.,

Jan. 16. S. D.

* * *

The Dean and Chapter of Norwich have requested Mr. J. L. Pearson, R.A., to report on the condition of the fabric of Norwich Cathedral.

The addition to the Prestwich County Asylum, near Manchester, is being warmed and ventilated by means of Shorland's patent Manchester stoves, those already in use in this asylum having given entire satisfaction, the same being supplied by Mr. E. H. Shorland, of Manchester.

Intercommunication.

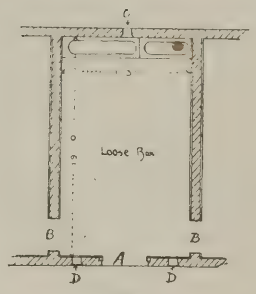
QUESTIONS.

[10702.]—**Bookkeeping.**—Could any kind reader recommend a good textbook on bookkeeping for plumbers and house decorators?—Pictor.

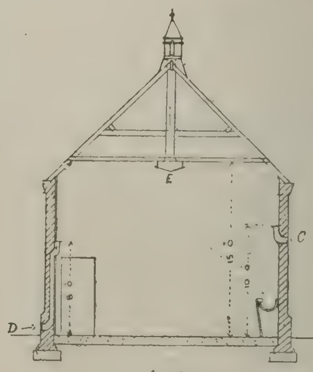
[10703.]—**Deal Floors on Concrete.**—In some workmen's dwellings I am anxious to lay ordinary deal flooring, tongued, directly on concrete composed of coke-breeze and Portland cement, to which the flooring would be nailed. Will any of your readers kindly state their experience of floors so laid? Are the boards liable to "cockle" or to decay more rapidly than if laid on joists? If they are, what is the best means of getting over these objections. "Block" flooring would be too expensive.—Surveyor.

[10704.]—**Fascia.**—I am much obliged to "G. H. G." for answering my last query. Will he kindly inform me how a stone fascia should be fixed to a box girder as well as a rolled iron joist? I suppose the soffit is usually only the thickness of the stone casing, which, I presume, is kept from dropping by means of joggled joints, the copper ties he refers to being for the purpose of keeping the stonework from bulging outwards. Can he recommend me a cheap book on practical iron construction?—Excalibur.

[10705.]—**Ventilation of Stables.**—I may say I am engaged in building a range of stables consisting principally of loose-boxes, which I have arranged to ventilate in the following manner. As, however, my system has been criticised and condemned as wrong in principle by a friend of the gentleman whose horses are to occupy the stables (thereby raising doubts in the mind of the latter), I have thought it wise, before proceeding with the work, to give others the opportunity of criticising the proposed system. I now give a plan and section of the boxes, the dimensions of which are as follows:—19ft. deep by 11ft. 3in. wide, and 15ft. high to the ceiling under the collar-beam. As will be seen, the entrance door A is in the centre. opposite the manger, over which there is a falling fanlight opening inwards when desired. There are also small communicating doors, B B. which enable the horses to be inspected more conveniently than would be the case had each box to be entered from the outside. However, it is with ventilation I have to deal. At D D, on either side of the entrance door, are two inlets 9in. by 4½in., built in the wall in the form of a Tobin's tube, admitting the pure air through a grating 9in. from the ground line, and delivering it vertically into the box by means of a regulating bracket 8ft. from the floor. There is also a similar bracket over the manger at C, delivering at the height of 10ft., but in this case the inlet grating is 8ft. from the ground on account of construction. At E is the outlet for vitiated air, protected by a cone 6in. from the ceiling, and terminating above the ridge with a Boyle's patent air-pump extractor. The above is the principle of the proposed system of ventilation which has been condemned as wrong on account of the height at which the pure air is delivered into the boxes. This, it is thought, ought to be considerably lower, say, from 2ft. to 3ft. from the floor of the box, as it is asserted that the fresh air, on being admitted at the height of 8ft., will fall on the back of the horse, whereas, if introduced at the lower level, no downdraught would occur. With this I cannot agree, as in my opinion the danger of draughts would be greatly increased rather than averted, to say nothing of the general principle being wrong.—H.



Plan



Section.

[10706.]—**Safe Load.**—I shall feel obliged if some of your correspondents will tell me what is the safe load for a rectangular cast-iron column 7½in. by 6in. by ¾in. thick, and 13ft. high.—Subscriber.

[10707.]—**Fan-Vaulting in Brick.**—Can any correspondent inform me of any examples of modern fan-vaulting in brick, or give any particulars of the cost of executing such work?—Bricky.

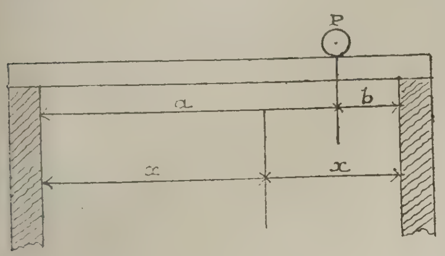
REPLIES.

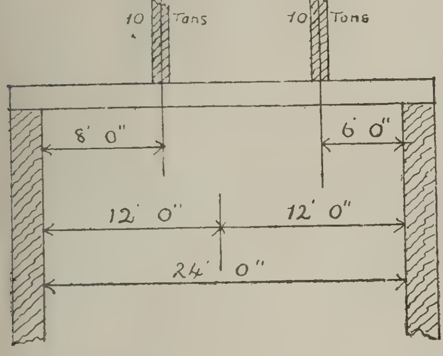
[10689.]—**Earth-Closets.**—"E. C." can obtain full information and all advice respecting earth-closets by writing to Mr. J. Ward, 203, Tonge Moor-road, Bolton.—Compton.

[10695.]—**Bricks and Brick Making.**—Hand-machines are out of date for making any considerable quantity of bricks in our days. "Currie" may see several large and small Hoffman kilns, both circular and oblong, in full work at Scarborough.—G. B.

[10684.]—**Strength of Materials.**—Hurst's rule is: "If the load is applied at any other point, as at D, the breaking weight will be equal to the square of half the length of A B multiplied by the breaking weight in the middle, and divided by the product of the distance

A D and D B from each end"—or, in other words, the breaking weight at the point P = the breaking weight in the centre $\times \frac{x^2}{af}$. From this it follows that the breaking weight in the centre = the breaking weight at point $P \times \frac{af}{x^2}$. Applying this to the problem in the examination referred to by "A. R. F. T," the weight in the





centre equivalent to the 10 tons at left-hand side $= 10 \text{ tons} \times \frac{2 \times 4}{3 \times 3} = \frac{8}{9}$ of 10 tons; also the weight in the centre equivalent to the 10 tons at right-hand side $= 10 \text{ tons} \frac{3}{2 \times 2} = \frac{3}{4}$ of 10 tons; therefore, total weight in centre equivalent to the two weights of ten tons each $= \left(\frac{8}{9} + \frac{3}{4}\right)$ of 10 tons $= \frac{59}{36}$ of 10 tons.—J. W.

[10698.]—**Building Line.**—By the Public Health (Buildings in Streets) Act, 1888, section 3, section 156 of the Public Health Act, 1875, is repealed, and in lieu thereof it is enacted that it shall not be lawful in any urban district, without the written consent of the U.S.A., to erect or bring forward any house or building in any street, or any part of such house or building beyond the main front wall of the building on either side thereof in the same street, nor to build any addition to any house or building beyond the front main wall of the house or building on either side of the same. My opinion is that any person may set his building back from the building-line if he cannot bring it forward.—G. B.

[10698.]—**Building Line.**—You can set your buildings back as proposed, and the corporation have no right to stop you. Better proceed cautiously, under the advice of an architect or solicitor who has a knowledge of Building Acts and local by-laws.—ARCHITECT.

[10700.]—**Traps.**—I would suggest to "R. A." that he take out the 4in. trap and put in a 6in. trap of any good make, and, say, four lengths of 6in. pipes, with a taper pipe into the 4in. drain. I think this would remedy the evil complained of. A 4in. trap to a w.c. is too small. —G. B.

[10700.]—**Traps.**—There must be something wrong with the fitting in of the Buchan's 4in. trap, or the pipes beyond it, if it requires to be cleared out every fortnight, as "R. A." says. Is it a No. 1 or No. 2 trap, or what style? With the No. 1 trap, I found that masons and others putting it in, often left the cement sticking up inside of the pipe beyond the trap, and so I brought out the No. 2 style, with the access opening at its outer end, to leave no excuse for tradesmen making a bad job. As thousands of these traps are in use in all sorts of buildings all over the kingdom, and work well, many as clean or clear after ten years' use as in the first week, I think "R. A." should see, first, that the trap is a real Buchan's trap; second, that it is properly fitted in, with a fall for the water into the trap of 2in. over the sharp edge; third, that the drain-pipes beyond the trap are clear, and no cement left sticking up inside of the pipes at the joints. Many pipes work well, when properly laid, with less fall than 1½in. to 10ft.—W. P. BUCHAN.

[10701.]—**Ventilation.**—"C. W. S." asks as to the "best" method of ventilating a public hall "surrounded by adjoining buildings on all sides." In that case, and especially if the adjoining buildings are higher than the ridge of the hall, the wind would not get at any wind-acting exhaust ventilators to make them work; hence for the "best" method of ventilating this hall some other motive power than the wind should be depended upon, say, either by using gas in the outlet pipe to cause an up-current, or by the use of a ventilating fan worked by a gas-engine, or otherwise.—W. P. B.

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Colonel Ducat, Local Government Board Inspector, held an inquiry at Rochdale on Thursday concerning an application by the corporation for permission to borrow £60,000 for the extension of gasworks, and £3,500 for fire-brigade purposes.

Legal.

COMPENSATION FOR LEASEHOLDS.

WHEN leasehold premises are taken by railway companies, or for purposes of improvement under the compulsory clauses of a statute, the value of the lessee's interest depends upon various considerations. It is clear that in assessing the compensation he is to receive all the facts affecting the value of his property at the time of the notice to treat should be considered. In the recent case of "McIntosh and the Pontypridd Improvement Company, Limited" (*Times*, Jan. 13), a very important point of principle and justice was laid down by the Court of Appeal. There the lessee held a piece of land with buildings on it by an under-lease, with about 50 years unexpired. But it appeared that the lease gave power to erect new buildings on the land, subject, of course, to the lessee's covenant as to their repair. In fact, the plaintiff had prepared plans for such new buildings, and had had them approved by the local board. As to whether other points were raised, that need not now be gone into. It further appeared that, as a matter of fact, the consent of the lessor to this pulling down and rebuilding had never been withheld in cases of other leases containing similar clauses, and it would have been granted here when asked. The arbitrator to whom the claim for compensation had been sent submitted two questions to the Court—firstly, whether the lessee was precluded by his lease from pulling down and rebuilding, when the value was put at £306; and, secondly, whether the lessee could use the land as a building site, when the value would be £1,569.

The Divisional Court had held that the latter sum was the proper amount of compensation, whence this appeal. The Master of the Rolls ruled that, in construing the questions asked by the arbitrator, the Court could go into the facts, and did so accordingly. They therefore included in his second question the fact that the lessor's consent to pulling down and rebuilding had always been given in similar cases, and would have been given here if asked. The point, then, was whether, under these circumstances, a purchaser would give more for the lease than if the fact of such consent being practically certain did not exist. The Court laid it down that the value to the lessee at the date of the notice to treat must be taken, and the arbitrator would be entitled to take into account anything which, as between vendor and purchaser, would enhance the value of the land to the lessee. It was perfectly clear that this fact would so operate to heighten the value of the land to the claimant, and therefore the arbitrator must take it into consideration. The Court of Appeal then confirmed the judgment of the Court below upon this broad ground, and so the valuation for compensation stood at £1,569, though without this implied consent to the lessee's pulling down and rebuilding the assessment of the lease would only have been £306, so that this point made a difference of just £1,250 to the lessee, and is worth noting for future use upon similar claims.

FRED WETHERFIELD, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

NOTE.—All questions for reply in this column must be headed "BUILDING NEWS," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

CH. H.—CONTRACT.—The work ought not to have proceeded until the priced bill of quantities was sent in, and the contract completed. The only course to pursue now seems to be to refuse any payment or certificate until the contractor has complied with the requirements of the contract in this respect; and if the contract has been carefully drawn, he can do nothing without the certificate.

COSMOPOLITAN.—PATENTS.—The proper course to pursue would be for you to get out a provisional specification of your improvement, and when thus protected you could negotiate with the patentee of the article you can improve.

J. H.—STREETS.—The surveyor seems to be right by the existing by-laws. The suggested inference of former approval is more matter of fact than of law, and does not appear strong enough to be acted upon. As to the School Board, this would probably depend on the contract itself.

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The county council of Ayrshire have adopted a scheme by Messrs. Leslie and Reid, of Edinburgh, for the construction of intercepting sewers and sea outfalls for the village of Fairlie.

LEGAL INTELLIGENCE.

BROSELEY TILES—CUSTOMS OF TRADE.—A case of considerable importance to architects, builders, and persons interested in the building trade, was heard on Wednesday last before His Honour, Judge Harris Lea, at Madeley County Court, Shropshire. The litigants were the Broseley Tileries Company, Limited *v.* Cooper Brothers. Mr. H. J. Osborne, of Birmingham, appeared for the plaintiffs, and Mr. Herbert Nield, of London, represented the defendants. The plaintiffs are tile manufacturers at Broseley, and the defendants are merchants, carrying on business in King William-street, London, and elsewhere. The case occupied the greater part of the day, during which time the court was crowded, most of the manufacturers in the district being present. From the evidence it appears that the defendants, who are large buyers of roofing tiles, wrote the plaintiffs to know if they had 30,000 strawberry-coloured tiles in stock, to which the plaintiffs replied that they had only 10,000 of the colour, and submitted samples, which were satisfactory, and from which a sample truck was ordered and sent. On arrival the truck was rejected, on the ground of colour differing from sample. The truck was eventually unloaded by the railway company, and it was then seen that two-thirds of the tiles were also second quality—i.e., having fine cracks, warps, scum, and other defects. The plaintiffs alleged that it was impossible to send the tiles nearer in colour than they had done, and called several witnesses, mostly manufacturers, who, although they acknowledged that the price charged was the standard association price for the best quality goods, alleged that 25 to 50 per cent. of tiles differing in quality and colour to the samples submitted would be fair representations of best quality in bulk, according to the custom of the trade. This the defendants denied, and submitted that having had many years' experience in the trade, they declared that not more than 2½ per cent. of seconds, and variations in colour from one shade lighter to one shade darker would fairly represent best quality in bulk, and called several merchants of many years' experience to substantiate this. His Honour, in giving judgment, said that the evidence of the plaintiffs was not so reliable as that of the defendants, as the statements of the respective witnesses varied considerably, whereas the evidence given for the defence was particularly clear, and notwithstanding the alleged customs of the trade, or of an association of manufacturers, he considered that the goods supplied were not fairly representative of the samples submitted, and he should therefere give a verdict for the defendants on both the questions—viz., colour and quality. Mr. Nield then applied for costs, to be awarded on the higher scale, on the ground of the action being particularly a test case, in which a large body of manufacturers were interested. His Honour agreed, and certified for two days' costs to each witness.

IN RE MARK GENTRY.—(Before Mr. Registrar Hope.)—This debtor has petitioned the Court, describing himself as of 43, London Wall, also of Sible Hedingham, and Langthorne Works, West Ham, builder, contractor, brickmaker, and farmer. The usual receiving order was made. The liabilities secured and unsecured are returned at £34,000, against assets £3,000.

IS A SCREEN WALL A "STRUCTURE"?—At Wandsworth Police Court, last week, Mr. J. E. Jennings, residing at Ilminster-gardens, Lavender-hill, was summoned by the London County Council for causing to be erected a certain structure beyond the general line of buildings in Falcon-road, Battersea, without first obtaining a license in writing. The property in Falcon-road consisted of shops, and an application was made to the Council for permission to extend the shop fronts on to the private property of the owners. This application being refused, a brick wall several feet high was erected on either side of the shop front at 72, Falcon-road. In respect of this Mr. Jennings was summoned. On his behalf it was contended that the walls could not be considered a structure, but were screens which he had a perfect right to erect to prevent a trespass on his premises. Mr. Denman decided against this contention, and made an order for the demolition of the walls, with three guineas costs.

IN RE D. W. LEWIS and SON.—One Portsmouth failure in direct connection with the crash of the Building Society is that of Messrs. David William Lewis and Henry David Lewis, builders, of Ottawa-terrace, Victoria-road, Southsea, trading as D. W. Lewis and Son. The first meeting of creditors will be held on Tuesday next, in London. The summary of the statement of affairs shows the sum of £3,390 12s. 5d. as due to unsecured creditors. The amount due to fully secured creditors is £62,403 9s. 2d., the debtor estimating the value of the securities in question at £65,807 11s. 3d., showing a surplus of £3,404 2s. 1d. To partly secured creditors the sum of £30,799 18s. 3d. is due, less £6,999 2s. 1d., the estimated value of securities. The assets amount to £6,629 6s. 5d. The doubtful and bad debts are estimated to produce £388 10s. 1d. The deficiency is returned at £21,462 2s. 2d. The failure is attributed to loss on contracts for sewerage work at Richmond, and on unlet property and repairs. The bankrupts, who filed their own petition, have only been in partnership about three or four months, the son having recently joined the father, but brought no capital into the business. The father commenced business about 24 years ago without capital. For the past 21 or 22 years he states he has been financed by the Portsea Island Building Society, who are now shown as fully secured creditors for £51,481 12s. 9d. The estimated value of the securities held against this sum is £49,597 11s. 3d.

Re Peter Balmer.—In the Liverpool Bankruptcy Court, application has been made for the discharge of this bankrupt, who was an architect and surveyor in Ormskirk and more recently in Liverpool, and failed in 1886. The debts amounted to £25,441 and assets to £57. No dividend had been paid. The bankrupt mainly attributed the loss of the money to his having become surety to a Southport bank for advances to companies of which he was a director. The official receiver, in his report, alleged that the bankrupt had failed to keep proper books of account. His Honour granted the discharge, subject to a month's suspension.

In re Improved Villa and Cottage Homes General Land and Building Company (Limited).—Under a winding-up order made against this company on Oct. 31 last, accounts have now been submitted showing liabilities £4,082, of which £1,156 are unsecured, without any available assets, and, as regards contributories the deficiency is returned at £1,741. The company was registered in October, 1887, and was formed for the purpose of erecting artisans' dwellings, which were eventually to become the property of the tenants. With this view the company, in December, 1889, entered into an agreement for the purchase of 7¼ acres of freehold land at Thornton Heath. On the completion of the purchase it was discovered that the value of the property for building purposes had been overestimated, and the vendor, about May, 1891, agreed to take back about four acres of it, and to reduce his charge to £90. The insolvency is attributed to want of capital to carry on the necessary building operations, and an account has been filed explaining the deficiency.

In re R. G. Guy.—(Court of Bankruptcy, Jan. 28.)—The bankrupt was a timber merchant, formerly trading in London in partnership with Lampton L. L. Bevan as George Guy and Co., and at St. John's, New Brunswick, as Guy, Bevan, and Co. The failure occurred in March, 1887, the joint liabilities being returned at £105,229. The assets were estimated to realise £25,423, but they are reported by the trustee to have realised only £2,116. The partnership between Messrs. Guy and Bevan was commenced in 1878, and the failure was attributed to the result of certain accommodation transactions. Further, that after March, 1882, the bankrupt, having parted with all interest in "Guys," continued the management of the business, and to enable him to raise the necessary funds for this purpose, he put into circulation accommodation bills drawn by him in the name of Guy, Bevan, and Co., and accepted by him in the name of George Guy and Co, which he discounted with third parties. The amount of the bankrupt's liability in respect of these bills was nearly £10,000. He also incurred liabilities on bills drawn or accepted by him which were unprovided for by him at the date of the receiving order to the amount of £70,000, and with the proceeds of these bills the business was continued, the trade falling off, and the business becoming hopelessly involved. The Official Receiver reported as offences rash and hazardous speculations, contracting debts without reasonable expectation of being able to pay them, and that the bankrupt had given an undue preference to one of his creditors. Mr. Registrar Giffard, in giving judgment, said that the vital point in the case was the circulation of the bills to which reference had been made, and he could not suppose the bankrupt did not know that the Messrs. Stewart were in desperate circumstances when they had to raise at least £60,000 on accommodation bills. Rash and hazardous speculation was a very mild term to apply to the transactions, and the bankrupt's discharge would be suspended for four years.

Employers' Liability.—The question whether injuries sustained from defective works when pulling down buildings entitled a person to compensation under the Employers' Liability Act, in the same manner as when a building was being erected, came before Justices Lawrance and Wright on Wednesday. A labourer named Brannigan, when engaged in clearing a site for the building of a new theatre at Ashton-under-Lyne, was injured by the fall of a wall, and he recovered nearly £200 damages from his employer, a Mr. Robinson, who appealed. Their lordships dismissed the appeal, but gave leave to further appeal, in order to have some novel points argued.

The Fatal Fire at Lavender-Hill.—The adjourned inquest on the two draper's assistants, Mary Medlam and Ada Dodd, who lost their lives in the fire at Messrs. Minnis' premises, Lavender-hill, on the 20th ult., was held by Mr. Braxton Hicks at the Vestry Hall, Battersea-rise, on Thursday, the 14th inst. Under an order of the London County Council, Mr. Frank Job Chambers, F.R.I.B.A., of College-hill, London, E.C., sat with the coroner as assessor, and a well-known clerk of works was foreman of the jury. The case was watched on behalf of the Home Office, the County Council, the fire brigade, the police, the Southwark and Lambeth Water Company, and of one of the deceased. Mr. Minnis, the occupier of the premises, stated that the premises consisted of Nos. 307 and 309. When he took possession in 1889, the staircase of 309 had been taken away, and the only communication with the upper floors was by the old staircase of 307. Certain alterations had been made, including the removal of the partition on the ground floor, and the insertion of an iron girder; the plans for these alterations were not submitted to Mr. Wilfrid J. Hardcastle, the district surveyor. Evidence having been given as to the supply of water, Mr. Hardcastle said in 1888 the premises were altered from private houses, but no notice was given him, and on visiting the works, he saw no plans. He did not know that the chimney breasts in these premises had been cut away, without a certificate being obtained from himself, as required under Section 20, clause 15, of the Metropolitan Building Act of 1885; nor did he see that the iron joists which replaced the partition had been simply let into the party-wall 4½in. instead of being carried on piers. The landings of the back staircase were concrete on ordinary wooden joists; he did not consider that a proper foundation. In reply to Mr. Chambers he said that the whole of the weight of the upper floors was carried on a rolled iron joist 10in. by 4½in. The joist, he admitted, was very much too weak, and would only carry eight tons. In consequence of this yielding to the flames the whole building collapsed. He did not notice at the time that the walls were not thick enough.—In conformity with the Act, Sec. 52 and 53, he sent in his report to the London County Council at the completion of the work, but did not mention the various infringements of the Building Acts, although he knew that the said report signed by himself constituted a certificate that all the works were completed in accordance with the Building Acts.—The inquest was then adjourned till yesterday (Thursday), when Mr. Hardcastle was represented by Mr. G. W. Bernard, solicitor. Mr. Horace Turner said he sold the shops to Minnis. He had nothing to do with the building operations, except to finance the builder, Mr. Ingram, trusting everything to the person who made the specifications. Witness knew there was no back exit from No. 309, the doorway having been bricked up by Minnis's instructions. He could not say that this was done to avoid the Building Acts, but admitted that the operations were not carried out as he should now like. Knowing nothing about the alterations, he had assumed that the district surveyor had been acquainted in the ordinary course. He did not know that plans had not been sent, and that Mr. Hardcastle only visited the premises in a casual manner. The vestry had nothing to do with the inside construction, but were favourable to the shops being built, having made a compromise with the freeholders regarding the two feet of frontage on which the shops were brought forward. The Metropolitan Board of Works, then in existence, were unfavourable to the proposal, and refused the application several times. Mr. Thos. Ingram, an auctioneer and surveyor, who carried out the alterations in Nos. 307 and 309, Lavender Hill, a Mr. West acting as foreman under his instructions, said he brought the frontage out 6ft. by request of the Metropolitan Board of Works, putting two girders under the front and one under the bay window. He sent in the plans to the vestry, also notifying Mr. Hardcastle of the fact. No. 309, however, had got three planks bolted together, this being the only shop so treated. The bresummers were supported by pillars of brick and cement. In August, 1889, he converted the two shops into one. He gave notice verbally to the district surveyor. Hardcastle could not have helped noticing the alterations, as he had to pass every day to go to his office. He was not obliged to submit plans of the internal construction, although he had to give notice. The case was then adjourned till next Thursday, when Mr. Hardcastle's examination is expected to be resumed.

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A granite drinking fountain with cattle trough, &c., surmounted by lamp, is to be erected at Compton, near Wolverhampton. Mr. J. Roddis, of Birmingham, will execute the work.

STATUES, MEMORIALS, &c.

Chichester.—The Dean and Chapter of Chichester, acting under the advice of their architect, Mr. Gordon M. Hills, of Adam-street, Adelphi, W.C., have just had the vacant Early English niche in the south-west porch of the Cathedral filled. The statue is a standing one of St. Richard, the famous 13th-century Bishop of Chichester. He is in full canonicals, and holds a crosier in his left hand, whilst the right is lifted in the act of benediction; at his feet is a chalice. The statue, which is just under life size, is from the studios of Messrs. Harry Hems and Sons, of Exeter.

WATER SUPPLY AND SANITARY MATTERS.

Sewage Purification at Birkdale.—Major-General C. Phipps Carey, R.E., of the Local Government Board, recently held a public inquiry at the Town-hall, Birkdale, about the disposal of the Birkdale sewage. The lime treatment of the sewage having produced bad results, the Southport Corporation obtained an injunction against the Birkdale local board for polluting a brook. To remove this injunction the Birkdale board proposed to continue treating their sewage with lime, but carrying their effluent therefrom through a pipe sewer into the sea. This was opposed by the corporation of Southport and by neighbouring landowners. Dr. E. Frankland, F.R.S., of the Rivers Pollution Commission, and Mr. Mansergh, M.Inst. C.E., gave evidence for the Southport Corporation against lime treatment of the sewage. These eminent authorities recommended the Ferozone and Polarite process of the International Company, as, in their opinion, it would produce the most satisfactory results, and would be less costly than the method proposed. After hearing this evidence, the representatives of the Birkdale Local Board withdrew, and, after a short deliberation, announced their willingness to give an undertaking to adopt the International process, whereupon the opposition of the Southport Corporation and the other opponents was withdrawn. The Birkdale Board have accordingly instructed Mr. Charles H. Beloe, M.Inst.C.E., of Liverpool, the consulting engineer to the International Sewage and Water Purification Company, Westminster, to prepare the scheme, in conjunction with Mr. J. H. Fairbairn, the surveyor to the board.

CHIPS.

Mr. Alfred Palmer has been appointed Master of Design in the Leeds School of Art.

Alterations have been made to the Drill Hall, Pentre, embracing the ventilation, which is now carried out on the Boyle system, the latest improved form of the patent self-acting air-pump ventilator being adopted for the extraction of the vitiated air.

The Perthshire County Council have adopted a scheme for the extension of the special water supply for Pitlochry district by bringing in an additional supply from Altassen burn, belonging to Mr. Buttar, of Faskally. According to the report of Messrs. Leslie and Reid, of Edinburgh, the engineers, the cost of the extensions will amount to £2,942.

It is intended to cover with a glass roof the central court of the South Kensington Museum, and devote the hall thus gained to the reception of articles in which the circulation department is concerned.

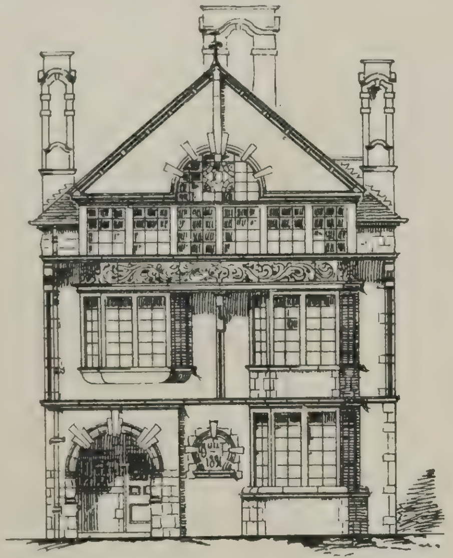
The town council of Luton have appointed Mr. T. Ridyard Roscoe, C.E., assistant surveyor, Islington Vestry, N., as engineer and surveyor for the Borough of Luton.

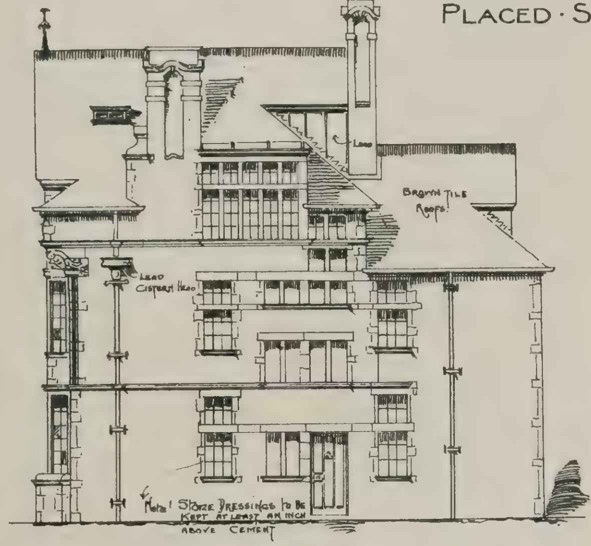
The dedication services of a church building which has been erected in Lower Broughton-road, in connection with the Salford New Church Society, took place on Friday. The church has been built from the plans of Mr. Thomas Browne, of Manchester. It is of Gothic design; the material is red brick with stone facings, and the fittings are of pitch pine. The total cost was about £5,300.

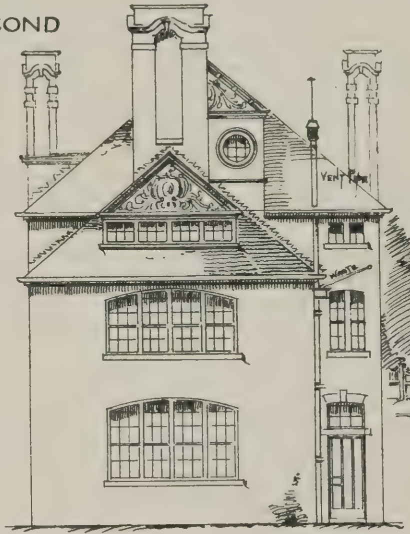
The heavy ring of six—tenor 39cwt.—is now undergoing restoration at Wrington, Somerset, by the firm of James Barwell, Birmingham. This firm have also recently restored and augmented the ring at Betley, Staffordshire, have supplied a set of Westminster quarters (hour bell 11cwt.) to a church in Ayrshire, and a bell of 12cwt. to the mission church at Peshawar (India).

The first contract for the construction of works has been let by the Lancashire, Derbyshire, and East Coast Railway Company to Messrs. S. Pearson and Son, the contractors for the Blackwall Tunnel. The present contract comprises ten miles of the main line from Chesterfield to Langwith, and several miles of branch lines. This length includes the heaviest works of the central section from Chesterfield to Lincoln. It includes three viaducts and two tunnels, one of the latter being about two miles long. Mr. R. Elliott Cooper is the engineer.

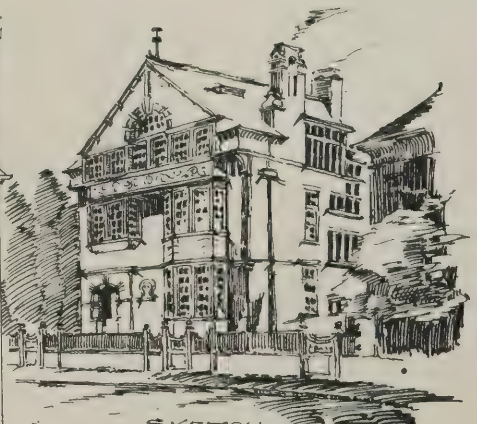
PLACED · SECOND


· FRONT ELEVATION ·


Lead
Brown Tile Roofs!
Lead Cistern Head
Note! Stone Dressings to be Kept at least an inch above Cement
· SIDE ELEVATION ·



· BACK ELEVATION ·

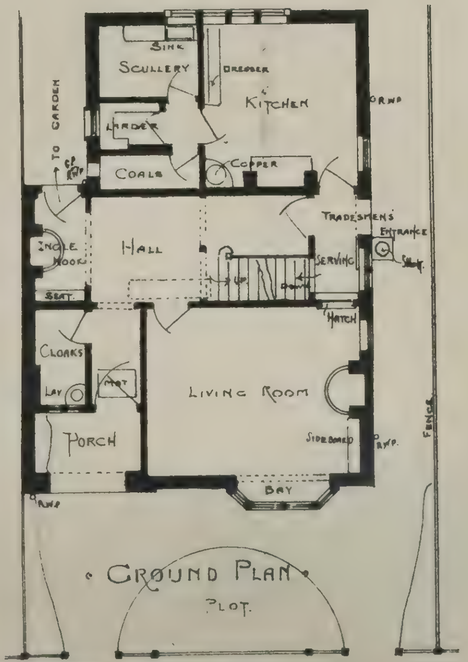

SKETCH

B·N·D·C

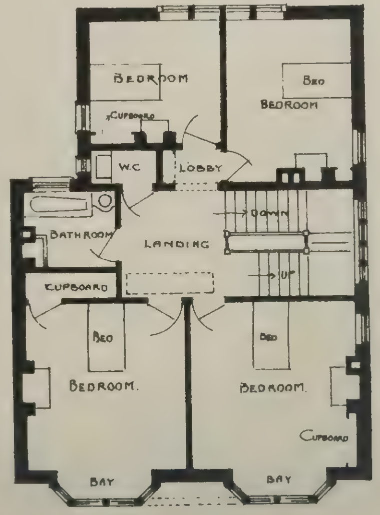
AN ARTISTS HOME

· BY SMILASH THE GOTH ·

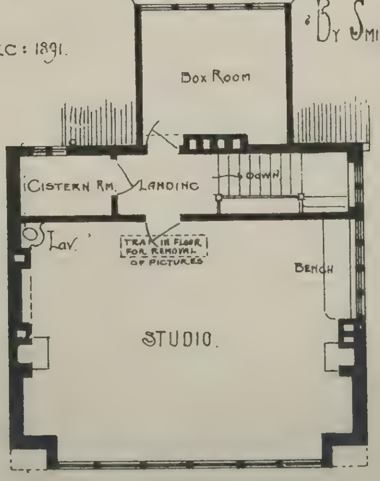
DEC: 1891.



· GROUND PLAN ·

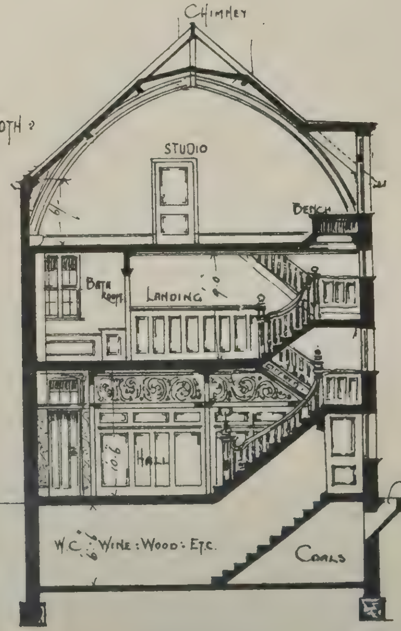


· FIRST FLOOR ·



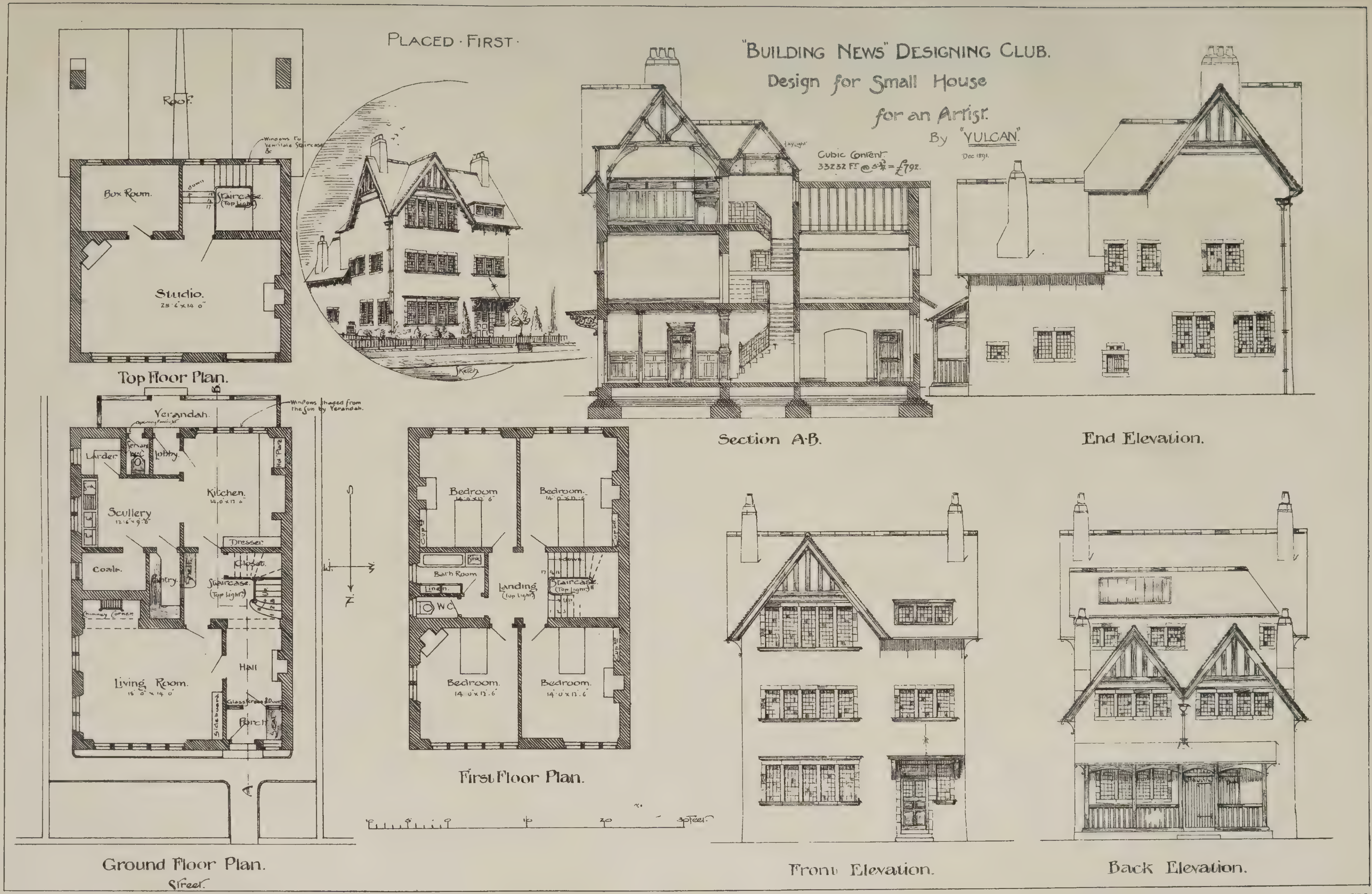
· SECOND FLOOR ·

Scale 5 0 10 20 30 40 of Feet.



· SECTION ·

Photo Lithographed & Printed by James Akerman, 6, Queen Square, W.C



PLACED · FIRST ·

"BUILDING NEWS" DESIGNING CLUB.

Design for Small House for an Artist.

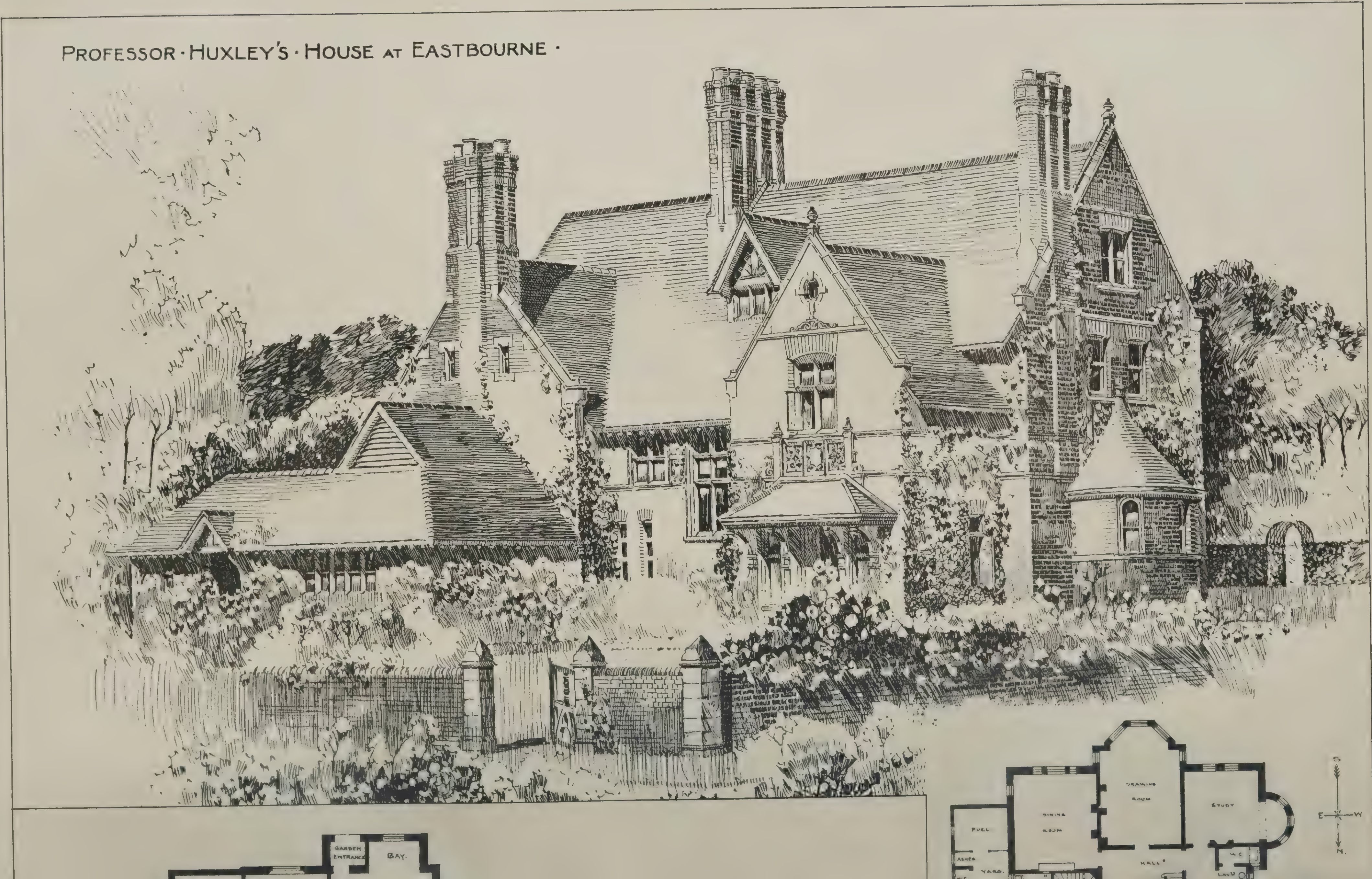
By "YULCAN".

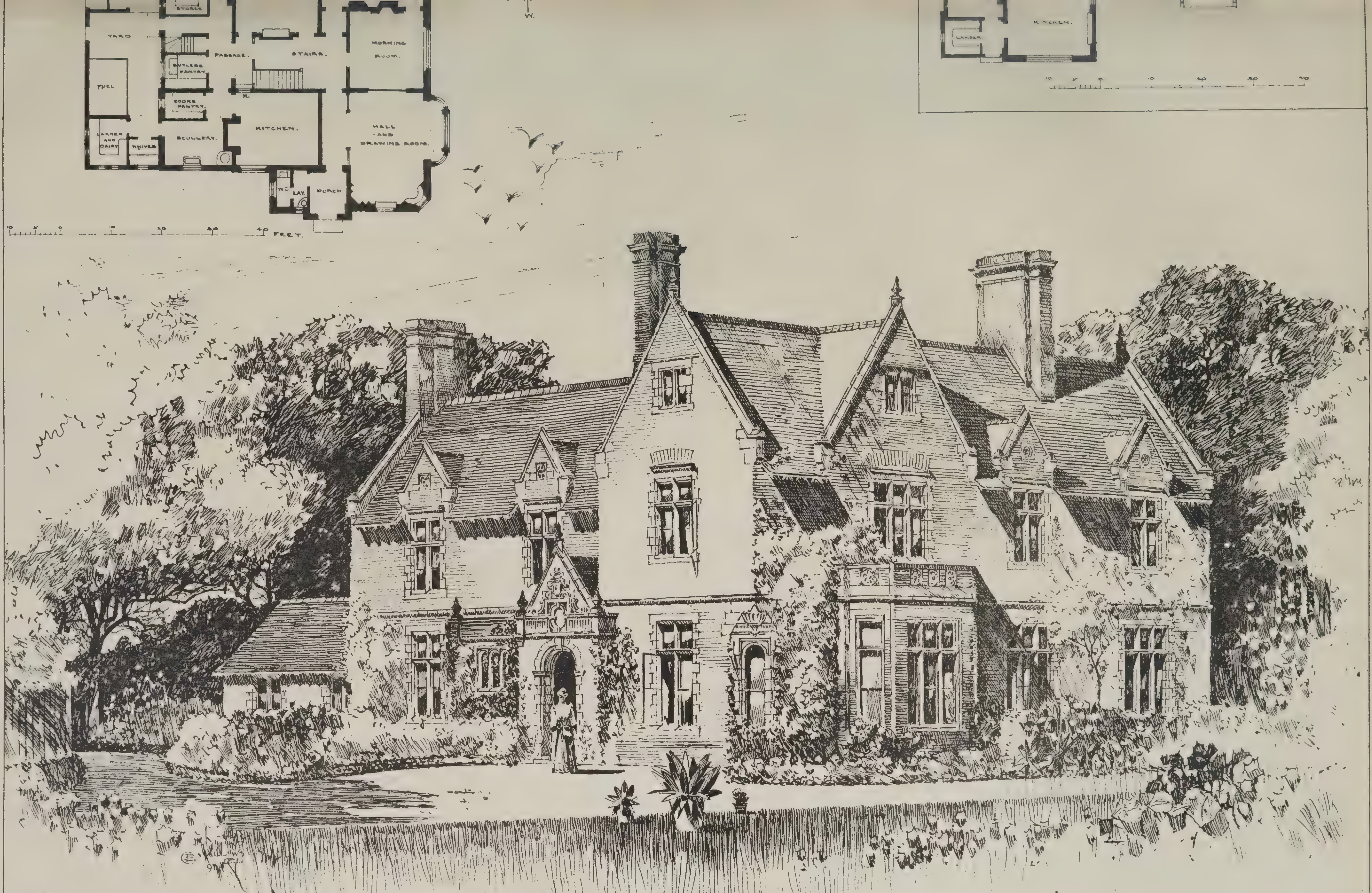
Dec 1891.

Cubic Content.
33232 FT @ 5¾ = £792.

Photo Lithographed & Printed by James Akerman, 6, Queen Square, W.C.

PROFESSOR · HUXLEY'S · HOUSE AT EASTBOURNE ·

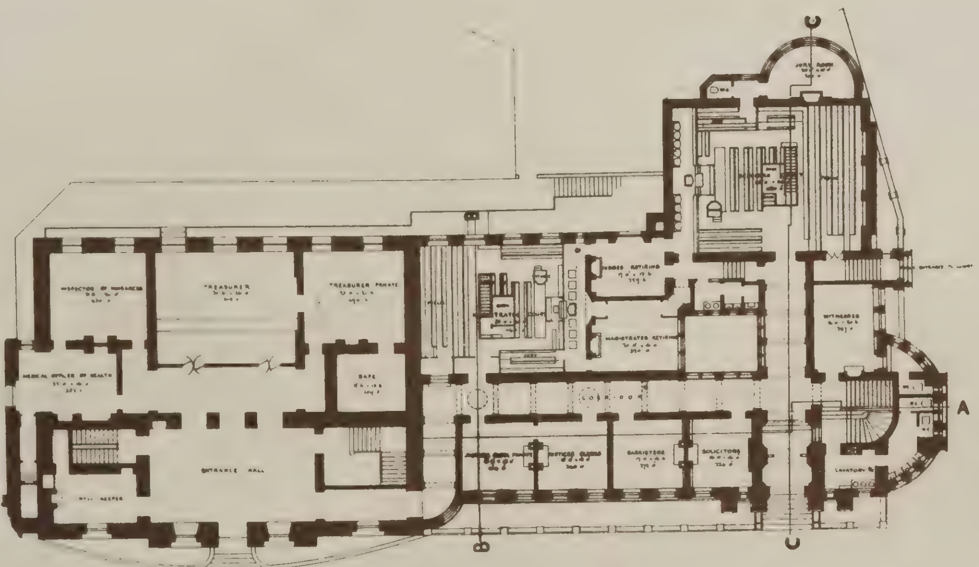




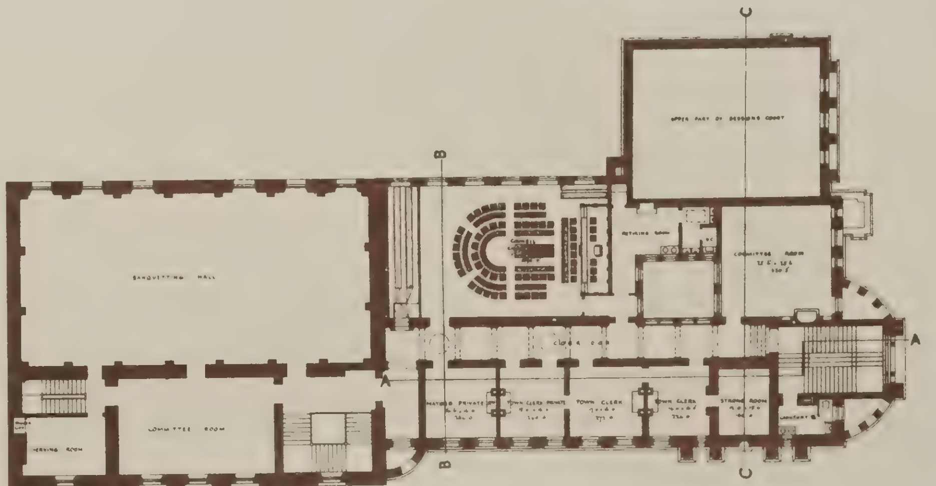
FREDK· WALLER·ARCHITECT

SIR·JOSEPH·HOOKER'S·HOUSE AT SUNNINGDALE·

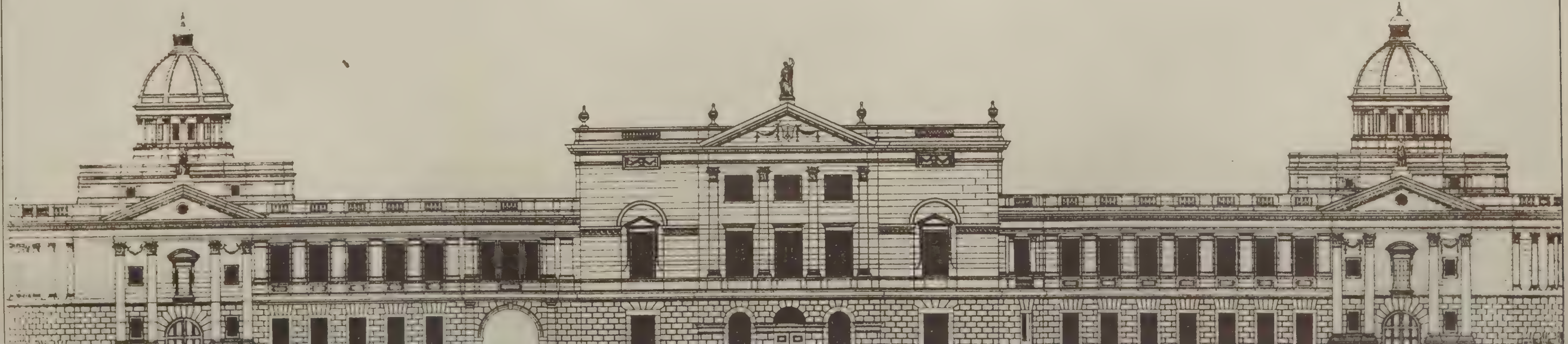
Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.C.



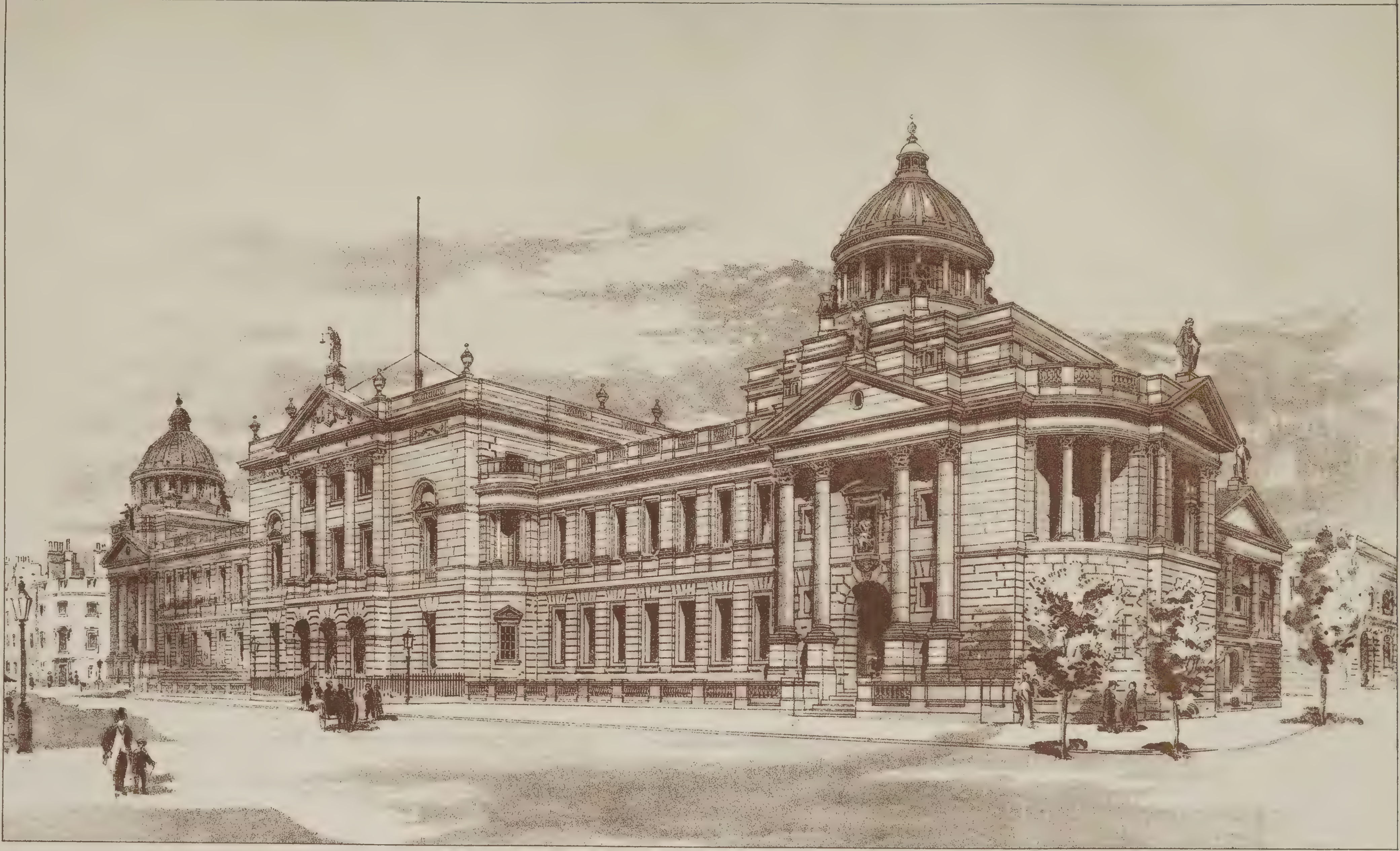
GROUND FLOOR PLAN



FIRST FLOOR PLAN

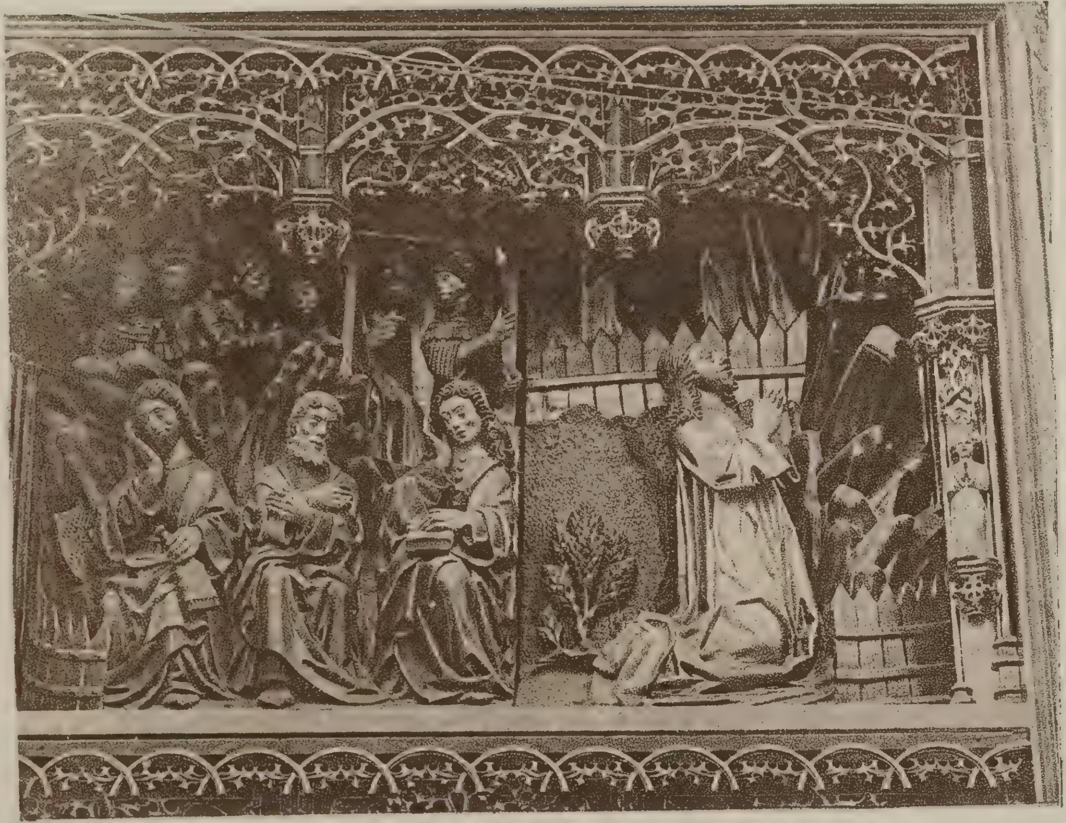


FRONT ELEVATION

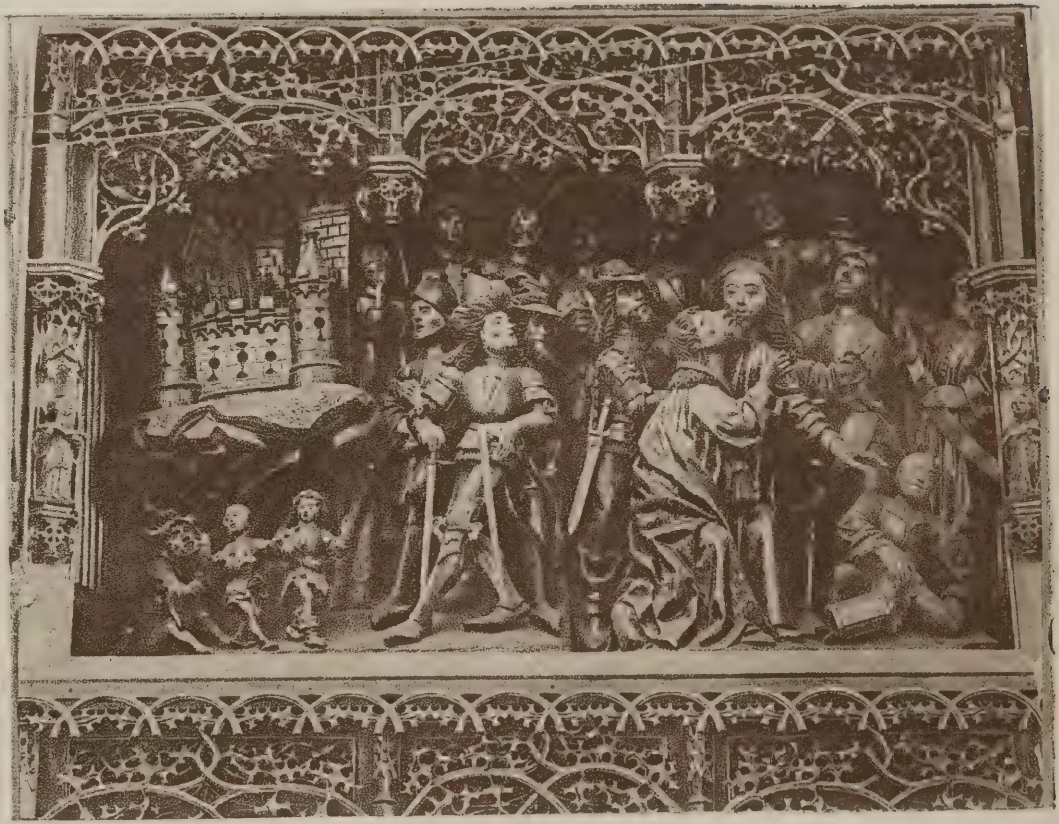


"PHOTO-TINT," by James Akerman, 6, Queen Square, London, W.C.

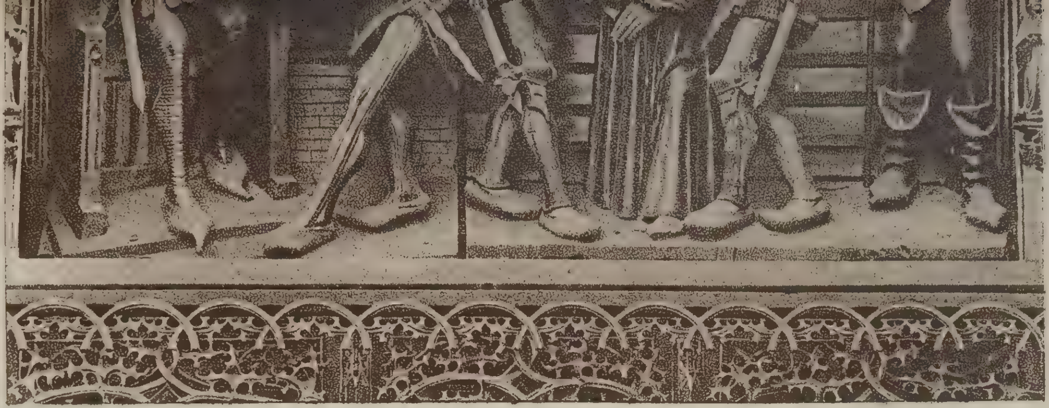
BATH MUNICIPAL BUILDINGS. SECOND PREMIATED DESIGN.



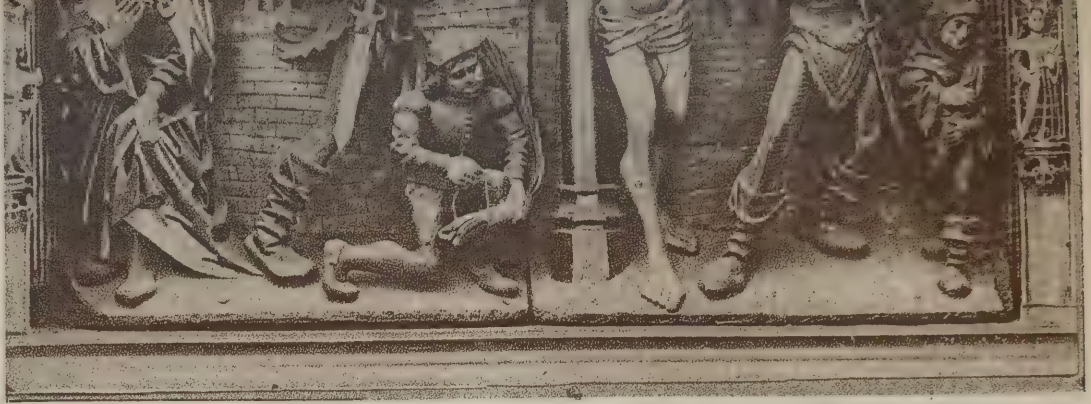
CHRIST IN THE GARDEN



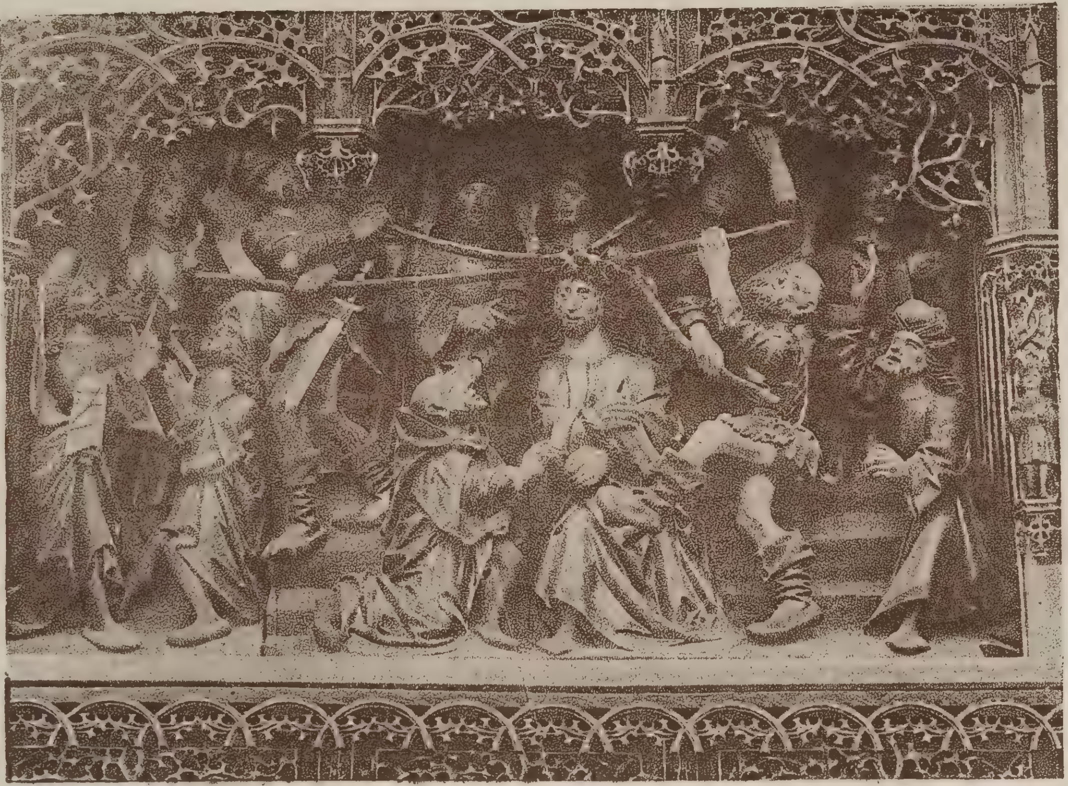
THE KISS OF JUDAS



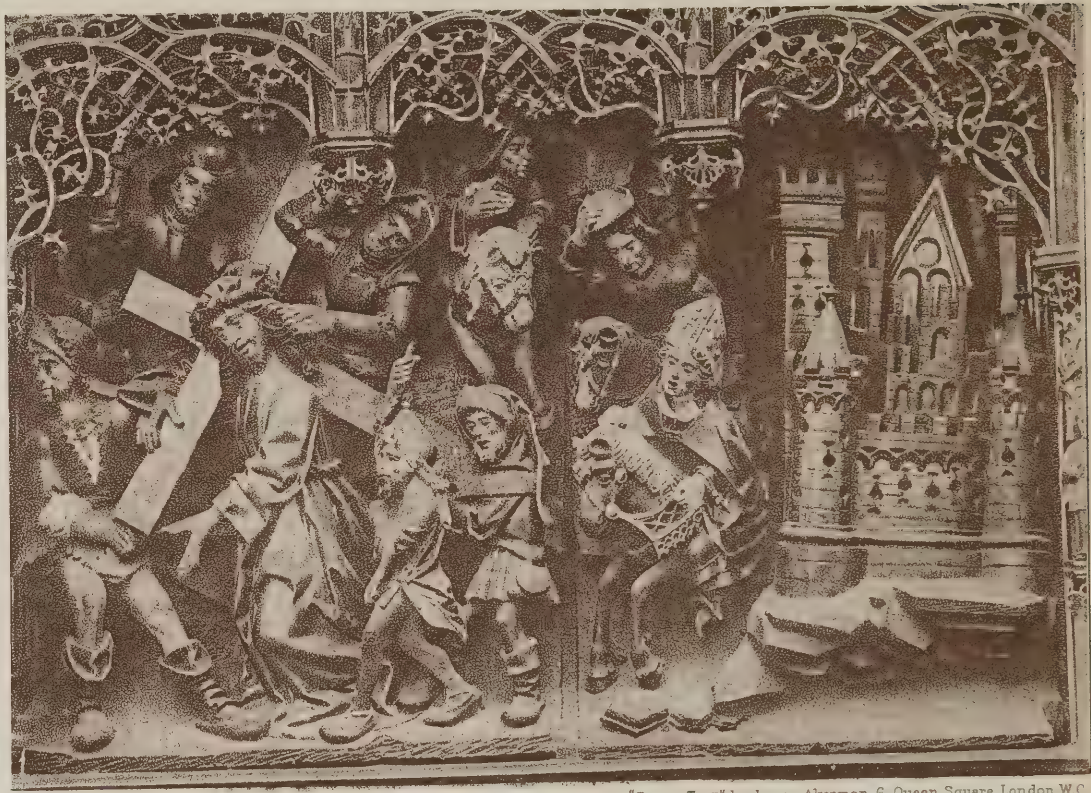
Pilate · Washing · his · Hands ·



The · Scourging



The · Mocking ·



"Photo-Tint", by James Akerman, 6, Queen Square, London, W.C.

Christ · Bearing · His · Cross ·

Wood · Carvings · of "The · Passion": Stalshund · Church · Black · Forest ·

From · Photos · by · Dr T · R Allinson · L.R.C.P.

Our Office Table.

Complaints have frequently been made by contractors of the variations in practice of the London County Council with regard to their treatment of deposits of money made by those applying for specifications and drawings of an advertised work. In some cases, the money deposited has been returned to persons who subsequently sent in *bonâ fide* tenders, but in certain instances of large works, in connection with which great expense has been incurred in the preparation of drawings, it has been the practice of the engineer's department to retain the amounts deposited. These variations in practice, it is satisfactory to state, will now cease, as, on Tuesday, acting on the recommendation of the General Purposes Committee, the County Council made a standing order that, in all cases, money so deposited will be returned to persons who send in *bonâ fide* tenders.

Mr. Thomas Morgan, F.S.A., died on the 13th inst., at his residence, Hillside House, Streatham, Surrey, at the age of 72. For a considerable time he was a vice-president of the British Archæological Association, and for fifteen years was their honorary treasurer. During his connection with the association he contributed many papers, chiefly relating to his favourite subject, Roman archæology. In 1886 he published a standard work on "Romano-British Mosaic Pavements," which contained a history of their discovery, and a record and interpretation of their designs. Up to a few days before his death he was busily engaged completing another work on a kindred subject.

The death is announced, at the age of 76, of M. Carl Louis Muller, the distinguished historical and *genre* painter. He studied at the Ecole des Beaux Arts in Paris. He made his *début* at the Salon of 1834 with "The Promenade." This was succeeded by "Entry of Christ into Jerusalem," "Haydée," "Lady Macbeth," "Marie Antoinette in the Conciergerie," "Proscription of Young Irishmen," "Play," and "A Mass under the Terror." His most important work, "The Appeal of the Last Victims of the Terror," painted in 1850, is now in the Louvre. To M. Muller were intrusted the decoration of the Salle des Etats in the Louvre, and the paintings in the cupola of the Pavillon Denon in the same palace. In 1850 he was appointed to direct the artistic school of the Gobelins. In 1864 he was elected a member of the Institute of France.

The first meeting of the Applied Art Section of the Society of Arts for the present session will be held on Tuesday evening next, when Mr. William Morris will read a paper on "The Woodcuts of Gothic Books," illustrated by lantern slides, and on February 23 Mr. J. William Tonks will read a paper on the "Artistic Treatment of Jewellery: Jewel and Address Caskets." At subsequent meetings, papers will be read by Mr. E. Roscoe Mullins on "The Decorative Uses of Sculpture" (March 29); by Mr. C. Purdon Clarke, C.I.E., on "English Brocades and Figured Silks" (April 12); and by Mr. George T. Robinson, F.S.A., on "Decorative Plaster Work" (May 17). This will be a continuation of a paper read by Mr. Robinson last session.

A conference of the Bristol, Cardiff, and Swansea district councils of the district councils of the National Registration of Qualified Plumbers was held at Cardiff on Saturday. The report of the Bristol district showed that the council was formed on October 21, 1889. There had been 130 applications, and the total number at present registered was 109—60 masters and 49 journeymen. The percentage of passes since the examinations were established was 40. Similarly satisfactory reports were presented from Swansea and Cardiff. Mr. J. Wertheimer, B.A., Bristol, introduced the question of the education of plumbers, and a resolution was passed to the effect that the conference was of opinion that the technical education of plumbers was a question of national importance, the provision of which was exceedingly difficult and costly, and that it was expedient that its special claims for money help should be brought before the attention of the county councils.

The death is announced of Mr. James Colville, a well-known Edinburgh builder, residing at 16, Kemp-place. The deceased had a long connection with the building trade in Edinburgh, and took an active part in an agitation by the masons for increased pay more than 30 years ago. At that time (1861) a number of masons joined together and started the Edinburgh Co-operative Building Company, Limited, when Mr. Colville was apointed manager. From that time until about two and a half years ago, when he retired owing to ill-health, he held that post. During the time he was manager upwards of 1,500 houses for the working classes and others, at prices ranging from £130 to £450, were erected in Edinburgh and Leith by the Association, besides a large number of villas and shops.

The vestry of St. Pancras, London, have appointed Mr. W. N. Blair, Assoc.M.Inst.C.E., at present borough surveyor of Bootle, to the post of chief surveyor to their vestry, at a salary of £600 per annum. There were originally 73 candidates for the position, and from these the Highways and Works Committee selected 22 for personal interview, after which they recommended for the consideration of the full vestry the following six, in the order of selection as under:—Mr. W. N. Blair, borough surveyor, Bootle; Mr. J. P. Norrington, vestry surveyor, Fulham; Mr. W. Howard-Smith, city surveyor, Carlisle; Mr. J. P. Barber, vestry surveyor, Islington; Mr. G. J. Broom, borough surveyor, St. Helens; Mr. H. Monson, vestry surveyor, St. James's, Westminster. These gentleman accordingly had an interview with the full vestry, who proceeded to select two of the number for final consideration, these two being Messrs. Blair and Howard-Smith. After a discussion lasting some hours, a ballot was taken, when Mr. Blair was found to have received the greater number of votes, and was accordingly appointed.

The spring season will soon be here, and its precursors, in the form of fashion books, are already calling for attention. Among such publications as these we have to briefly note a comprehensive pattern folio of wallpapers manufactured for popular uses by Messrs. Cotterell Bros., of Bristol, who deserve credit for the variety of their designs, which are contrived to meet a great variety of tastes, and accommodate, in the matter of price, all kinds of customers. We may mention some good patterns prepared in sanitary papers, such as the Persian ornament in No. 39238, made in salmon-red and quiet greens. The "Girton," in glazed creams, with a silk-like finish, is bold and quiet, and the mica lustre in a darker red, called the "Lucerne," is suitable for small rooms facing the north, where brightness is wanted. Among the bolder designs, "Acanthus" is the best, though the flowers are lumpy, and the mosaic papers for dadoes and bathrooms are an improvement on the old tile patterns.

The thirty-eighth annual report of the Department of Science and Art states that the number of science schools decreased 132 during the past year, but in the number of classes in different branches of science there was an increase of 281, and in the number of pupils under instruction of 2508. Of the 86,318 students who were examined, but 71,417 were successful in passing in one or more subjects, whereas in the previous year 75,816 were successful. The payments on results to science schools, exclusive of those made to training colleges, for the year 1890 amounted altogether to £103,453 12s. 9d., or £656 2s. 5d. more than in the preceding year. The grants for drawing during the year 1889 amounted to £54,011 6s. 11d., in 1890 to £70,035 12s. 2d. The effect of the code in making drawing compulsory had been to raise the number of schools taking drawing from 1,324 to 9,500 at the end of April last. The total area dealt with by the Geological Survey during the year amounts to 725½ square miles, with 4,502¼ linear miles of boundary, being a large increase over the amount reported for the previous year. The expenditure of the Department during the financial year 1890-91 amounted to £473,102.

* * *

At a vestry meeting held at Chertsey, Surrey, last week, a committee was nominated for the restoration of the parish church, which, it was stated, was greatly in need of structural repairs.

Messrs. Hudson and Kearns have sent us one of their handsome, framed illuminated calendars, and a few of their office "tear-off" calendars, which are exceedingly handy and useful. The little ivory memoranda-tablet almanac and pocket book-knife they issue are also extremely well finished and desirable.

MEETINGS FOR THE ENSUING WEEK.

Monday.—Royal Institute of British Architects. President's Address to Students. 8 p.m.
Royal Academy. "Saracenic Architecture," No. 1, by Professor Geo. Aitchison, A.R.A, 8 p.m.
Society of Arts. Cantor Lecture, No. 1, "Development of Electrical Distribution," by Professor George Forbes, F.R.S. 8 p.m.
Liverpool Architectural Society. "The Rise of Civilisation in Babylonia," No. 3, by the Rev. F. F. Grensted. 6.30 p.m.

Tuesday.—Society of Architects. "Building Stones, their Structure and Origin," by Professor J. Logan Lobley, F.G.S. St. James's Hall, Piccadilly. 8 p.m.
Society of Arts. "The Woodcuts of Gothic Books," by W. Morris, M.A. 8 p.m.
Institution of Civil Engineers. 8 p.m.
Glasgow Architectural Association. "Approximate Estimating," by Jas. Lindsay. 8 p.m.

Wednesday.—Society of Arts. "The Scientific Value of Lovibond's Tintometer," by F. W. Edridge Green. M.D. 8 p.m.
Carpenters' Hall Free Lectures, No. 2. "Building Acts and By-laws for various Localities," by P. Gordon Smith. 8 p.m.
St. Paul's Ecclesiological Society. "Religious Subjects on Misericordes," by T. A. Martin. 7.30 p.m.

Thursday.—Royal Academy. "Saracenic Architecture," No. 2, by Professor Geo. Aitchison, A.R.A. 8 p.m.

Friday.—Architectural Association. "Fashions in Architecture and its Kindred Arts," by N. H. J. Westlake. 7.30 p.m.

* * *

Architectural Association, 9, Conduit-street, W.—February 29th, the Sixth Ordinary General Meeting, at 7.30 p.m. Paper by N. H. J. Westlake, Esq., on "Fashions in Architecture and its Kindred Arts."

Ernest S. Gale
F. T. W. Goldsmith } Hon. Secs.

* * *

CHIPS.

A joint committee of the county councils of Lanark and Renfrew have adopted plans by Mr. W. R. Copland, C.E., of West Regent-street, Glasgow, for the construction of a railway-bridge over the river White Cart at Eaglesham.

The Kidderminster highway board have agreed to advertise for tenders for widening the Habberley Valley-road, in accordance with plans by their surveyor, Mr. Shepherd, to whom they voted an extra sum of £50 for their preparation.

We regret to hear that among the architects who are suffering from the prevailing epidemic are Professor Aitchison, Mr. E. Ingress Bell, and Mr. T. E. Collcutt. Mr. H. W. Primrose, C.S.I., the secretary to the First Commissioner of Works, is also prostrated by influenza.

The London and North-Western Railway Company intends considerably augmenting the importance of Rugby as a centre of its railway system. On several acres of land recently bought, they are erecting new engine-sheds, repairing shops, &c., which, when completed, will give employment to upwards of 1,000 additional hands, the majority of whom will be drafted from Crewe and Wolverton.

A new church, to be dedicated to St. Peter, is about to be built facing the river at Staines, at the sole cost of Sir Edward and Lady Clarke. Mr. G. H. Fellowes-Pyrnne, of Queen Anne's Gate, S.W., has been appointed architect, and the work, which will cost about £5,000, is to be proceeded with at once.

Several contracts have been let in connection with the construction of the Glasgow Subway. This new underground railway, which is to be worked either by electric or cable power, will entirely incircle the western half of the city, and have its principal station in St. Enoch-square. The work of tunnelling, mostly through rock, from St. George's Church in Buchanan-street to St. George's Cross, will be undertaken by Messrs. Robert M'Alpine and Co., and the contract for the work from Coburg-street to Shields-road, on the south side of the river, has been let to Messrs. John Paterson and Sons, the tunnelling in this case being through soft material.

The Liverpool Architectural Society have organised a series of classes for students, to be given free of charge on Thursday evenings. They commenced last night, the 21st inst, when Dr. D. Harrison delivered an address on "Sanitation from a Physiological Point of View," and will close on April 21st, the lecturers including Messrs. T. Harnett Harrison, F.R.I.B.A. (president of the society), J. Dod, W. H. Keef, E. Ware, H. L. Beckwith, F.S.I., and C. E. Deacon, F.R.I.B.A.

The new Public Library for Bermondsey was opened by the Right Hon. Sir John Lubbock, M.P., on Monday. It has been built from the designs of Mr. John Johnson, of Queen Victoria-street, E.C., and will be illustrated by us next week.

Trade News.

WAGES MOVEMENTS.

Bolton.—The members of the various branches of the building trades in Bolton and district have agreed upon a scheme of federation, and a meeting for the adoption of rules and other preliminary matters connected with this step was held at the Spinners' Hall, St. George's-road, Bolton, on Friday night. The objects of the federation as set forth in the rules are to maintain the rights of combination of labour by trades unionism, by mutually supporting any of the societies within the federation, if individually attacked by employers or body of employers, to promote conciliation in trade disputes, and to advance and elevate the cause of labour generally. The federation is to be of a mutual character, and no financial responsibilities will attach to any society other than the claims of its own members and the subscription for working the federation. Each trade belonging to the federation will be required to confine itself to its own branch of industry, and if a dispute takes place between any society and the employers, the other societies connected with the federation are not to interfere unless non-society men be brought in to take the place of men on dispute or other unfair means used to crush the society affected.

Edinburgh Joiners.—A meeting of the branches in the Edinburgh and Leith district of the Joiners' Associated and Amalgamated Societies was held on Friday night to consider the "report from the Conciliation Board." Some of the men are dissatisfied with the Board's recommendation as to the rate to be paid for overtime and "country" work. After a three hours' discussion, the report was sent back to the Board for reconsideration.

Youghal.—All the men employed in the brickyard owned by Messrs. Green and Co. have been dismissed by the local agent. The dispute arose out of the dismissal of the crew of a lighter engaged in carrying brick, and the consequent refusal of the brickyard employés to fill their places.

◆

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TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

Armagh.—For the construction of a new pipe sewer 2ft. 6in. dia., and closing and filling in of existing sewer at Armagh court-house:—

Bright, W. H., Portadown	£565	6	0
McIlwaine, S., Lurgan	442	12	6
Collin, T., Armagh (accepted) ...	442	10	0

(County surveyor's estimate £450.)

For pointing and cementing outside of Armagh court-house:—

McIlwaine, S., Lurgan	£172	12	6
Farr, T., Armagh	166	10	0
Woods, J., Armagh	159	10	0

(County surveyor's estimate £175.)

Beckenham.—For private improvement works, Lucas-road, for the Beckenham local board. Mr. G. B. Carlton, C.E., surveyor:—

Woodham and Fry	£520	0	0
Iles, E. W., and Co.	506	0	0
Mayo, R.	436	0	0
Mid-Kent Building and Contracting Company	417	0	0
Mowlem, J., and Co.	395	0	0

Berkhamstead.—For the erection of a police-station, lock-up, and residence at Great Berkhamstead, for the Standing Joint Committee of the Quarter Sessions and the County Council for Herts. Mr. Urban Smith, C.E., architect. Quantities by Mr. A. Burr:—

Stevens, Bastow, and Co., Bristol.	£4,444	0	0
Hunt, J. A., Hoddesdon	4,176	0	0
Payne, J., Hemel Hempstead ...	4,000	0	0
Grist, S., Aylesbury...	3,888	0	0
Waterman, G. and J., Watford ...	3,827	0	0
Honor, J., and Son, Tring	3,660	0	0
Smith, E., and Son, Tring ...	3,650	0	0
Dupont, F., Colchester (accepted)	3,637	0	0

Chesterfield.—For the construction of section 1 of the Lancashire, Derbyshire, and East Coast Railway—viz., that from Chesterfield to Langwith. Mr. R. Elliott Cooper, engineer:—

Pearson, S., and Son (accepted).

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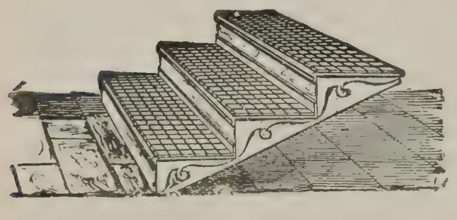

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Blaydon-onTyne
Bletchley
Bolton
Bolts Bridge
Bombay, India
Bow
Bowdon Central
Brick Lane
Bristol
Broadfield
Broad Street
Broadstone, Dublin
Burdett Road
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Burton
Bury
Borough Road Mersey Tunnel
Canonbury
Camden Road
Chalk Farm
Charing Cross
Cheddington
Cheetham Hill Junction
Chequerbent
Clayton
Clifton
Clitheroe
Crewe
Crooked Billet Level Crossing
Cross Lane
Crumpsall
Cullercoates
Cannon Street
Dalston
Daubhill
Daybrook
Denholme
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Droylesden
Drighlington
Dudley
Dudley Port
Dundee
Ealing Common
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Farrington
Fenchurch Street
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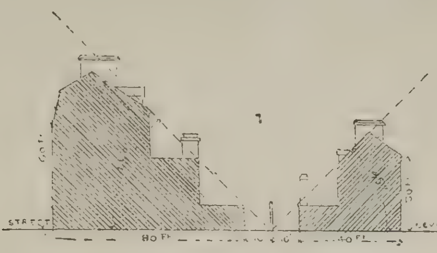
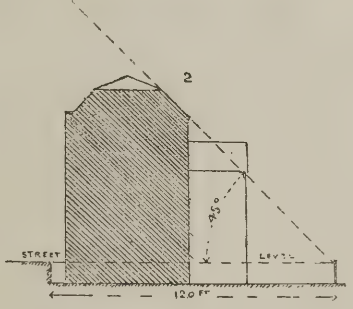
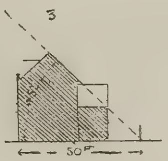
THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXII.—No. 1934.

FRIDAY, JANUARY 29, 1892

THE REGULATION OF BUILDING HEIGHTS AND SPACES.







THE absolute need of some rule to control buildings in the Metropolis must be obvious to everyone who has made any personal observation of the gradual encroachment on space by new erections and the rebuilding of old streets. Hitherto the only salutary check to such encroachment has been the law of light and air, or the domination of ancient lights, though these rights of property have often interfered with improvements of a public character. Litigation of a vexatious kind has been the chief deterrent to building additions; but in what manner? A building owner is allowed to proceed with his extensions or the addition of new stories till he receives notice of an injunction to restrain further building, or is compelled to pay heavy compensation to his neighbour for damages; in fact, the effect of the present law is to make money by enforcing compensation, or to promote legal proceedings, rather than to prevent the mischief which leads to them. And lawyers, and architects too, are easily found who will provoke rather than stay litigations. The other restrictions imposed by the Acts in force are too trivial and inadequate to meet the case. What practical advantage, for example, is gained by section 14 of the Metropolitan Management Amendment Act (now sec. 18) as to open spaces in the rear? That section regulates the space by the amount of frontage, and not in any way by the height of the building, so that the same space is provided for a building of two stories as for one of six or more; and not only so, but the space so provided in the rear may be built over to the level of the ceiling of the ground-floor story. We have all along objected to this system as quite inadequate, as a shop or offices on the ground floor might be extended to the very back wall of the plot.

The suggestion made by the Building Act Committee of the Consolidated Bill will alter this undesirable state of things. Space in the rear of buildings will be regulated by their height, and be left open, with the exception of conveniences like closets and receptacles for ashes, which are limited in height. Any rules to be at once rational and practical ought to be based on actual requirements. Of these there are two chief. One is: Given the depth of a plot of building land, to what height may the building be erected, and how much area may be covered? The other requirement is: Given the height of a new building, how much depth of space must be allowed? In one case we want to know to what height we can build; in the other case, what depth of building plot is necessary. These two requirements are solved by the rule adopted in Liverpool, to which we have already referred, which is to secure a free and open space of 20ft. between buildings in the rear, or 10ft. in depth for each building throughout the whole width of the building, and free from any erections. The remaining portion of the plot may be built on up to an oblique line drawn from the rear boundary at an angle of 45°, with another horizontal line at the level of the paving in front of the building, and no part of the building, except chimneys, dormers, gables, or other architectural features, is to extend above this oblique line. To make this rule clear, we give the following diagram (1), which is a reproduction of the one published by the committee. The houses, back to back, show the statutory open space of 10ft. to each, and, as will be seen, the oblique line will define the height of all back offices. The height of the larger house is 60ft., and the total depth of plot 90ft. On the other side is a house of half the height on a plot of 50ft. in depth, which will give an idea how the rule will work out for the modern class of dwellings. From this it will be seen that a house of from 15ft. to 20ft. frontage will have an open space free of all erection of from 150ft. to 200ft. at the very least. It is also seen that a plot of 50ft. deep will enable a house of 30ft. high to be erected, and as a matter of demonstration the least depth of ground for a house of this size will be 50ft., whereas under the existing section 14 of the Metropolis Amendment Act it may be 10ft. or 12ft. less. Thus it is evident that the height of the building is regulated by the depth of plot, and *vice versâ*. In fact, the height of the building at the rear cannot exceed the depth of land. It will also be noticed that the height of the back wall of the building measured from the street level practically determines the least depth of land, the angular line of 45° subtending that height; and it follows from this, and from construction, that the deeper the building is from front to back the lower it must be. One practical result is that projecting offices at the back of a dwelling-house are limited in height by the angle, or they will entail a greater depth of land. Thus, in Fig. 1, the smaller house has this projection reduced in height by one story. Fig. 3 also shows the rule applied to a house of two stories, with back projection, which is kept low. Should such a rule be made law in the Metropolis, the result will be that these back buildings will be curtailed in projection as well as height.

In our diagram 2 we show the application of the same principle to large houses of 50ft., or more, depth, and of 60ft. in height, by which it will be seen that a minimum depth of land is required of 120ft. The building is shown to be erected on ground below the level of the street, a common circumstance in building on new estates where the roads are made up to a higher level, by which arrangement the usual excavation for basement is not required. It will be seen that in this case the angle of 45° is measured from the street-level line, not from the ground level, as a correspondent in a contemporary appears to assume, and that, in consequence, a house sunk one story below the street level, as in many cases, will have the advantage of an additional story, instead of one less, as assumed. On this ground, we are afraid there may be an objection urged to the rule. Builders and owners who wish for more accommodation than they can obtain on a plot of land of small depth will be inclined to sink their basement so as to obtain an additional story, which, if permitted, would be injurious to health of inmates. Another objection that may be urged is that projecting offices will be reduced in depth and height to bring them within the proposed statutory angle, and the house be rendered less healthful; but these tendencies are met by other by-laws, and the occupants on the whole are gainers. No doubt certain expedients will be tried, such as reducing the height of stories so as to bring the required accommodation within the limit; but we apprehend that these attempts will quickly defeat their own purpose, as most people like spacious and lofty rooms.

The proposed rule is intended, of course, to prevent overcrowding, and to determine the minimum space at the back of houses; it does not do more. The angle of 45° has the advantage of easy calculation, as the back wall is limited in height to the depth of land, and it has also been used for ancient lights. In the absence of a more liberal allowance for real space, we may accept it as the best proposed. What is the state of things now? Houses can be built back to back without a foot of open space, the back walls actually within 20ft. of each other, and the poor are of course the sufferers—those, unfortunately, who are the least able to spare light and air. If the rule is passed, the overcrowded slums of London will disappear; "model" dwellings and flat companies will be unable to build monster residences in flats and dwellings for the poor on sites upon which only two-storied tenements ought to be erected. At present the lower stories of many of our so-called "model" dwellings are, as stated, "unfit for human habitation," though the authorities possess no power to prevent their erection.

Of course, the rule will not be applicable to all sites without modification. Take, for example, a small corner plot abutting on two streets; it would be impossible to apply the angle to each side, therefore the committee propose that the Council may permit the erection of buildings not exceeding 15ft. in height upon a certain portion of the open, or 10ft., space, as they think fit. If two fronts are built, the inner corner of the area only will remain, and this will have to be of a sufficient area for the purpose of light and air. Irregular sites also will have to be dealt with by the Council, and a proposal is made that the 150sq.ft. must be provided in every case, and be ventilated by a passage communicating with a street or open space. A future rebuilding or enlargement of old buildings not complying with the Act will necessarily bring them under the operation of the rule to such an extent, at least, that such alterations or additions must not reduce the area they now have. We commend to the attention of our readers these proposals, as perhaps a discussion of the rule we have explained may be of service, and suggestions may be made before the proposed amendment is finally adopted in the new Bill.

NONCONFORMIST CHURCH BUILDING.*

By James Cubitt.

Chapter IV.—Execution of the Works.

WORKING DRAWINGS AND SPECIFICATION.

THE general design of the building having been decided on, the next step is, of course, for the architect to prepare the working drawings and specification. With regard to these, different men have different practices. With some it is the custom to write a very long specification, and to supply very few detail drawings. They describe—or try to describe—everything in words. Architectural features, however, are seldom capable of being so described with anything like accuracy. A few lines drawn on paper will define them better than long pages of writing, and clear definition, above all things, is what is wanted. Hence it is better, in most cases, to draw more and write less. A comparatively short specification, plainly stating the quality of materials to be provided in each trade, supplemented by an abundance of illustrations showing all the constructive and decorative features, will form the securest basis for the builder's contract.

BILLS OF QUANTITIES.

A builder, however, as we all know, cannot form anything like an exact estimate of cost by merely looking at the plans and specification. He must measure up the labour and materials from them, or have them measured up, and these measurements, when put together and brought into shape, constitute a "bill of quantities." In very small works, or where a tender is only asked for from one firm, a contractor will sometimes be willing to do this measuring for himself. In such a case, he naturally and properly charges for the time and trouble of it in the amount of his tender. But where several builders tender against each other, it is customary that the quantities should be supplied to them all, and that they should be paid for by the builder whose tender is accepted.

INVITING TENDERS.

There are several ways of doing this. One way is to ask for them by advertisement, to furnish a copy of the bills of quantities to all applicants, and then, when the tenders come in, to consider whether the firm which has sent in the lowest one is qualified to undertake the work. It may happen that the firm is a good one, and then all is so far well. But it may also happen that, though honest and well-intentioned, they have neither capital nor experience. Their tender, perhaps, is many hundreds of pounds below the next one. They know nothing of church building, and they think the work will pay them at their price. It is put into their hands: they go on for a time, finding endless difficulties, and causing endless delays because the class of building, and perhaps its magnitude also, are new to them. Now, they cannot get materials because they cannot pay for them, or they get the wrong sort of materials, which have to be rejected. This happens over and over again. Their work is bad, and has to be pulled down. They lose more and more money over it; at last they can go on no further. Then come bankruptcy proceedings, litigation, arbitration, further delay, and general unpleasantness. This is the great risk in open competition amongst builders.

To invite tenders from a selected list of six or eight capable and trustworthy contractors is a safer course. The principal danger here is that most of the men selected may at the time be fully occupied, and may not care just then for more work except at a high profit. If this should happen, as it easily may, either the tenders must be all declined, or the building will be needlessly costly. But if this and similar evils can be provided against, this mode of obtaining tenders is a very good one. In deciding on the men to be invited, however, there is a common error to be guarded against. It is true, as the last paragraph is meant to show, that there are objections to employing a very small builder. But it does not follow that it is best to go to the other extreme, and invite the largest firms in the business. A very large builder is good for a very large building. Smaller places are hardly worth his while to give any great care and attention to. He will probably not bestow half as much time and thought to them as a competent man of medium position, who has credit to gain by doing them well, and reputation to lose by doing them badly. And even in case of admitted errors, however ruinous to the building, he may even say, as the head of a large firm said some years ago in reference to palpable and very injurious mistakes in a large Nonconformist church in London, "We have made no money by the mistakes, consequently we decline to rectify them, and, if you like, you can take the matter to arbitration, and see if you can make us." Extremes meet; and between the very small builder who cannot do his work properly, and the very large builder who will not do it, there is not a great deal to choose.

There is a third mode of obtaining tenders, which has some advantage over the other two. This is simply to advertise that contractors wishing to tender are to send their names to the architect. With the concurrence of the committee a selection is then made from these names, of firms whose character, experience, and position prove them capable of doing the work properly. To these selected firms alone the bills of quantities are sent, and in this way unsuitable persons are excluded. The advantage of this plan over the last is that in all probability those who apply will be at the time desirous of obtaining work, and therefore ready to take it at a moderate profit. Whatever system is adopted, the committee should announce beforehand that they do not bind themselves to accept the lowest or any tender. It is customary to stipulate that the builder whose tender is accepted shall deposit a copy of his priced bills of quantities with the architect, and that all additions to, or deductions from, the design contracted for, shall be measured and valued at these prices. If, therefore, when tenders come in, the building should prove somewhat more costly than was expected, reductions and alterations can easily be made, and their value ascertained in a way which is fair both to the contractor and the contractees.

The ordinary course is for the sealed tenders to be opened, and the amounts read out in presence of the contractors tendering, or of their representatives. If the first of our three modes of obtaining tenders has been adopted, now is the time for making a very close inquiry into the character and capabilities of the firm whose tender may be lowest; but if the second or third mode has been followed, all necessary inquiry, it may be assumed, has been already made. On either of these two latter systems, therefore, the work will naturally fall to the builder whose tender is lowest, provided that the amount of this tender is not excessive.

CONDITIONS OF CONTRACT.

When it has been decided what tender to accept, the next step is the signing of the contract. Building contracts usually contain a large number of conditions, which experience has shown to be necessary in order to prevent disputes, delays, overcharges, bad workmanship, and other evils. There are, for instance, a clause providing that deviation may be made from the plans without annulling the contract; a clause empowering the contractees to remove all bad materials and work; another one enabling them in case of delay to employ another contractor to complete the building, and another making provision for the event of the contractor's bankruptcy. There are also clauses binding the contractor to make good defects in workmanship, and to allow the contractees reasonable facilities for getting such thing as warming, lighting, and decoration done by anyone whom they may appoint.

Then there are the conditions as to time, and as to payment. A date for completion is fixed, and the contractor undertakes to complete by this date, or, in default, to pay or allow to be deducted from any money due to him a certain sum per week for any period by which he may exceed the time allowed. But, on the other hand, it is usually agreed that the time shall be extended in case of bad weather, strikes, or any causes arising from the action of the contractees or their agents. With regard to payment of the contract sum, a common arrangement is to pay from time to time as the work goes on successive amounts equal to 80 per cent. of the contract value of the work done. Then at completion, the contractor receives half the balance which has been kept back, and the remainder a certain number of months after, provided that all defective work has been made good. It is specially stipulated that no money will be paid without the architect's certificate in writing that it is due.

To prevent unexpected claims for "extras" at the final settlement, it is well also to insert a proviso that no work shall be allowed for as extra unless it is ordered as such in writing by the secretary or some other duly authorised member of the committee. And it is usual also for the contract to name an arbitrator, to whom, in case of dispute, questions about payment are to be referred.

CLERK OF WORKS.

The contract having been signed, there comes a question about the employment of a clerk of works. In a small building, with a capable and trustworthy contractor, this is seldom necessary. On the other hand, with a builder inexperienced in church works, or with a previous training more or less of the "jerry" type, it is vitally necessary. In such a case, even if he tries to do well, he will not know how. He will, in fact, be learning a new business; for to produce a soundly-built church requires a very different sort of apprenticeship from that which enables a man to run up cheap shops or £40 houses. And the clerk of works must be a really good one, accustomed to first-rate work. Such a contractor he will have to direct at every turn; and the blind cannot lead the blind. Clerks of works differ as much as builders—perhaps more—and not one in ten, however trustworthy and well-meaning he may be, is really fit for such an appointment as that just indicated. Hence the necessity of the recognised principle that the clerk of works should be selected by the architect, though he is paid by the committee. The contract should always contain a clause limiting the powers of the clerk of works, and especially stating that he has no authority to permit departures from the contract, or to order extra works. His business is to see the contract carried out, and if any departure from it should ever seem desirable, to state the fact to the architect, so it may, if necessary, obtain the sanction of the committee.

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With a competent and conscientious builder the works will in all probability go on smoothly. With an incompetent builder there will be frequent rejections of materials and workmanship, and much delay in consequence. No care on the part of the architect or the contractors will in such a case prevent the continual loss of valuable time, and if the matter culminates in the contractor's bankruptcy, there will be further loss of time and further trouble. As a reserve has been kept in hand the building may even then be completed for the contract sum, but the circumstances connected with its erection will never be pleasant to reflect upon.

FINAL ACCOUNTS.

When the work is completed the accounts will have to be finally made up. If there have been no deviations from the contract, or only a few trifling ones, this will be a simple matter, unless, indeed, the builder has been one of those (not quite unknown) who take contracts at a very low price, and then make all kinds of baseless claims at the end. No matter how stringent may be the conditions of contract, no matter how complete may be the original plans and specifications, no matter how unremitting may be the architect's supervision and the attention of the clerk of works, no building will be carried out as satisfactorily by a bad builder as by a good one. The material structure, indeed, may be at last made sound; but the loss of time in doing this, and the disputes which are likely to go on from the beginning of the scheme down to the final payment, are reasons for great caution in the first acceptance of a tender.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AN ordinary meeting of the Institute was held on Monday evening. The President, Mr. J. MacVicar Anderson, was warmly congratulated on his recovery from a severe attack of influenza. The deaths were announced of Mr. Alfred Porter, of Bermondsey, Fellow, and of Mr. Henri Cornelius Elworthy, of London-road, St. Leonard's-on-Sea, Associate (son and partner of Mr. Thomas Elworthy, F.R.I.B.A.) The announcement that the council had decided to give a donation of £300 to the Architectural Association, in furtherance of their new scheme of education, was received with applause. The gift is to be paid by three equal instalments, the second and third to be conditional on the existence, at the time they become due, of the scheme.

THE ART OF PLANNING.

The PRESIDENT delivered his annual address to the students. If, he remarked, it be true that one of the chief difficulties that attend the study of architecture is to be found in the number and variety of subjects with which it is essential to be more or less familiar, it is no less true that the comprehensive nature of the pursuit constitutes one of its greatest attractions, for it opens up a field of inquiry over which the mind may roam with ever-increasing vigour and interest. No amount of devotion to a study so varied as that of architecture should conduce to lassitude, for mental refreshment is to be found—not in cessation—but in variety of thought, and the student of architecture need never experience difficulty in finding mental repose by turning from one to another of the many fields of research that lie before him. For the successful pursuit of a study so varied and so fascinating many qualifications are desirable, but three are essential: natural aptitude, application, imagination. Without the first, the student will do well to abandon the career, even though he may have spent time in discovering his want of affinity with it. If the heart, as well as the intellect, is not engaged in the work of life, you may possibly, in favouring circumstances, attain to respectable mediocrity, but you will never achieve real success. Be sure, therefore, at the outset, that you possess that earnestness of purpose and heart-love for your work which spring from natural affinity, and cannot exist without it. It is needless to insist on the importance of application. Original genius or natural endowments cannot be acquired or imparted; but it is marvellous to what an extent application compensates for the lack of such gifts. If you have application, you possess one of the most powerful levers with which to remove and triumph over difficulties. But it is obvious that natural aptitude and application, invaluable as they are, are not sufficient to qualify you for the career on which you are entering. Far away the most important work of your lives as architects will be that of design, and if you are devoid of the mental endowment of imagination—by means of which alone can there be design—you will be like a ship without compass or rudder, your lives will be aimless, and you will miss the prize of your calling. Possessed of all knowledge, your works, without imagination, will be but imitations and reproductions, not designs. Equipped with learning, but devoid of creative power, you would not be artists, and, therefore, could not be architects. I propose to confine my remarks to one branch only of your engagements as architects, that being "the art of planning." No doubt there are those who will regard such a designation as a contradiction in terms, for it is to be feared that there are not a few who consider planning as, at the best, a very prosaic part of an architect's work, and to whose poetic fancies the idea of elevating it to the dignity of an art may appear to be a sort of architectural blasphemy. There are others who, without going so far as this, do not hesitate to relegate planning to an inferior and subordinate place, not worthy of the exercise of the higher and artistic faculties of the designer—a constructive skeleton, as it were, admirable it may be in its mechanism, but which the architect must clothe with grace before it can be admitted to the sacred courts of art. Such views of planning are thoroughly fallacious, and injurious to the best interests of architecture, because derogating to a commonplace utilitarianism what is really an integral and inseparable part of the art, the root from which grow the loftiest conceptions, the suggestive source from which springs all that follows. Thus viewed, it is impossible to exaggerate or overestimate the importance of the study of planning. It may indeed be safely asserted that there is no study in which the human mind can engage, on the results of which the comfort, convenience, and happiness of society so much depend. This is claiming a good deal, but no more than the study demands. It is not my purpose at present to emphasise utilitarianism, but do not forget that every building is designed for use; to say so is not to derogate from art, because the highest art is displayed when a building is so designed as most successfully to fulfil its purpose by combining fitness with beauty. Thus the primary field for the exhibition of the architect's art is planning. Let me demonstrate it. What is architecture? Is it the mere clothing of the structure?—or is it the artistic design of the structure itself? Unquestionably the latter; and if so, how can the study of planning be other than artistic work, the primary stirring of the dry bones out of chaos, and the life inspiration which creates out of them the useful and the beautiful? for planning is not the mere casual throwing together of so many forms; the chance disposition of so many lines representing walls, inclosing so many haphazard spaces representing rooms. It involves the exercise of imagination. The design of the plan is the medium for educing this quality, just as much as the design of the elevation. It is customary to hear the word design applied to the latter much more than to the former, but the one is really just as much design as the other; consequently, the plan affords the opportunity for the display of artistic power just as much as the elevation. Not only so, but a true artist, while studying and elaborating his plan, has a mental drawing-board by his side, on which he rears in his mind's eye forms and proportions suggested by it and emanating from it; he disposes the arrangement so as not only to meet the requirements, but also so as to produce a happy result in point of effect; in short, the two things go together, they are mentally indivisible, and must be elaborated, not without reference to one another, but in unity. Hence experience demonstrates that a good plan will generally be found to produce a good elevation; they are integral parts of a whole; the one having been artistically studied with a view to the other, the result will be harmonious; if the tree is good, so will the fruit be. Did time permit, it might be interesting to divide the subject, and classify it under separate heads, treating each in turn, as, for example, the plan ecclesiastical, the plan collegiate, the plan palatial, the plan municipal, the plan judicial, the plan official, and the plan domestic; and we could easily find in the elaboration of the characteristics and requirements of each much that might profitably engage our attention. I must, however, content myself with a more general treatment, touching briefly on principles, leaving the application of them to your own imagination. None but those who have made a real study of planning have any conception of the infinite breadth and variety of the field of design which it creates; they only know experimentally the charm of puzzling over difficulties; of revising, rearranging, and redisposing, in order to overcome them; thereby probably creating other difficulties which in their turn have to be surmounted by a further similar process, and so on, until, after many disappointments, many failures, and many inventions, a satisfactory result is at length reached. It is now many years since I resolved never to let a plan leave my hands until I felt satisfied that it was right; and in battling with the difficulties thereby created until they have been successfully obviated, I have found some of the most engaging studies of professional life. The question with you should never be whether a plan is good enough—that is an unworthy standard—but rather, Is it the best that I can design? The former, the "it-will-do-well-enough," standard prevails far too commonly; the latter is the only standard really worth working for, because the only one which will lead to attainments beyond mediocrity. Never, then, rest content with a plan until you are satisfied that it meets and fulfils all the requirements of the case in the best and most complete manner that you can think of; the plan is the foundation of the whole design, and if the foundation is faulty, there is not much hope for the superstructure. It may seem like insisting on an elementary truism to say that the plan of a building must necessarily be adapted to, and governed by, the exigencies of the site; but the not infrequent violation, or rather neglect, of so obvious a principle justifies me in emphasising its importance. The peculiarities of a site in respect to levels and aspect frequently constitute difficulties that at first sight appear insurmountable; but out of which emanate in skilful hands the happiest results, which otherwise might not have been thought of, or attained. Herein is displayed the skill of the artist, to lay hold on all such adventitious circumstances and hindrances, and conform them to his will, translating obstacles into mediums for achieving success. The neglect of such opportunities is unpardonable, and betrays the bungler. Prospect, again, constitutes an important factor in planning. Few conditions call for more ingenuity than when the proper aspect is at variance with the prospect that it is desirable to secure. In towns, indeed, aspect and prospect must necessarily, and to a great extent, be subordinated to immovable conditions, but in the country it is different. While, therefore, striving for comfort, convenience, and grace within, never neglect an opportunity of securing the inestimable attraction of a higher than any art loveliness, the prospect of nature and creation. In connection with prospect let me in passing condemn a practice too much in vogue, the glazing of the upper portions of windows with tinted, stained, or painted glass, sometimes uglier than anything it is intended to obscure from view. Situated as we are in London, the expedient is no doubt attended with advantages, shutting out hideous objects which one's neighbours are so fond of obtruding, or excluding the impertinent gaze of the too curious; but in the country, where it is frequently adopted, what possible justification can be urged? Is it possible that anything can compensate for the light of the sun, the beauties of nature, or the marvels of the heavens? Never, then, attempt to obscure the contemplation of God's universe by the commonplaces of humanity. Further, a plan to be good must be simple. The arrangement of some buildings is necessarily more elaborate than that of others, but you may take it as an unerring guide that when you find a plan becoming complicated and confused you are on the wrong tack. I have seen an artist, after hours of work, wipe from his canvas all he had painted, and then make a fresh start with manifest advantage and no real loss of time; so when your planning results in complication, your best course is ruthlessly to obliterate what you have done, and begin *de novo.* Nothing will compensate for the absence of simplicity in a plan. This is a golden test which I have never hesitated to apply, and I speak from no inconsiderable experience. Again, a plan is only good when it is the embodiment of thrift. Much has been said, and more has been written, on the moral aspect of thrift, and it would be easy to enlarge on the advantages of its application, not merely to the life, but also to the artistic work of the student of architecture. Without thrift, both of space and material, a plan cannot properly fulfil its purpose. Thrift is not parsimony, any more than liberality is waste. Each space in a plan, be it room, hall, stair, or passage, should be just the size that is necessary for its purpose; if it be less, there is parsimony, for what is inadequate will have to be enlarged hereafter at much more than what would have been the original cost; if it be more, there is waste, for it has involved the expenditure of more capital than was required, and will incur needless labour and consequent cost in maintenance. Take, as an illustration, a room which has been designed on a scale beyond the necessities of its occupants. It is obvious that it has cost more to build and furnish than it should have done, and involves a perpetual cost for maintenance and service which should have been avoided; hence the happy medium is to be found in thrift. So in respect to materials; walls should be of sufficient thickness, floors and roofs of sufficient strength, for their respective functions, not much more, and not much less; else there will ensue, either waste in the first instance, or parsimony, which will involve waste in the long run. There are, however, cases in which materials should not be too sparingly employed; in a mansion, for example, intended to be a family home, and to pass from generation to generation, it would be unwise, and out of keeping with its purpose, to apply too literally such a condition as this; for nothing imparts more dignity and a greater idea of the enduring purpose for which such an edifice is designed than massive walls, thicker no doubt than may be actually required for sound construction, but not more than is called for in order to be in harmony with the traditions and associations that the structure will represent. This, however, is but one of those exceptions that prove the rule of thrift. I am not unprepared for the inevitable protest of the art-student, who in a burst of æsthetic enthusiasm will denounce the suggestion that so prosaic a quality as thrift should dare to enter the hallowed sanctuary of the art studio; but it would be in the true interest of art were her portals more frequently and more hospitably thrown open for the admission and entertainment of the prosaic maiden I have introduced to your notice. How often, for instance, might she, with manifest advantage, restrain the artist hand in scattering with inartistic profusion ornament which is misplaced and therefore ineffective! There are various conditions, more or less obvious, each one of which contributes in its place to the merit of a plan. Apart from considerations of aspect, prospect, and dimensions, each place should be, not only convenient in itself, but should be in its proper position in relation to other places; the work of an establishment, as well as the cost, may be materially diminished or increased, according as this condition is observed or neglected; doors, windows, fireplaces should be arranged so as at once to promote comfort and convenience without needlessly destroying wall-space, or incurring draughts; the amount of window-space should be regulated according to the aspect; in short, the perfect plan is, and can only be, the result of the thoughtful study of each principle and every detail. None are too minute to be overlooked. As little things sweeten life, so attention to little details makes a plan complete. I have written to little purpose if I have not convinced you that planning is one of the most important, difficult, and artistic studies of the architect. Now let me inquire why it is that plans are so frequently bad. I am aware that there are men in the profession who are adepts in planning, and whose productions in this respect we admire. But are they the majority? Rather will they be found to be the small minority. Rarely do I examine published plans without detecting faults which are obviously not the necessary outcome of the circumstances. Why is this? In the majority of cases it does not arise from lack of ability on the part of the author, but from the neglect to apply the ability he possesses to the working out of a good plan. Where plans are bad, they are so from two causes. 1. It is impossible to produce a satisfactory result without practical knowledge of the requirements; in the case of a gentleman's house, for example, how can we expect to succeed without being familiar with the nature and working of the establishment? 2. Plans are bad because they are not studied as they should be; there are many practising architects who have never realised the true nobility of planning, who have never experienced the fascination of the almost exhaustless field it presents for the display of imaginative artistic skill, and who consequently have concentrated their artistic powers in the design of the elevation. Need I guard myself from possible misconception by adding that not one word I have written is intended to militate against the importance of artistic design as applied to the elevation? My subject is planning, and my remarks naturally apply specially to it. Moreover, architects are not likely to regard the design of the elevation as the least artistic portion of their work, and it is because I entertain the conviction, judging from results, that they do far too much regard the design of the plan in that light that I have emphasised its artistic character. The architecture of the future will derive its character, and find its development, from the students of to-day; hence I have embraced this opportunity to bring specially before you the subject of planning, believing that those who undervalue it do so because they have not studied it and tasted its fascination, and in the conviction that there is no more useful as well as artistic study in which you can engage. The subject vitally affects you who are devoting your lives to the study of architecture, and your treatment of it will still more vitally affect those for whom, by-and-by, you will be called on to design; nothing will so certainly secure for you their grateful blessing as to promote the comfort, convenience, and beauty of their homes, for on nothing does the daily happiness of civilised society so greatly depend. If I have succeeded in elevating the study and lifting it out of the prosaic level from which it is too generally regarded; if I have inspired in any of you the determination to throw yourselves into it with an enthusiasm which you may not hitherto have displayed; if I have thus, through influencing you, sowed seed which will fructify for the benefit of succeeding generations; if I have demonstrated that in this study is to be found one of the most interesting, fascinating, and artistic pursuits, the time will not have been misspent which we have this evening devoted to the consideration of the art of planning.

Mr. Aston Webb, hon. sec., read an elaborate criticism on the drawings and designs submitted for the various medals and prizes. The competition could be, he said, divided into three classes: sketches of old work, designs for ideal buildings, and essays. The work done in the first class, to which the Institute Silver Medal and Pugin Studentship belonged, were either of the greatest use to a student in after life or practically worthless, according to the mode of sketching adopted. It might be taken for granted that if the sketches were of general interest they would be of little real value to the student. It was far better for him to measure up a portion of a small church, giving a plan, section, and many dimensions, than to cull pretty bits from many sources. A sketch, for example, of a nave arcade would be practically valueless if not accompanied by a plan and section, however rough, to show the relation to the building, and, above all, the dimensions should be freely introduced. The late Mr. G. E. Street almost always gave a few leading dimensions in his sketches. Having criticised in detail the designs submitted for the Pugin Studentship and the Institute Silver Medal, Mr. Webb referred to the second class of competitions, remarking that the power to design was never developed so early as that of draughtsmanship. This year more than one competitor relinquished the task of competing for the Soane Medallion, although it was now augmented to £100, and was the most valuable prize in the gift of the Institute. The subject, a chapter-house, was not an easy one, and of the eight who sent in designs, four adopted an octagonal, three a sexagonal, and only one a parallelogrammetric plan. The prize had been taken by a Late Decorated octagonal design, while a sexagonal plan, treated in Late French style, was placed second, and given an extra medal of merit. The essays had, he was sorry to see, sunk to too much of a catalogue of the accompanying drawings bound with them, whereas the prize was intended to develop literary power and ability. As a whole, he thought the the Institute might be proud of the work submitted in the competitions. Those who had failed to succeed would probably be the first to acknowledge that they had derived much benefit by the work done. In a short time the competing students would be at work in a more important sphere, and would be either encumbering or beautifying the world with the buildings they designed. If the promise of the draughtsmanship of to-day were fulfilled by the buildings of to-morrow, we might be very hopeful of the architecture that was yet to come.

Mr. John Slater moved a vote of thanks to the President for his address. This was seconded by Mr. Charles Barry, F.S.A., who suggested that among the subjects architects might usefully study was one omitted by the President—viz., the characters of their clients, individual and corporate. He could recommend young architects not to neglect that form of diversion.

The President, in replying, said he thought the study of the character of clients scarcely came within the scope of the art of planning. He wished to thank Mr. Webb for the careful, exhaustive, and admirable criticisms he had offered on the drawings—a task, the President added, he had purposed undertaking himself, but had been prevented by illness. He then distributed the prizes and medals in accordance with the list published by us last week on p. 122.

BUILDING STONES: THEIR STRUCTURE AND ORIGIN.[*]

In grouping building stones, it is found to be more practically useful to adopt a lithological rather than a geological or stratigraphical arrangement. A lithological arrangement of building stones must necessarily be based on mineralogical composition, and this will at once give convenient descriptive names for the seven groups or classes, which we shall find comprise all stones used for ordinary building purposes. These are: (1) sand stones, (2) lime stones, (3) argillaceous stones, (4) talcose stones, (5) felspathic stones, (6) hornblendic stones, and (7) augitic stones. Sandstones may be defined very simply and briefly as masses of sand, the grains of which are cemented together. They thus consist of grains of sand and a cementing material. To take first the grains of sand, we find that they are grains of the very hard and refractory mineral quartz, which is chemically silica, a simple compound of the two elements silicon and oxygen. This mineral, so abundant in nature, assumes various forms, and is known in some of these forms as rock crystal, flint, chalcedony, agate, amethyst, cairngorm, &c., and constitutes not only the sands of the deserts, the sands of the sea-shore, and the pebbles of shingle beaches, but also the delicate framework of many tropical sponges, and of microscopic marine creatures of arctic latitudes. It also constitutes the gravel of the Thames Valley, so familiar to all Londoners, and which is but worn-down fragments of flint from great and wide-spreading masses of chalk, which have been removed by denudation from the drainage area of the Thames. Quartz, being practically insoluble and of great hardness, endures when associated minerals are dissolved, decomposed, or reduced to impalpable dust, and thus the sand of which sandstones are formed has been derived either directly from quartzose igneous rocks, such as the granites, from the quartz veins of the older sedimentary rocks, from the flints contained in the chalk, or from the destruction of older sandstones and beds of sand. The grains therefore vary greatly, both in size and angularity, some sandstones being composed of grains both large and with sharp angles, while the grains of others, from long and repeated attrition by the action of moving water, are very small and devoid of angularity, their edges being all smoothly rounded; and there are all degrees between these two extremes. The cementing material varies considerably also, and does so both in character and amount. It is sometimes of the same mineral composition as the grains themselves—namely, silica; it is sometimes iron oxide; it is sometimes argillaceous matter, and sometimes carbonate of lime, and it is often a combination of two, if not of more, of these substances. When the cementing material is silica alone, the resulting sandstone is white, and may be very hard. When iron-oxide forms the cement, either in whole or in part, the stone is coloured red, brown, or yellow, and may be either a very soft or a very hard stone. In a red sandstone the grains themselves are only red at the surface, where they are coated with a thin film of the peroxide of iron, the reddish colour of which is so familiar to us in iron-rust. If, therefore, the iron-oxide of a piece of red sandstone were dissolved by acid, white or colourless grains of quartz would alone remain. It will be evident that the terms hard and soft as applied to a sandstone have no reference to the material of the grains of which it is composed, but only to the stone as a coherent mass, the grains of the softest sandstone being just as hard as those of the hardest, and that it is the character and amount of the cementing material that is the cause of the varying hardness of sandstones. Thus sandstones may, from lack of cementing material, be so soft as to be easily crumbled by the fingers, since they are little more than beds of sand compacted into coherent masses by pressure, such, for instance, as the very soft sandstone of the well-known "Rocks" of Tunbridge Wells, which, however, has harder bands where there is a sufficient amount of ferruginous matter to furnish an adequate cement. The unequal weathering consequent upon these harder bands produces such grotesque masses as the Toad Rock of Rusthall Common. Some of the finest British sandstones, hard, fine-grained, and white, are from the Coal Measures and Lower Carboniferous series, which furnish the excellent building stones of Bradford, Halifax, and other Yorkshire towns, as well as Newcastle-upon-Tyne, and the famous Craigleith and other white sandstones used in Edinburgh and Glasgow. The Trias yields the sandstones of Warwickshire, Cheshire, Lancashire, &c., and from the Permian of Westmoreland is quarried a fine-grained pink sandstone. The very coarse and hard sandstones called grits are not used except very locally as building stones, but they make excellent millstones, and one of the geological formations that has long been worked for them is called the Millstone Grit. Perhaps the hardest sandstone is found in those great and interesting blocks of stone lying on the surface, called Sarsen-stones, which our prehistoric ancestors used so freely as a convenient building material ready quarried and lying at hand for their mysterious circles, trilithons, dolmens, and cromlechs. The larger stones forming the outer circle of Stonehenge are Sarsen-stones, and so are all the stones of Avebury and Ashdown; the "Countless Stones" of Aylesford in Kent, Kit's Cotty House, and many other so-called Druidical remains. Sarsen-stones may therefore be regarded as the earliest used building-stones of this country, and they still lie in great numbers on the Wiltshire and Kentish Downs. Indeed, their abundance on the surface of these grassy uplands has suggested the name Grey Wethers, by which they are often called, from their resemblance at a distance to a flock of sheep. The origin of sandstones, whether coarse or fine, whether hard or soft, may be learnt from a visit to any sandy shore on our coasts. Sandstones are simply the consolidated accumulations of sand brought into the sea and there deposited, either from the denudation of inland areas or the destruction of sea-cliffs, rivers forming the transporting agent from the interior to the coast. The accumulated masses of sand, covered over by great thicknesses of other rocks, and elevated above the level of the sea by that imperceptible but long continued vertical upheaval which transforms sea-bottoms into dry land, is penetrated by water holding in solution the cementing material, or substances from which it may be derived, which is thereby carried to all parts of the mass, and is left as a solid agglutinating substance between the grains cementing them together. Sandstones have, therefore, been formed by the simple slow-acting mechanical forces of nature, supplemented by chemical operations, also continued through long periods of time. But in the case of Sarsen-stones it may be asked how is it that they are found as separated blocks lying on the surface of the ground, and above, not sandstone, but the limestone chalk? The answer given by geology is that they are the remnants of beds that were once above the chalk, and that, with the exception of these blocks, have been removed by denudation. The great blocks of stone now exposed were formed by limited portions of beds of sand being converted into stone by the cementation of the grains by silica, while the bulk of the bed remained loose sand, which yielded subsequently to the removing power of water, while these heavy blocks of solid stone were merely gradually lowered until they rested on the surface of a lower and an entirely different formation. Sandstones *in situ* may be either thick or thin bedded. Triassic sandstones are often very thick bedded, as at Grinsill, in Shropshire, and in the neighbourhood of Liverpool, on both sides of the Mersey. In Yorkshire, on the other hand, the Coal Measure sandstones are sometimes very thin bedded, in which case they are quarried for the flagstones over which we walk in London, and for other covering purposes. This stone often contains layers of fragments of mica, that cause the flags to split again, with wear and weathering, into still thinner slabs and plates. The divisional planes between the beds in a sandstone quarry are caused by a change of conditions having occurred at intervals during the period of original accumulation; the deposition of a little argillaceous matter being sufficient to separate arenaceous beds. Though their silicious material is not liable to decomposition by the atmosphere, sandstones may be much affected by weather removing the cementing material from exposed surfaces. Some years ago, previous to the restoration, Chester Cathedral presented a remarkable aspect. It was built of the deep red and soft sandstone of the district, and the angles of the blocks were so completely worn away that each block of stone stood out separately, presenting a smooth projecting convex surface, all carved work having quite disappeared. A harder and paler coloured stone has been employed for the restoration. The limestones form a more numerous and varied class of building stones than the sandstones, and much more interest attaches to their structure and origin, since both organic life and chemical action have taken part in their formation. Mineralogically a limestone consists essentially of calcite, a mineral that is chemically carbonate of lime, lime being a simple compound of the elements calcium and oxygen, and, therefore, a pure limestone is made up of three elements, calcium, carbon, and oxygen. While many limestones are approximately pure calcareous matter, some contain, disseminated throughout their mass, other substances in greater or less proportion. They also vary in hardness very greatly, for the soft white chalk, the easily cut Caen stone, the harder Portland stone, and the very hard Devonshire and Anglesea marbles, as well as all other marbles, are all equally limestones. Although the chalk is not now usually regarded as a building stone, yet its harder beds were quarried for building material in olden times, some of the most ancient churches of the South-East of England being partly constructed of the lower or grey chalk. Chalk is composed of minute, even microscopical, particles of carbonate of lime, simply compacted together by pressure. Hence its general softness and great absorbent power. The latter quality is so marked that a cubic foot of quite dry white chalk will hold a gallon of water before the super-saturation point is reached. The limestones, however, which are best known now as building-stones, such as Portland stone, Bath-stone, Box stone, Leckhampton or Cheltenham stone, Ham Hill stone, Barnack stone, Ancaster stone, &c., called comprehensively Oolites, possess a quite different structure, the result of other conditions and other agencies. The characteristic structure of oolite is the aggregation of small globular grains, and their cementation together so as to form a solid stone. From its resemblance to the roe of a fish this structure was called oolitic, from the Greek word *oön*, an egg, but in some cases the spherical grains are as large as peas, as in the Pea Grit of Leckhampton, when the structure is called pisolitic. The typical oolitic structure is best exhibited by Bath stone, which is from the Great Oolite, in which the round grains are very uniform in size, and form the whole stone. On being examined by the microscope the little globes are found to consist of an iron-like arrangement of concentric coats of carbonate of lime surrounding a central nucleus of a particle of shelly or sandy matter. Now it was found by Dana that the calcareous sand on the shores of some of the coral islands and reefs of the Pacific was of a similar character to the grains composing Bath oolite, as a consequence of minute particles of coral-rock being rolled in water highly charged with carbonate of lime, which has covered over these particles with successive coats of solid mineral matter. On the shores of the Great Salt Lake in North America, oolite is being formed, and the Sprudelstein of the springs of Carlsbad has a similar structure. Thus is explained the origin of Oolite rock, which was formed by an accumulation of coral-island calcareous sand, and its subsequent cementation into solid stone by the introduction of more carbonate of lime by water action. The structure and texture of oolitic limestone render it an easily worked free-stone, and well adapted for ornamental work in which carvings are conspicuous. Of the same geological age as the Bath stone, that of the Great Oolite, is also the Caen stone of Normandy, so admirably adapted for interior carved work, the Box, Doulting, and Corsham stones of the West of England, and the Ancaster stone of Lincolnshire. The Inferior Oolite stones, including Cheltenham or Leckhampton stone, Dundry stone, and Ham Hill stone, are less pronounced in the oolitic structure, though it is displayed in its extreme form in the pea grit of the Inferior Oolite. The Portland stone, so well-known as the chief building stone of London, the stone of St. Paul's and nearly all of the great public buildings of the Metropolis, is much harder, whiter, and less regularly oolitic in structure than either the Great Oolite or the Inferior Oolite stones. It also occasionally contains large shells in the building-stone beds. It is, therefore, perhaps better suited for non-Gothic than for Gothic buildings. It is an almost pure limestone. The compactness of the texture of Portland stone is indicated by the fact that it only absorbs 8·86 per cent. of its weight of water. Some of the beds of the Portland stone, as a geological formation, are so crowded with fossil shells and casts of shells, and contain also so many cavities from which shells have been dissolved away, that the stone from these beds is quite unsuited for ordinary building purposes. This stone, called Roach, is, however, highly interesting as being strikingly indicative of the marine origin of the Portland stone, for the shells, or casts of shells, it so abundantly contains are well represented in the present seas of the globe. Although Portland stone has been worked for centuries in the Isle of Portland, there are three enormous masses still available; while at Great Swindon in Wilts, and Stone and Brill in Bucks, there are also large quarries. Another oolitic stone, the Coral Rag, was much used at one time for building purposes at Oxford, near which city, at Headington, it is still worked. The explorations and careful and elaborate observations of Darwin, Dana, and L. and A. Agassiz amongst the coral islands and the coral reefs of the tropical seas conclusively show that limestone rock is now being formed on a great scale by the unwearied industry of the little coral animal.

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[*] By Prof. J. Logan Lobley, F.G.S.; a paper read before the Society of Architects on Tuesday last, Jan. 26, 1892.

(*To be continued.*)

SARACENIC ARCHITECTURE.

PROFESSOR GEORGE AITCHISON, A.R.A., is delivering this session a course of six lectures to the Royal Academy students on successive Monday and Thursday evenings, the subject being "Saracenic Architecture." Numerous photographic and other illustrations are exhibited. In his opening address, given on Monday evening last, Mr. Aitchison pointed out that the architects of the Early Saracenic monuments were probably Byzantine. It appeared hopeless to endeavour to ascertain the nationality to which the architects belonged, who made the first advance forward towards an independent style, for polygamy then prevailed, and we know the names of but very few artists. It was even impossible to learn the character of the architecture that the Saracens brought with them. The original Saracens were of three sorts, firstly, the wandering tribes of herdsmen or nomads; secondly, those who lived in towns and tilled the land, as the people of Medina; and thirdly, those who were carriers and merchants, like the people of Mecca, and the first and last tribes equally despised each other and the husbandmen. The new religion of Mohammed for a time welded a set of hostile tribes into a nation, and sent them forth to conquer. It also caused the erection of mosques, probably the modification of the plans of other buildings, and of their ornaments. In little more than a century after the death of Mohammed his followers had not only conquered Persia, Khorasan, Afghanistan, Bokhara, Scind, and the Punjab from the Indus to the feet of the Himalayas, and had penetrated to Samarcand and Kasgar, but they had also subjugated Syria and Palestine, Egypt, and the North Coast of Africa to the Atlantic, the greater part of Spain, the south-east of France, and had ravaged Asia Minor and the main islands of the Mediterranean, and besieged Constantinople. The lecturer continued: Mohammed's immediate successors, the Caliphs Becker and Omar, imitated his frugality, simplicity of dress, and living. The third Caliph, Othman, of the Omeyza family, became enormously rich, built himself a palace at Medina, with marble columns and walls covered with costly stucco, and gave all the principal employments to his relatives. All the nobles of the Koreish and the governors of cities or countries built themselves palaces in many places. This caused a great scandal to the ascetic Moslems, just as splendid private buildings had scandalised the Romans of the Republic, and, of course, the poor were furious with envy. From this time forward there were constant riots, rebellions, and revolutions, and the old tribal feuds broke out again. After the first three caliphs the Caliphate became a vulgar despotism of the ordinary type, only with religious despotism superadded. Even in the first few years of the second Caliphate these half-starved barbarians, the Saracens, had obtained the main treasures of the Persian Empire and the rich plunder of Syria. Private troopers had got five or six hundred pounds apiece as their share in one expedition, equal to at least ten times that amount now, the imperial carpets of Persia, embroidered with gold and precious stones, were cut up and sold by auction at Medina. Great Arab settlements were at once made on the Tigris and Euphrates; Kufa and Mosul were built, and these, as well as all the other settlements, must have had mosques built. In some places, as at Damascus, the cathedral was divided between the Moslems and Christians. We know of the Mosque of Amru being built at Cairo, and Omar's Mosque at Jerusalem; but whether this was the Dome of the Rock or the Mosque of El Akbar, I must leave the learned to decide. These monuments were doubtless constructed with materials plundered from ancient edifices, and were designed by Byzantine, Syrian, Persian, or Koptic architects. If Byzantine architecture is chaotic as regards dates, what can be said of Saracenic architecture, of whose early work we know nothing, nor of the Persian, Indian, or Koptic architecture, from which, or from the Byzantine, all their new architecture must have been taken? Even before a conquered world lay at the feet of the Saracens, fierce conflicts were waged between the rival caliphs, and religious seditions were rife, and between the two everything was detroyed; the holy Medina—the scene of much of the prophet's life, inspirations, and preaching, and the site of his tomb—was given up to pillage by Yezid I.; horses were stabled in Mohammed's mosque; and the very Kaaba of Mecca was burnt down. In the first days of the Abassides, 132 A.H., the empire began to break up; Spain never acknowledged their sway, and all Africa, except Egypt, had to be re-conquered. And besides all the plundering, burning, and destruction in the days of the Omiades, and still greater destruction took place at the end of the Abasside dynasty, when the private disputes of Turks and Tartars were added to those about the religion, the predominance of tribes and rival dynastic claims after the Arabian caliphate was at an end and the rulers were mainly Turks. The part under their sway was like the East after Alexander the Great's death; the kingdoms were constantly being overrun and reconquered, and then there was the destruction by the Crusaders. Subsequently a fresh tide of destruction overwhelmed the greater part of Asia when Tamerlane and his savage hordes swept over it. Most probably, while the conquests were being made, Saracens, who were little better than banditti, loosely held together by a common faith and the love of bloodshed and plunder, were not very likely to settle down to study the fine arts, even if pure Arabs ever did; and this is, to some extent, borne out by the fact that Welid I. (705 to 715 A.D.—86 to 96 A.H.), although he built much and encouraged manufacture and design, accepted £60,000 in gold, several loads of mosaic, and one hundred Byzantine masons from Justinian II., Phillip Bardanes, or Anastasius II.; it is also said that in a treaty between him and the Byzantine Emperor the latter was to furnish the mosaic for his new mosque at Damascus. As late as Abd-al-Rahmân, the last of the Omiades, who became caliph of Spain, and reigned from 754—787 A.D.—138—171 A.H., architects and skilled workmen were sent him by the Byzantine Emperors to build the mosque at Cordova, and all the monarchs of Europe sent him columns plundered from ancient edifices for the same purpose. Ab-al-Rahman is said to have founded universities in Spain. Mamun, the son of a Persian princess, is said to have founded colleges and libraries, and to have commanded Mohammed Ben Musa to publish a book on quadratic equations, called Al Jebre al Mokabala (restoration and reduction), from which comes our word Algebra. The substance of the work appears to have been derived from Hindoo sources. Subsequently, the works of the Greek physicians, philosophers, arithmeticians, and geometers were translated, and physic and mathematics became favourite studies of the Saracens. The Abassides had great influence in Persia, Khorasan, Afghanistan, and Bokara—they were descended from El Abbas, the time-serving uncle of the prophet, and not like the Omiades, descended from his enemies; they seem, however, to have been less noble and less liberal, and even more bloodthirsty and perfidious than the Omiades, yet these reigns are held to be the golden age of the Caliphate; they introduced Turks for their fighting men, and Greeks and Persians for posts where intellect was wanted,—commonly called officers of the pen and of the sword. After their extinction, Turks mostly filled their places; the Arab race having lost their religious enthusiasm, fell generally into a lower grade. In some respects, the Moslem world, as far as architecture is concerned, was in much the same position as Europe is now,—it had become enormously wealthy, new buildings were made on an unprecedented scale, and the main architecture of the world lay before it for study; but there was no Saracenic style. The buildings were in the style of the country or town in which they were erected; or in the style used by architects who designed them. I say this, however, with some diffidence, for the mosque at Cordova, San Cristo de la Cruz at Toledo, and St. Maria de la Blanca are unlike anything else I know. The attractions of living styles are greater than we could imagine if we had not such frequent examples before our eyes. English architects of all degrees of excellence and talent go to our dependency, and whether they affect Classic, Gothic, Renaissance architecture here, they at once take up with the native style of that part of the country they inhabit, or paraphrase the Moslem buildings they find there; and it is the same in Egypt—the last hotel built by an English architect close to the Pyramids has its architecture borrowed from the mosques, even to the niche. It is admitted that the Saracens brought no style with them from Arabia, but adopted features that pleased them from the countries they conquered, the most characteristic feature being the minaret, and this is said to have been Persian; the dome was taken from the Byzantines, the niche (mehrab) from the apse of Christian churches, floral ornament that was not Byzantine probably from Afghanistan or India. Fergusson remarks on the similarity of the ornaments on the tomb of Mahmud of Ghuzni to those used in the mosque of Ahmed-Ibn-Tulun at Cairo, only this would suppose that it was not indigenous unless earlier examples could be found, for Ahmed-Ibn-Tulun died in 883 A.D., and Mahmud of Ghuzni was not born till 967 A.D. Architects in the "Arabian Nights" are always called mathematicians or geometers, and when they were thoroughly imbued with geometry they made great advances on the geometrical patterns of the Byzantines, on whose work it was based so as to completely transform them. A striking peculiarity of Saracen art is the stalactites. There is an ingenious and plausible theory that may turn out to be the true one—that the stalactites or honeycomb work sprang from the brick niches in the domes of steeples of the tombs of Ezekiel and Zobeide, Er-Rashid's head wife, both near Baghdad; these spires strongly remind us of jelly-moulds. If it came from these niches, the Moslems developed them to a degree that bears no resemblance to the original, for who would trace from this the stalactite domes of the Alhambra, which are certainly some of the most wonderful achievements of man; in fact they suggest the work of enchanters, or of things being sent down from another world; at first sight their maddening complexity, and their apparent want of support, makes it impossible for us to conceive that mere human beings could ever have invented or produced them; one would be led to believe that the Spanish ones were suggested to some genius by his seeing some pieces of wood of irregular length, whose ends had been shaped put together for mosaic-like Tunbridge ware, for every wood corbel or capital I examined in Spain was made up of separate squares, oblongs, and triangles. Besides this, Saracens also invented a system of ornament in which one pattern was laid over another in low relief, and perfected by colour and gilding. This is magical in effect, for each change of position brings out a new pattern and a new predominating colour. To them, too we owe the perfection of murmonic ornament, formed by overlaying a floral ground with Kufic or other writings, which is as distinctly Moslem as their maddening geometrical ornament or stalactite work. The ancient Egyptians, Persians, Greeks, Romans, and Byzantines produced works infinitely grander and more dignified, and the Greek works were infinitely more beautiful and of a higher style of beauty; but no people have ever produced anything so magical or so sumptuous in colour. The human figure and the representation of any living thing was forbidden by their religion; the Mesopotamians and Persians did even try their hand at this form of art. By the Moslems every handicraft was carried to a perfection before unknown in the world, from the temper of a sword-blade to the weaving of a robe or a carpet. Even now their enamelled glass and pottery, their damascened work, their wooded lattices, coloured work, carpets, and illuminations are in some respects unsurpassed, and fine specimens fetch their weight in gold; and so superior were their works to those of European manufacturers that when the Christians began to imitate their costly stuffs, chased brass, or damascened work, it was a common practice to put Arabic letters on their stuffs and utensils, in the form of texts from the Koran, but meaning nothing, to insure a market. As late as the Porta della Carta at the Ducal Palace at Venice, Arabic letters in imitation of an inscription were put on the dress of one of the figures, the solution of which was long an enigma to scholars. It is quite possible that the real Saracens had no capacity for invention, or the fine arts, at any rate. Scarcely any buildings of great artistic merit have survived them; but supposing they had neither taste nor invention, they would, none the less, claim our admiration and gratitude. They expunged the worn-out civilisation of the world, and imparted to the survivors their own resistless energy, their simple faith, and a lavish generosity, so that their successors, perhaps blessed with higher capacities, overspread the world with elegant and sumptuous monuments from Spain to the Indus, and from the Red Sea to the Atlantic. Every country beneath their sway flourished like a garden. Stock was increased, and the breed of horses greatly improved; every town was a hive of industry, from which issued the most splendid arms and armour, glass, metal, and woodwork, enamelled earthenware, velvet, satin, silk, and cloth of gold of splendid patterns and gorgeous colours; and from them lawns, crèpes, and delicate muslins were spread over the earth; arts and literature, science and speculative philosophy found their homes amongst them, and spread light among the surrounding darkness. The inventions of the East were communicated to the West; not the least of which were the Arab arithmetic, algebra, and the mariner's compass, until they may be said to have been smothered by the wealth and plenty their industry had created. The splendid mosques, tombs, towers of victory, hospitals, khans, and palaces with which the Moslem conquerors enriched India alone, probably exceed in number and magnificence all the monuments of Europe since the Renaissance, not to speak of their bridges, aqueducts, and tanks. New phases of architecture, and new systems of ornament and illumination were invented, and in the later Crusades the manners and morals of the Moslems were held up as patterns to the Christians by their priests. It seems a pity that most of their monuments are perishing by decay, or by more wanton destruction; and when they are gone we shall have but indifferent records of their glory.

THE ACTION OF HEAT FROM OPEN FIREGRATES, STOVES, AND HOT-WATER PIPES.—III.

By F. DYE.

NOTWITHSTANDING the excellent results attained with the modern forms of open grates, with the advantages described in the last paper, they still fall short of the efficiency of stoves and hot-water pipes. It is upon the points of economy and regularity of heat that the grate is behind the other methods of heating; but, as already described, the latter do not possess some good features that the grate has, and for general domestic purposes it is well known that the grate has still the greatest share, if not all, the favour.

From stoves we have the heat transmitted to us in two direct ways; by radiation from the heated surface of the metal, and by convection of the air that comes in contact with the heated surfaces. This differs from open grates, as with these we have no convective action, except from objects warmed by the radiant heat, and this is trifling compared with that which takes place direct from the highly heated plates of a stove. It is supposed that the stove is of a pattern that has the fire inclosed within it, and not made visible anywhere. If the fire is visible, then we get results intermediate between an open grate and a stove; that is to say, the action of each is manifested. There are many stoves made in this way, with visible or open fires, but they cannot very well be made to keep alight for hours without attention, like a close stove can, and unless this can be done we get the irregular heat of the open grate.

What is now being said, of course, refers to stoves that are fixed in the room or apartment to be heated. If the stove is placed in a chamber constructed for the purpose, and the heat conveyed by pipes or conduits to the place to be heated, the action and results are very different. This latter method is termed "heating by hot air," and will be alluded to directly.

It may be supposed that with a close stove placed in a room the two actions by which the heat is transmitted contribute about a half each to the results attained, that is, the radiant heat does about as much towards heating the room as the heat received by convection (warmed air) and *vice versâ*. Now, by referring to the previous papers it will be seen that the air being warmed to this extent is rather opposed to natural results, and to those sufficiently sensitive this way of heating might prove disagreeable. There is, however, another, and greater objection to warming the air, in the fact that it is rendered unnaturally dry. This is a particular drawback, and anyone troubled with bronchial affections becomes very conscious of it, and, in fact, it is unbearable. Everyone knows that the chief objectionable feature of the dreaded east wind is its unhealthy dryness.

It has to be explained that air has, or should have, a certain percentage of moisture in it varying with its temperature, air at a low or cold temperature having, and only being able to hold, a small quantity of water compared to what air can when it is hot. It is peculiar to note that the body is agreeable to this varying degree of moisture, for when the air is cold with its least quantity of water in suspension there is no disagreeable result to speak of; if, however, this air became heated, but without increase of moisture, it would be highly unpleasant and unhealthy. The great difference in this capacity for water that our atmosphere has can be judged by the fact that air at 30° Fah. has, when saturated, only $2\frac{1}{8}$ grains of water in suspension per cubic foot, whereas at 80° it has $10\frac{1}{2}$ grains. The capacity of air for water is about doubled with each increase of 28° to 30° in temperature.

When speaking of the saturation of air, it is meant that the air contains as much water as it can possibly hold. The most agreeable air to breathe is not fully saturated, at least such would be the opinion of most people accustomed to our English climate. A particular purpose that requires a fully saturated atmosphere is a hot-house, and, in fact, all horticultural glass-house works. In fern-houses, for instance, the atmosphere is kept in a state that might almost be described as wet. These places are heated by hot-water pipes, which go a great way to render the air dry by warming the air by convection, and it is a primary thought of the gardeners to see that efficient and amply sufficient means be provided to give the necessary moisture to the air. This is effected with vaporising troughs which are placed upon the hot-water pipes. The heat causes the water in them to give off a vapour, and, furthermore, the air will help itself to water where it has opportunity.

With stoves the difficulty is met by the use of water-pans, and many stoves are provided with these by the makers; some even having them cast, in an ornamental way, upon the stove itself. The only objection to this arrangement is the possibility of rendering the air too moist, which, although not objectionable in sick-rooms with certain maladies, is not a desirable thing when the occupants of an apartment have to go directly in and out of the open air. As a rule, provision for adding moisture to the air is necessary, and without this the air may not only be disagreeable to breathe, but it will, if very dry, help itself to moisture wherever it can, much to the detriment of cabinet-ware and such like.

Doubtless many readers have heard the expression that when a stove becomes overheated it "burns the air." This is often mentioned and used as an argument against stoves generally. The expression is wrong, however, utterly so, for the air by contact with hot stoves does not become burnt (? consumed intended); and even if it did, it would not be accountable for the odour of burning that is generally noticeable at such times. The only effect upon the air when the stove is overheated is to render it still more unhealthily dry than ever, and if the stove is any way near red-heat, then the air will have an odour like scorching materials due to the innumerable particles of matter that are suspended in the air coming in contact with the hot metal. The dust (the purest of air always has some in it) which floats about, particularly in dwelling houses, is composed almost wholly of organic matters, particles of woollen, cotton, and linen material, and a hundred other things that are light enough to be carried up when reduced to such a fine state. This is the cause of the "burnt" sensation that is perceived at such times.

The heating of living apartments by close stoves can hardly be called a success yet: there is opportunity for it to be made so, but it has a very strong opponent in the open fire with its cheerful appearance. If the cheerful effect were by some means abolished from the open fire, its other advantages would hardly be sufficient to keep the stove from conquering it eventually. In many other countries, however, the stove is pre-eminent; on the Continent the large erection of firebrick in the apartment, and in America the basement stove, with its hot-air conduits throughout the house. The latter country, however, is, in its cities, fast adopting the open grate, notwithstanding its rather primitive character.

The particular advantage of the stove (also hot-water and hot-air works) is the regularity of its heat. With a good stove properly constructed one charge of fuel will last many hours without attention, which must give more regular results than the frequent stoking and burning up and going down of the open fire. In addition to this, every heating apparatus which heats the air contributes heat to the body equally on all sides. This is an argument urged against the open fire, of course, which, by radiation, only heats the side of the body which is turned towards it.

One of the most useful and ingenious inventions in connection with the heating surfaces of stoves is the addition of gills or plates, a series of which are placed along the body of the stove externally, and projecting some 6in. to 10in. according to the size of the stove. There are stoves made like this and called "gill stoves," although almost all makers use these gills more or less in some way with stoves that do not bear this name. A gill stove is like Fig. 11. A side section would be as Fig. 12, which shows clearly the gills or plates (or ribs, or wings, as they are sometimes called) standing out from the body of the stove which constitutes the fire-box. The object of the gills is to prevent the stove overheating, and so having an ill effect upon the air, and also from being a source of danger should anyone come against it.

The action of the gills is as follows:—When the outer surface, the shell of the fire-box, receives heat, this heat is as instantly transferred to the gill plates, the heat travelling into them by the rapid conductive power of the metal of which the stove is composed. Now, if we have a certain quantity of heat (we may call it a quantity for the purpose of this explanation) in a piece of metal which raises it to a certain temperature, it follows as a matter of course that if we increase the size of the metal so as to allow the heat to distribute itself more, the temperature will be reduced notwithstanding all the heat is still there. We may compare it to a perfume which as it spreads about becomes less strong to the senses, although it is not lost. It is thus with a gill stove; there is a greater quantity of metal to receive the heat, and although the surfaces are not so intensely hot the greater area of these surfaces compensate, and so we get a large volume of heat at a low temperature, instead of a less quantity at a higher temperature. The result is far more agreeable, the metal does not get so hot as to create odours of any kind, neither should it get hot enough to cause an accident if anyone came in contact with it, as might happen with a plain surface. This kind of stove is well suited for hot-air works.

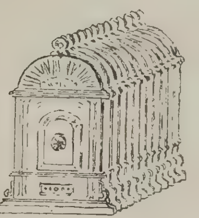

FIG. 11.

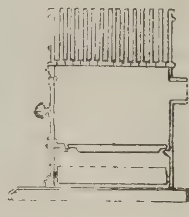

FIG. 12.

For hot-air works the stove (or it may be hot-water pipes) is placed in a brick-built chamber but little larger than itself. Into this chamber is a fresh or cold air inlet, and from it are one or more warm-air conduits, according to the magnitude of the undertaking, these being brick channels (like chimneys) or earthenware or iron pipes. These conduits terminate in the apartments to be warmed. It will be seen that the heat is contributed in this system by convection only, and, although so extensively adopted abroad, it is not approved of here and but little adopted. Warmth that is due to warmed air is equable, as the stove can be so easily arranged to burn and give out heat regularly; it is also fairly economical, as practically the whole of the heat is utilised, and it possesses the advantage of delivering heat to several different rooms or at several points in one room from a single fire. The gain effected, however, is not appreciated in England, and the more advanced we become the less likely is this mode of heating to become popular. It is possible to obtain good results with practical attention, but in dwelling-houses it will not get this. To the best of the writer's belief, the House of Commons is at present heated by hot-air, but there are capable men there to attend to the apparatus. There is the most efficient provision for moistening the air that is heated, with hygrometers to indicate its moistness, and other ways by which the air is purified, sweetened, and rendered as agreeable and healthful as it is possible to get it. Notwithstanding this, however, if the heat could be imparted to the occupants of the house without heating the air the results would be obviously better.

Hood, in one of his editions of "Warming Buildings," alludes to an instance where one of the large clerks' rooms in the Custom House, London, when heated by hot-air, resulted in the major portion of the occupants becoming ill and suffering from symptoms which upon inquiry and examination was found to be due to the stoves being overheated, sometimes red-hot. The air after passing over them was occasionally 110°, rendered intensely dry, and the smell produced by the decomposition of the matters composing the dust which settled upon the stoves was very disagreeable. This apparatus had such a pernicious effect that it had to be removed. It appears, however, that there had been no provision made for adding moisture to the atmosphere, and with such a temperature and dryness the air would rob even the skin and lungs of moisture.

◆

PRICES.—XXIX.

(All Prices Include Profit).

JOINER (*continued*).

HARDWOOD DOORS: Honduras mahogany; segment headed; ordinary sizes; measured square, and all over—

		£	s.	d.
1¼in. two panels, square framed	per ft. sup.	0	2	4
Ditto ditto bead butt	ditto	0	2	7
Ditto ditto flush	ditto	0	2	9
Ditto ditto moulded one side	ditto	0	2	8
Ditto ditto ditto two sides	ditto	0	3	0
Ditto ditto ditto and one side bolection moulded	ditto	0	3	2
Ditto ditto stop-chamfered one side including plain stops	ditto	0	3	0
Ditto ditto ditto two sides	ditto	0	3	6
1½in. ditto square framed	ditto	0	2	6
Ditto ditto bead butt	ditto	0	2	9
Ditto ditto ditto flush	ditto	0	2	11
Ditto ditto moulded one side	ditto	0	2	10
Ditto ditto ditto two sides	ditto	0	3	2
Ditto ditto ditto and one side bolection moulded	ditto	0	3	5
Ditto ditto stop-chamfered one side, including plain stops	ditto	0	3	1
Ditto ditto ditto two sides	ditto	0	3	7
Ditto ditto raised panels one side	ditto	0	3	4
Ditto ditto top panels out for glass, not including loose beads	ditto	0	2	8
Ditto ditto top panel sashed	ditto	0	3	3
Ditto ditto ditto in small squares	ditto	0	3	7
Hung folding add	ditto	0	0	1½
2in. ditto square framed	ditto	0	3	0
Ditto ditto bead butt	ditto	0	3	3
Ditto ditto ditto flush	ditto	0	3	5
Ditto ditto moulded one side	ditto	0	3	4
Ditto ditto ditto two sides	ditto	0	3	8
Ditto ditto ditto and one side bolection moulded	ditto	0	3	10
Ditto ditto stop-chamfered one side and including plain stops	ditto	0	3	6
Ditto ditto ditto two sides	ditto	0	4	0
Ditto ditto top panel out for glass, not including loose beads	ditto	0	3	2
Ditto ditto top panels sashed	ditto	0	3	10
Ditto ditto ditto small squares	ditto	0	4	2
Ditto ditto raised panels one side	ditto	0	3	10
Ditto ditto hung folding extra	ditto	0	0	2
1¼in. four-panel, square framed	ditto	0	2	6
Ditto ditto bead butt	ditto	0	2	9
Ditto ditto ditto flush	ditto	0	2	11
Ditto ditto moulded one side	ditto	0	2	10
Ditto ditto ditto two sides	ditto	0	3	2
Ditto ditto ditto and bolection moulded on one side	ditto	0	3	4
Ditto ditto bead butt and moulded.	ditto	0	3	2
Ditto ditto flush and ditto	ditto	0	3	4
Ditto ditto stop-chamfered one side including plain stops	ditto	0	3	1
Ditto ditto ditto two sides	ditto	0	3	8
Ditto ditto top panels out for glass, not including loose beads	ditto	0	2	9
Ditto ditto top panels sashed	ditto	0	3	1
Ditto ditto ditto in small squares	ditto	0	3	6
Ditto ditto raised panels one side	ditto	0	3	2
Ditto ditto hung folding add	ditto	0	0	1½
1½in. four-panel, square framed	citto	0	3	2
Ditto ditto bead butt	ditto	0	3	5
Ditto ditto ditto flush	ditto	0	3	7
Ditto ditto moulded one side	ditto	0	3	6
Ditto ditto ditto two sides	ditto	0	3	10
Ditto ditto ditto and one side bolection moulded	ditto	0	4	0
Ditto ditto bead butt and moulded .	ditto	0	3	11
Ditto ditto ditto flush and ditto	ditto	0	4	1
Ditto ditto stop-chamfered on one side and plain stops	ditto	0	3	10
Ditto ditto ditto two sides	ditto	0	4	6
Ditto ditto top panels out for glass, and not including loose beads	ditto	0	3	5
Ditto ditto top panels sashed	ditto	0	3	11
Ditto ditto ditto in small squares	ditto	0	4	4
Ditto ditto raised panels one side	ditto	0	4	0
Ditto ditto hung folding add				
2in. four-panel, square framed	ditto	0	3	9
Ditto ditto bead butt	ditto	0	4	0
Ditto ditto ditto flush	ditto	0	4	2
Ditto ditto moulded one side	ditto	0	4	1
Ditto ditto ditto two sides	ditto	0	4	5
Ditto ditto ditto and one side bolection moulded	ditto	0	4	7
Ditto ditto bead butt and moulded.	ditto	0	4	4
Ditto ditto ditto flush and ditto	ditto	0	4	6
Ditto ditto stop-chamfered one side and plain stops	ditto	0	4	4
Ditto ditto ditto two sides	ditto	0	5	0
Ditto ditto top panels out for glass, not including loose beads	ditto	0	4	0
Ditto ditto top panels sashed	ditto	0	4	6
Ditto ditto ditto in small squares	ditto	0	5	0
Ditto ditto raised panels one side	ditto	0	4	9
Ditto ditto ditto two sides	ditto	0	5	9
Ditto ditto hung folding add	ditto	0	0	2
2½in. ditto square framed	ditto	0	4	6
Ditto ditto bead butt	ditto	0	4	10
Ditto ditto ditto flush	ditto	0	5	0
Ditto ditto moulded one side	ditto	0	4	11
Ditto ditto ditto two sides	ditto	0	5	4
Ditto ditto and bolection moulded on one side	ditto	0	5	7
Ditto ditto bead butt and moulded .	ditto	0	5	5
2½in. four-panel, bead flush and moulded	per ft. sup.	0	5	7
Ditto ditto stop-chamfered on one side and plain stops	ditto	0	5	2
Ditto ditto ditto two sides	ditto	0	5	10
Ditto ditto top panels out for glass, not including loose beads	ditto	0	4	9
Ditto ditto top panels sashed	ditto	0	5	3
Ditto ditto ditto small squares	ditto	0	5	9
Ditto ditto raised panels one side	ditto	0	5	6
Ditto ditto ditto two sides	ditto	0	6	6
Ditto ditto hung folding add	ditto	0	0	2
1½in. six-panel, square framed	ditto	0	3	6
Ditto ditto bead butt	ditto	0	3	9
Ditto ditto ditto flush	ditto	0	3	11
Ditto ditto moulded one side	ditto	0	3	10
Ditto ditto ditto two sides	ditto	0	4	2
Ditto ditto ditto and one side bolection moulded	ditto	0	4	4
Ditto ditto bead butt and moulded .	ditto	0	4	1
Ditto ditto ditto flush	ditto	0	4	3
Ditto ditto stop-chamfered one side including plain stops .	ditto	0	4	2
Ditto ditto ditto two sides	ditto	0	4	10
Ditto ditto top panels out for glass, not including loose beads	ditto	0	3	9
Ditto ditto top panels sashed	ditto	0	4	3
Ditto ditto in small squares	ditto	0	4	7
Ditto ditto raised panels one side	ditto	0	4	3
Hung folding add	ditto	0	0	1½
2in. ditto, square framed	ditto	0	4	0
Ditto ditto bead butt	ditto	0	4	3
Ditto ditto ditto flush	ditto	0	4	5
Ditto ditto moulded one side	ditto	0	4	4
Ditto ditto ditto two sides	ditto	0	4	8
Ditto ditto ditto and one side bolection moulded	ditto	0	4	11
Ditto ditto stop-chamfered one side and plain stops	ditto	0	4	9
Ditto ditto ditto two sides	ditto	0	5	6
Ditto ditto top panels out for glass, not including loose beads	ditto	0	4	3
Ditto ditto top panels sashed	ditto	0	4	9
Ditto ditto ditto in small squares	ditto	0	5	3
Ditto ditto raised panels one side	ditto	0	4	10
Ditto ditto ditto two sides	ditto	0	5	8
Hung folding add	ditto	0	0	2
2½in. ditto square framed	ditto	0	4	8
Ditto ditto bead butt	ditto	0	5	0
Ditto ditto ditto flush	ditto	0	5	3
Ditto ditto moulded one side	ditto	0	5	0
Ditto ditto ditto two sides	ditto	0	5	4
Ditto ditto bead butt and moulded.	ditto	0	5	4
Ditto ditto flush and moulded	ditto	0	5	7
Ditto ditto moulded on one side and bolection the other	ditto	0	5	10
Ditto ditto stop-chamfered one side and plain stops	ditto	0	5	8
Ditto ditto ditto two sides	ditto	0	6	8
Ditto ditto top panels out for glass, not including loose beads	ditto	0	5	0
Ditto ditto top panels sashed	ditto	0	5	9
Ditto ditto ditto in small squares	ditto	0	6	6
Ditto ditto raised panels one side	ditto	0	5	9
Ditto ditto ditto two sides	ditto	0	6	10
Hung folding extra	ditto	0	0	2

HARDWOOD DOORS: Spanish Mahogany; segment headed, measured square, and all over the door—

		£	s.	d.
1¼in. two panel square framed	ditto	0	3	9
Ditto ditto ditto bead butt	ditto	0	4	0
Ditto ditto ditto bead flush	ditto	0	4	2
Ditto ditto moulded one side	ditto	0	4	1
Ditto ditto ditto two sides	ditto	0	4	5
Ditto ditto ditto and one side bolection moulded	ditto	0	4	7
Ditto ditto stop-chamfered one side and plain stops	ditto	0	4	6
Ditto ditto ditto two sides	ditto	0	5	3
1½in. ditto square framed	ditto	0	4	1
Ditto ditto bead butt	ditto	0	4	4
Ditto ditto ditto flush	ditto	0	4	6
Ditto ditto moulded one side	ditto	0	4	5
Ditto ditto ditto two sides	ditto	0	4	9
Ditto ditto ditto and one side bolection moulded	ditto	0	4	11
Ditto ditto stop-chamfered on one side and plain stops	ditto	0	4	10
Ditto ditto ditto two sides	ditto	0	5	7
Ditto ditto raised panels one side	ditto	0	4	10
Ditto ditto ditto two sides	ditto	0	5	7
Ditto ditto top panel out for glass, not including loose beads	ditto	0	4	4
Ditto ditto top panel sashed	ditto	0	4	10
Ditto ditto ditto in small squares	ditto	0	5	4
Hung folding add	ditto	0	0	1½
2in. ditto square framed	ditto	0	4	8
Ditto ditto bead butt	ditto	0	4	11
Ditto ditto ditto flush	ditto	0	5	1
Ditto ditto moulded one side	ditto	0	5	0
Ditto ditto ditto two sides	ditto	0	5	4
Ditto ditto ditto and one side bolection moulded	ditto	0	5	6
Ditto ditto top panels out for glass, not including loose beads	ditto	0	4	11
Ditto ditto top panels sashed	ditto	0	5	6
Ditto ditto ditto in small squares	ditto	0	6	0
Ditto ditto stop-chamfered one side and plain stops	ditto	0	5	8
Ditto ditto ditto two sides	ditto	0	6	8
Ditto ditto raised panels one side	ditto	0	5	4
Ditto ditto ditto two sides	ditto	0	6	2
2½in. ditto, square framed	ditto	0	5	8
Ditto ditto bead butt	ditto	0	6	0
Ditto ditto ditto flush	ditto	0	6	3
Ditto ditto moulded on one side	ditto	0	6	1
Ditto ditto ditto two sides	ditto	0	6	6
Ditto ditto ditto and one side bolection moulded	ditto	0	6	9
Ditto ditto top panel out for glass, not including loose beads	ditto	0	6	0
Ditto ditto top panel sashed	ditto	0	6	9
Ditto ditto ditte in small squares	ditto	0	7	3
Ditto ditto stop-chamfered one side and plain stops	ditto	0	6	8
Ditto ditto ditto two sides	ditto	0	7	8
Ditto ditto raised panels one side	ditto	0	6	9
2½in. two-panel, raised panels two sides	per ft. sup.	0	7	10
Hung folding add	ditto	0	0	2
1¼in. four-panel, square framed	ditto	0	3	10
Ditto ditto bead butt	ditto	0	4	1
Ditto ditto ditto flush	ditto	0	4	3
Ditto ditto moulded one side	ditto	0	4	2
Ditto ditto ditto two sides	ditto	0	4	6
Ditto ditto ditto and one side bolection moulded	ditto	0	4	9
Ditto ditto top panels out for glass, not including loose beads	ditto	0	4	1
Ditto ditto top panels sashed	ditto	0	4	7
Ditto ditto ditto in small squares	ditto	0	5	1
Ditto ditto stop-chamfered on one side and plain stops	ditto	0	4	10
Ditto ditto ditto two sides	ditto	0	5	10
Ditto ditto raised panels one side	ditto	0	4	10
Ditto ditto ditto two sides	ditto	0	5	10
Ditto ditto hung folding add	ditto	0	0	1½
2in. ditto square framed	ditto	0	4	1
Ditto ditto bead butt	ditto	0	4	4
Ditto ditto ditto flush	ditto	0	4	6
Ditto ditto moulded one side	ditto	0	4	6
Ditto ditto ditto two sides	ditto	0	4	11
Ditto ditto ditto and one side bolection moulded	ditto	0	5	1
Ditto ditto top panels out for glass, not including loose beads	ditto	0	4	4
Ditto ditto top panels sashed	ditto	0	4	10
Ditto ditto in small squares	ditto	0	5	4
Ditto ditto stop-chamfered one side and plain stops	ditto	0	4	10
Ditto ditto ditto two sides	ditto	0	5	7
Ditto ditto raised one side	ditto	0	5	1
Ditto ditto ditto two sides	ditto	0	6	1
Ditto ditto hung folding extra	ditto	0	0	1½
2in. ditto square framed	ditto	0	4	8
Ditto ditto bead butt	ditto	0	4	11
Ditto ditto ditto flush	ditto	0	5	1
Ditto ditto moulded on one side	ditto	0	5	1
Ditto ditto ditto two sides	ditto	0	5	6
Ditto ditto ditto and one side bolection moulded	ditto	0	5	8
Ditto ditto top panels out for glass, not including loose beads	ditto	0	4	11
Ditto ditto top panels sashed	ditto	0	5	5
Ditto ditto ditto in small squares	ditto	0	5	11
Ditto ditto stop-chamfered on one side, and plain stops	ditto	0	5	5
Ditto ditto ditto two sides	ditto	0	6	2
Ditto ditto raised panel one side	ditto	0	5	8
Ditto ditto ditto two sides	ditto	0	6	8
Ditto ditto hung folding extra	ditto	0	0	2
2½in. ditto square framed	ditto	0	5	8
Ditto ditto bead butt	ditto	0	6	0
Ditto ditto ditto flush	ditto	0	6	2
Ditto ditto moulded one side	ditto	0	6	2
Ditto ditto ditto two sides	ditto	0	6	8
Ditto ditto ditto and one side bolection moulded	ditto	0	6	11
Ditto ditto top panels out for glass, not including loose beads	ditto	0	5	11
Ditto ditto top panels sashed	ditto	0	6	5
Ditto ditto in small squares	ditto	0	7	0
Ditto ditto stop-chamfered one side, and plain stops	ditto	0	6	6
Ditto ditto ditto two sides	ditto	0	7	3
Ditto ditto raised panels one side	ditto	0	6	9
Ditto ditto two sides	ditto	0	7	10
Ditto ditto hung folding add	ditto	0	0	2
1½in. six-panel, square framed	ditto	0	4	8
Ditto ditto bead butt	ditto	0	4	11
Ditto ditto ditto flush	ditto	0	5	1
Ditto ditto moulded one side	ditto	0	5	1
Ditto ditto ditto two sides	ditto	0	5	6
Ditto ditto ditto and one side bolection moulded	ditto	0	5	8
Ditto ditto top panels out for glass, and not including loose beads	ditto	0	4	11
Ditto ditto top panels sashed	ditto	0	5	5
Ditto ditto in small squares	ditto	0	5	11
Ditto ditto stop-chamfered on one side, and plain stops	ditto	0	5	8
Ditto ditto ditto two sides	ditto	0	6	8
Ditto ditto raised panels one side	ditto	0	5	9
Ditto ditto ditto two sides	ditto	0	6	9
Ditto ditto hung folding	ditto	0	0	1½
2in. ditto square framed	ditto	0	5	4
Ditto ditto bead butt	ditto	0	5	7
Ditto ditto ditto flush	ditto	0	5	9
Ditto ditto moulded one side	ditto	0	5	9
Ditto ditto ditto two sides	ditto	0	6	2
Ditto ditto ditto and one side bolection moulded	ditto	0	6	5
Ditto ditto top panels out for glass, and not including loose beads	ditto	0	5	7
Ditto ditto top panels sashed	ditto	0	6	2
Ditto ditto ditto in small squares	ditto	0	6	9
Ditto ditto stop-chamfered one side and plain stops	ditto	0	6	3
Ditto ditto ditto two sides	ditto	0	7	0
Ditto ditto raised panels one side	ditto	0	6	4
Ditto ditto ditto two sides	ditto	0	7	4
Hung folding add	ditto	0	0	2
2½in. six panels, square framed	ditto	0	6	3
Ditto ditto bead butt	ditto	0	6	6
Ditto ditto ditto flush	ditto	0	6	9
Ditto ditto moulded one side	ditto	0	6	9
Ditto ditto ditto two sides	ditto	0	7	3
Ditto ditto ditto and one side bolection moulded	ditto	0	7	6
Ditto ditto top panels out for glass, not including loose beads	ditto	0	6	6
Ditto ditto top panel sashed	ditto	0	7	3
Ditto ditto ditto in small squares	ditto	0	7	11
Ditto ditto stop-chamfered one side and plain stops	ditto	0	7	3
Ditto ditto ditto two sides	ditto	0	8	3
Ditto ditto raised panels one side	ditto	0	7	4
Ditto ditto ditto two sides	ditto	0	8	5
Hung folding	ditto	0	0	2

HARDWOOD DOORS: Wainscot or American walnut, segment headed, ordinary sizes, and measured square—

		£	s.	d.
1¼in. two-panel, square framed	per ft. sup.	0	2	10
Ditto ditto bead butt	ditto	0	3	0

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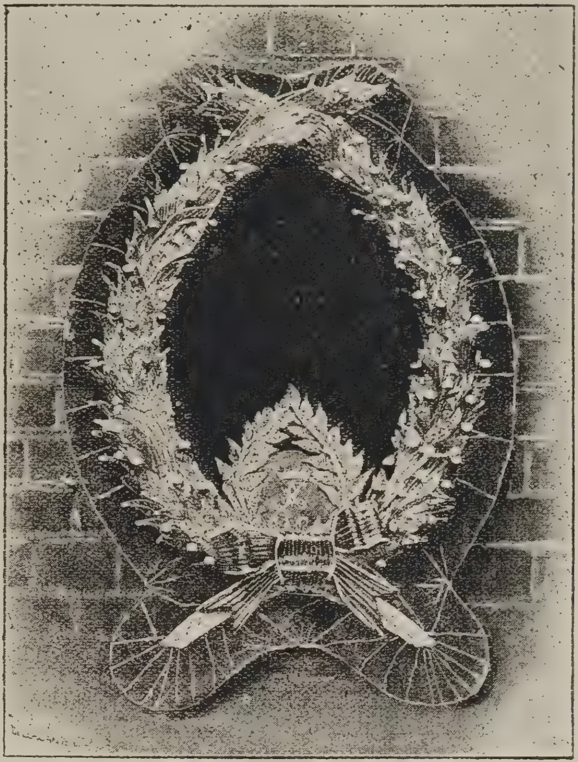
		£	s.	d
1¼in. two-panel, bead flush …………	per ft. sup.	0	3	1
Ditto ditto moulded one side ………	ditto	0	3	2
Ditto ditto ditto two sides ………	ditto	0	3	6
Ditto ditto ditto and one side bolection ………………	ditto	0	3	8
Ditto ditto stop-chamfered one side, and plain stops ………	ditto	0	4	7
Ditto ditto ditto two sides………………	ditto	0	5	4
1½in. two-panel, square framed ……	ditto	0	3	0
Ditto ditto bead butt …………………	ditto	0	3	3
Ditto ditto ditto flush………………	ditto	0	3	5
Ditto ditto moulded on one side ……	ditto	0	3	5
Ditto ditto ditto two sides………………	ditto	0	3	10
Ditto ditto ditto and one side bolection moulded ………	ditto	0	4	0
Ditto ditto stop-chamfered one side and plain stops ………	ditto	0	3	5
Ditto ditto ditto two sides …………	ditto	0	3	11
Ditto ditto raised panels one side …	ditto	0	3	9
Ditto ditto ditto two sides……………	ditto	0	4	6
Ditto ditto top panels out for glass, and not including loose beads	ditto	0	3	3
Ditto ditto top panels sashed ………	ditto	0	3	9
Ditto ditto in small squares.. ………	ditto	0	4	3
Hung folding add …………………	ditto	0	0	1½
2in. two-panel, square framed ………	ditto	0	3	6
Ditto ditto bead butt …………………	ditto	0	3	9
Ditto ditto ditto flush…………………	ditto	0	3	11
Ditto ditto moulded one side ………	ditto	0	3	10
Ditto ditto ditto two sides …………	ditto	0	4	2
Ditto ditto ditto and one side bolection moulded ………	ditto	0	4	4
Ditto ditto bead butt and moulded..	ditto	0	4	1
Ditto ditto ditto flush…………………	ditto	0	4	3
Ditto ditto stop-chamfered one side and plain stops ………	ditto	0	4	0
Ditto ditto ditto two sides …………	ditto	0	4	8
Ditto ditto top panel out for glass, not including loose beads	ditto	0	3	8
Ditto ditto top panel sashed ………	ditto	0	4	2
Ditto ditto ditto in small squares …	ditto	0	4	8
Ditto ditto raised panels one side …	ditto	0	4	3
Ditto ditto ditto two sides ……………	ditto	0	5	0
Hung folding add ………………………	ditto	0	0	2
2½in. two-panel, square framed ……	ditto	0	4	4
Ditto ditto bead butt…………………	ditto	0	4	7
Ditto ditto ditto flush ………………	ditto	0	4	10
Ditto ditto moulded one side ………	ditto	0	4	9
Ditto ditto ditto two sides …………	ditto	0	5	2
Ditto ditto ditto and one side bolection moulded ………	ditto	0	5	4
Ditto ditto bead butt and moulded..	ditto	0	5	0
Ditto ditto ditto flush ………………	ditto	0	5	2
Ditto ditto stop-chamfered one side and plain stops ………	ditto	0	5	0
Ditto ditto ditto two sides ……………	ditto	0	5	8
Ditto ditto top panel out for glass, not including loose beads	ditto	0	4	8
Ditto ditto top panel sashed ………	ditto	0	5	3
Ditto ditto ditto in small squares …	ditto	0	5	10
Ditto ditto raised panel one side……	ditto	0	5	4
Ditto ditto ditto two sides ………	ditto	0	6	4
Hung folding add………………………	ditto	0	0	2
1½in. four-panel, square framed ……	ditto	0	3	6
Ditto ditto bead butt ………………	ditto	0	3	9
Ditto ditto ditto flush ………………	ditto	0	3	11
Ditto ditto moulded one side ………	ditto	0	3	10
Ditto ditto ditto two sides …………	ditto	0	4	2
Ditto ditto ditto and one side bolection moulded ………	ditto	0	4	4
Ditto ditto bead butt and moulded..	ditto	0	4	1
Ditto ditto ditto flush and ditto ……	ditto	0	4	3
Ditto ditto stop-chamfered one side and plain stops ………	ditto	0	3	11
Ditto ditto ditto two sides …………	ditto	0	4	5
Ditto ditto top panels out for glass, not including loose beads	ditto	0	3	9
Ditto ditto top panels sashed ………	ditto	0	4	3
Ditto ditto ditto in small squares ..	ditto	0	4	8
Ditto ditto raised panels one side …	ditto	0	4	3
Hung folding add ………………………	ditto	0	0	1½
2in. four-panel, square framed ………	ditto	0	3	8
Ditto ditto bead butt ………………	ditto	0	3	11
Ditto ditto ditto flush ………………	ditto	0	4	1
Ditto ditto moulded one side ………	ditto	0	4	0
Ditto ditto ditto two sides …………	ditto	0	4	4
Ditto ditto ditto and one side bolection ………………	ditto	0	4	6
Ditto ditto bead butt and moulded..	ditto	0	4	4
Ditto ditto ditto flush and moulded.	ditto	0	4	6
Ditto ditto stop-chamfered one side	ditto	0	4	3
Ditto ditto ditto two sides……………	ditto	0	4	10
Ditto ditto top panels out for glass, not including loose beads	ditto	0	3	11

ERRATUM.—In No. 27, read "Wainscot or American Walnut" for "Honduras Mahogany, ordinary sizes."

DR. SALVIATI'S VENETIAN MOSAIC.

ARCHITECTS, and all lovers of real art-work who visit the big show at Olympia, will be sure to find their way to the rear of "Modern Venice," with its gondolas and other attractions, to the most interesting Venetian glass workshop which Dr. Salviati has established there. Never before in England has the opportunity been afforded of witnessing what is one of the few surviving real "art-industries" left to us. Dr. Salviati's assistants are not "art workmen"; they are really artists, and it is a pleasure to watch not merely their deft manipulation of the molten metal, but their thoroughly artistic grasp of its capabilities and the genuine feeling and intelligence they put into their work. The history of the self-denying attempts of Dr. Salviati's father to restore the lost art of working in Venetian glass and the making of mosaics is familiar to all readers of our earlier volumes. The encouragement Dr. Salviati received in England from the great English architects of the past generation is also well-known, and it is gratifying to know that this is being continued. We saw last Sunday at the Church of the Annunciation, Chislehurst, one of the most beautiful specimens of mosaic ever erected, and we hope to describe and illustrate it shortly.



We give herewith an illustration of the Venetian glass wreath made by Dr. Salviati's Venetian glass-artists for the Duke of Clarence's funeral. It, of course, conveys as faint an idea of the real thing as a black and white picture of a stained-glass window; but the form, at any rate, is shown of what was a beautiful tribute of sympathy. The wreath was composed of laurel-leaves interlaced with lilies of the valley and other emblematical flowers and golden oak-apples, all made in glass, and bound together by glass ribbons of amber edged with white, the symbolic colours of Death. In the centre was an inscription setting forth the dedication of the wreath by its makers. We may add that some of the reproductions of antique models of Venetian glass shown at Olympia, in Dr. Salviati's rooms there, are simply perfect as regards form and their marvellous reproduction of the iridescence of the originals, and that the modern work is characterised throughout by a real elegance and fitness of design which cannot be too highly commended. We regret to hear that the glass furnace will not remain in England after the close of the exhibition, and advise all who are interested to take the earliest opportunity of seeing it.

THE TACHEOMETER AS A SURVEYING INSTRUMENT.

THE Engineering Section of the Royal Society of New South Wales, held at Sydney, had had an interesting paper read before it by Mr. W. Poole on this instrument, and its application to engineering surveys in New South Wales. The author of the paper expressed his surprise that instruments such as the tacheometer are not better known in the colony for preliminary work. In this country the Ordnance Survey maps supply all the information required, and therefore the tacheometer is not much used, and British engineers have not on this account introduced it into the colony. On the Continent and in America it is very generally used for topographical and preliminary surveys. The value of the tacheometer is that at a single observation the elements of height, distance, and azimuth may be obtained. Great rapidity of operation is one of its chief advantages. Mr. Poole gave a description of the instrument, and showed one of Messrs. Troughton and Simm's of improved make. The tacheometer resembles a transit theodolite with a superior telescope fitted with a distance measuring arrangement. It can be used for all purposes for which the theodolite is used, and owing to the sensitiveness of the telescope-bubble and its high-power lenses, can be used with great accuracy for ordinary building operations. The results obtained by the tacheometer when compared with those by the level and chain, leave nothing to be desired. Thus, the author says, two points were found by careful chaining and levelling to be 1666·2ft. apart, and 66·31ft. different in reduced level; by the tacheometer the distance was found to be 1665·4, and 56·23ft., and the difference of reduced levels between the two methods was 1 in 829, which is small. For use in topographical work this instrument has been found to be very reliable. Only one attendant to hold the staff is required for small areas. From the Report of the United States Lake Survey the error of closure of 141 lines on an average of 1½ miles in length, was found, compared with the distances found by triangulation, to have a mean result of 1 in 650. The length of sight between stations averaged 800ft. to 1,000ft. The official limit of closure was 1 in 300. Those interested in surveying will find much useful data and information in Mr. Poole's paper, a full report of which is given in the Melbourne *Building and Engineering Journal*.

CHIPS.

An anonymous offer of a gift of land on which to erect a Roman Catholic church, monastery, and school at Hythe, Kent, has been made conditionally upon the erection within the year of one of the buildings.

The annual dinner of the Clerks of Works' Association will be held at the Holborn Restaurant on Monday, Feb. 15th, under the presidency of Mr. Aston Webb.

At the last meeting of the Bournemouth town council 18 tenders were opened for lighting the pier, gardens, and offices with electric light, ranging from £6,302 to £1,438. It was decided to refer them to an expert.

New City and County banking premises are in course of erection at the corner of Park-street and Bond-street, Leeds. Corinthian in character, the works are carried out in Bradford stone for the exterior, the whole of the internal walls of the bank proper being lined with Burmantofts faïence. Messrs. Smith and Tweedale, of South-parade, Leeds, are the architects. Messrs. W. Nicholson and Son, of Hunslet, are the contractors, and the carving is being executed by Mr. Appleyard, of Leeds.

CONTENTS.

The Regulation of Building Heights and Spaces ... 159
Nonconformist Church Building 160
Royal Institute of British Architects 161
Building Stones: their Structure and Origin 162
Saracenic Architecture... 163
The Action of Heat from Open Firegrates, Stoves, and Hot-water Pipes.—III. 165
Prices.—XXIX. 166
Dr. Salviati's Venetian Mosaic 167
The Tacheometer as a Surveying Instrument 167
Our Illustrations 168
The BUILDING NEWS Directory 169
Wayside Notes 189
Fires in Lofty Buildings 190
New Sanitary Regulations 190
Books Received 190
Building Intelligence 191
Competitions 191
Architectural and Archæological Societies 191
Correspondence 192
Intercommunication 192
Legal 193
Legal Intelligence 193
Water Supply and Sanitary Matters 194
Stained Glass 194
Our Office Table 195
Meetings for the Ensuing Week 195
Trade News 195
Tenders 196

ILLUSTRATIONS.

ROYAL ACADEMY CARTOON FROM "ST. AUGUSTINE PREACHING CHRISTIANITY IN ENGLAND."—NOS. XVIII. TO XXIII. CHEAPSIDE.—CONVALESCENT HOME NEAR SWANLEY.—GALILEE, DURHAM CATHEDRAL.—CHURCH DOOR, KILPECK, HEREFORD. — PUBLIC LIBRARY, BERMONDSEY. — NEW BUILDINGS FOR THE YOUNG MEN'S CHRISTIAN ASSOCIATION, CORK.—SCREEN IN DRINKSTONE CHURCH, SUFFOLK.

Our Illustrations.

R.A. CARTOON FROM "ST. AUGUSTINE PREACHING CHRISTIANITY IN ENGLAND."

IN our double number, published on January 1st last, we gave a double-page plate of Mr. P. R. Montford's Royal Academy prize design for the decoration of a public building, the subject of which was "St. Augustine preaching Christianity in England." To-day we have reproduced Mr. Montford's large cartoon, illustrating the same subject in detail. It represents the figure of a deacon standing on the steps of the Cortile of the ruined Roman Palace in the middle picture to the right of the central group in the composition.

BUSINESS PREMISES, CHEAPSIDE.

THESE premises, now in course of erection, have a frontage to Cheapside of 60ft., and a depth of 200ft., and comprise four large warehouses, each having basement and four floors over, with two additional floors to front block, all approached by means of a cul-de-sac roadway, and arranged for letting as separate buildings or in floors. Two stone staircases are provided, with hydraulic passenger and goods lift to each, which are being carried out by Messrs. Richmond and Co. The front block has not been rebuilt, as it was erected by Messrs. Caldecott and Co. about 15 years ago, but has been remodelled internally, and the whole of the front cut down and rebuilt in Portland stone, the carving being executed by Mr. Gilbert Seale. The front to the cul-de-sac is in Portland stone up to first floor, and in white glazed bricks, with Portland stone dressings, above. The works are being carried out by Messrs. W. Brass and Son—Mr. Reynolds being leading foreman—from the designs and under the superintendence of Mr. T. H. Smith, architect, of 17 and 18, Basinghall-street, E.C.

CONVALESCENT HOME NEAR SWANLEY.

THE building was planned for a hilly and broken site, suggestive of a partial basement, which is utilised in the design for the kitchen and servants' offices, entered at a lower level than the remainder of the Home. It was also proposed to adapt some existing buildings at the lower level as larders, stores, &c., connected with the catering department of the institution. One of the conditions imposed on the architects was that the building, while forming a complete whole in the first instance, should be capable of extension for additional accommodation in the future. With this end in view, the dining-hall and servants' departments were designed upon an ample scale to meet the requirements of either scheme, and the contingent increase in accommodation was secured by lengthening the main block of the building in both directions as required. The rooms set apart for the patients of both sexes open upon a long, level plateau on the south-east side of the building, commmanding beautiful views of the adjoining country. The central tower was arranged to contain water tanks for supplying fire-mains and working hydraulic lifts in various parts of the building. The plans were prepared by Messrs. Wood and Ainslie, of 35, New Bond-street, W. The perspective view is reproduced from a drawing hung in the last Royal Academy Exhibition.

THE GALILEE OF DURHAM CATHEDRAL.

WE are indebted to Mr. George Bankart, of Leicester, for these two beautiful photographs which we reproduce to-day among our illustrations. The unique structure in England which goes by the name of "the Galilee" of Durham Cathedral is as well known as the church to which it is attached. The original purpose, however, for which it was erected and used is quite obscure. Mr. Wm. White, F.S.A., read an exhaustive paper on the subject before the R.I.B.A. in March, 1890. He said the several and diverse traditions respecting it were not only at variance with each other, but no one of them accounted for certain architectural features found in it, or for its name. In many instances it had been called the Galilee porch, the Galilee chapel, or the Lady chapel. The prevailing idea was that it had been built for a chapel; but this theory seems untenable. The alleged separation of the Galilee from the church for the first 200 years militated against the idea of its being recognised as a Lady chapel. The word Galilee, which signified "circuit," was originally applied to the circuit of the country around Kadesh Naphtali, occupied chiefly by strangers, and it is thought that the Galilee at Durham took its rise from that association of ideas and circumstances, it being the Court for causes extra-ecclesiastical. Bishop Hugo Pudsey, from the best authorities, built the Galilee as a court external to the Cathedral, though in contiguity to it, to serve not only as his Palatine Court, but also for his regal court of justice, both criminal and civil cases coming before him as Prince Bishop and Chief Justiciary under Richard I. Although there existed in England several so-called Galilee porches, there was but one besides Durham, that at Ely, and Ely had also been the see of the Prince Bishop, who was also Chief Justiciary. In ancient documents the Galilee of Ely was spoken of as "*Curia vocata le Galilee*," which, had it never been used as a court, was, to say the least, rather curious. In several parish churches in England there were western porches, with chambers attached, external to the church, which had by some been called the Galilee. These might have been used as courts, where they were large enough; but in the chamber over the porch at Snettisham Church, Norfolk, a notable example, there is hardly room to stand upright. Others exist at Melton Mowbray, Wigginton, Berks, and Croyland Abbey. The narthex is believed to have been used by penitents. At Cluny and Vézélay it is probable that the 13th century tribune was intended for some such purpose as above indicated at Durham. At the cathedral at Tuam the choir was used as a court or "*curia.*" Worksop Abbey shows on the south side of the choir a Galilee older than that at Durham, and one is believed to have existed at Fountains Abbey.

DOORWAY, KILPECK CHURCH, HEREFORDSHIRE.

THIS beautiful doorway from this interesting little church, situated in the Forest of Haywood, near the Wye, which we illustrate to-day, is a typical specimen of Norman work. The "tree of life" is represented in the tympanum as a highly conventionalised composition of foliage, and there are no human figures introduced. The shafts to the doorway are enriched by large dragons, and the arch is elaborated with the signs of the Zodiac.

PUBLIC LIBRARY, BERMONDSEY.

THE Public Library, Bermondsey, is one of the most complete and best lighted in London. The principal entrance—in the centre of the building—emphasised by an Ionic portico, leads to a spacious hall and staircase, 15ft. wide. On the right is the newspaper reading-room, 41ft. by 33ft., in which, on handsome stands, are provided upwards of 80 English, Scotch, and Irish newspapers. Immediately opposite the entrance is the lending library, 41ft. square, fitted with cases for 20,000 vols. The counter space is nearly 40ft. long. The librarian's room and residence, having private access to lending department, adjoins the main entrance, thus giving complete control of the building. The stone stairs consists of central and return flights, which terminate in the large first-floor landing, paved with marble mosaic. The landing is arcaded at sides, and has large cove with lantern light in centre. The reference library is 41ft. square, with a domical roof in centre, supported by four Corinthian columns. It is well lighted by the clerestory at the base of the dome, also by the windows in the side walls. The reading tables are in the centre; the bookcases are arranged on the alcove plan around the sides. Next the landing is the magazine reading-room, which is 41ft. by 24ft., this department being made a prominent feature. Adjoining is the ladies' reading-room, 20ft. by 16ft., with lavatory accommodation. On this floor is the Commissioners' committee room, 24ft. by 16ft., with separate access from the exterior. The whole of the second floor is exclusively occupied by the librarian's apartments, forming a complete residence, with bath, larders, stores, coal-lift, and every residential convenience. In the basement are provided lavatories, &c., for the general readers, also a large space for additional book-store when required, a bookbinding room, a general store-room, coal-cellar, and heating chamber. There is a side entrance for cases, &c., also special staircase for attendants, with a book-lift, so that every portion of the building can be conveniently reached without entering the principal staircase. The architect is Mr. John Johnson, A.R.I.B.A., 9, Queen Victoria-street, Mansion-house, E.C., whose design was selected out of 57 submitted in public competition. The builders are Messrs. F. and H. F. Higgs, of Loughborough Junction; the quantities were prepared by Mr. H. Lovegrove. The exterior is of Renaissance character, freely treated, executed in Red Elham bricks, with dressings of Monk's Park bathstone. The carving has been carefully executed by Mr. Baird, of Herne-hill, from the architect's designs; the central figures of "Literature and Science" are by Mr. Lawlor. The central turret was introduced to give height and dignity to the front on account of the imposing, massive character of the adjoining town hall.

YOUNG MEN'S CHRISTIAN ASSOCIATION, CORK.

THIS Association has taken the old Baptist Chapel and surrounding ground in Marlborough-street, Cork, and is about to erect a Y.M.C.A., to include all the requirements which young men expect in this civilised age. In addition to the chapel, which will be used as an assembly-hall, there are several reading and class rooms, and also a large gymnasium, dressing-room, bath, and lavatory-room, and abundant sanitary accommodation, and even a photographic-room and cycle stable are included. The arrangements are shown in the accompanying illustrations. The architect is Mr. W. H. Hill, F.R.I.B.A., Cork, and the plans having been adopted are about to be thrown open to competition.

SCREEN IN DRINKSTONE CHURCH, SUFFOLK.

THE drawings which we reproduce obtained a National bronze medal last year. Drinkstone Church is situated about seven miles from Bury St. Edmunds. Although the entire church is architecturally poor, the rood-screen is of a very high class of workmanship. It is of 14th-century date, and has not been restored. The colour on it is original, and the gilding is very thick. It was removed by the present rector from the arch under the tower at the west end to its proper position about twenty-five years ago. Mr. Walter Brand made the drawing.

◆

Dr. Frederick Leighton, father of the President of the Royal Academy, died at his residence, 11, Kensington Park-gardens, on Sunday night. Dr. Leighton, who was for some years in practice as a physician at Scarborough, was ninety-three years of age.

The Congregational Chapel at Sandwick, Shetland Isles, was reopened last week, having been taken over by the Free Church and renovated. A new pulpit and fresh seats have been provided, and the lighting and ventilation improved. Mr. William Thomson, of Hoswick, and Mr. Lawrence Mouat, of Lower Culliston, executed the masonry works, and Mr. Malcolm Duncan the joinery.

THE BUILDING NEWS DIRECTORY.

At the request of many advertisers it has been determined to commence with 1892 the weekly publication of a BUILDING NEWS DIRECTORY, to which Architects may easily refer when in search of the makers and vendors of Architectural and Building Specialities.

The large Advertiser is, of course, to a considerable extent independent of such help. By his judicious iteration of the merits of his specialities he effectually impresses the mind of the constant reader with his claims to attention. But he will find it to his interest to avail himself of our new help to publicity; and besides, there are hundreds of Manufacturers who never advertise in the ordinary way, or who, if they do so, only advertise one or a few of the articles they make and supply, and who yet essentially need *constantly to remind Architects of their existence.*

It may be urged that the Trade Directories and Price Books to a certain degree supply this want; but when it is remembered how limited, comparatively, is their circulation, and how swamped the comparatively few that are wanted are for the most part amongst hundreds of thousands of other names and addresses in which Architects have no interest, and among which they are seldom likely to search for what they require, it will be seen at once how advantageous in a Journal like THE BUILDING NEWS will be the introduction of the feature we contemplate.

We propose, therefore, to devote space *in the body of the paper, immediately preceding and following the Illustrations,* and not among advertisements, or on the inside pages of the outer sheet, to a carefully-arranged *Directory of Makers and Vendors of Architectural Specialities and Builders' Appliances,* under generic and suggestive heads which will naturally suggest themselves to Architects and others in search of Advertisers' addresses.

It will be evident, of course, that many Manufacturers will desire to have more than one entry in the list, because they supply more than one speciality. For the majority possibly one entry will be ample, and that we undertake to make and to repeat weekly in every edition for the sum of ONE POUND PER ANNUM, payable strictly in advance, and expiring on the 31st of December in each year. We cannot undertake to charge for parts of years in connection with this matter, so that entries should at once be forwarded, accompanied by the necessary subscription, that they may appear throughout the whole of 1892.

Clients who may desire to have more than one entry under different heads can do so to any extent they please by payment of *One Pound each* for every additional entry.

All payments *must be made in advance,* as this feature is not introduced as a remunerative one to the Publisher in itself, and the small charge made will barely defray expenses, and will not allow of booking. Name and address must not exceed one line.

The following firms have already entered their names. We cannot keep the list open long, so those desirous of being included should *send in their instructions at once,* as when the allotted space is full no more names will be received this year.

ARCHITECTURAL DESIGNERS—
Finsbury Tracing and Drawing Office, 113, Pavement, E.C.

ARCHITECTURAL PHOTOGRAPHERS—
Bedford, Lemere, and Co., 147, Strand, London, W.C.

ARCHITECTURAL TERRACOTTA—
Gibbs and Canning, Ltd., Tamworth.

ARTISTS IN STAINED GLASS—
Bourne Swaine, 61, King Edward-road, Birmingham.

ASPHALTE—
Avelines Sicilian Asphalte. Joseph Bernays, 96, Newgate-street, E.C.

BATH STONE—
Bath Stone Firms, Limited, Bath.

BLINDS—
Williams, G. A., and Son, Queen's-road, Bayswater.

BOOKS—
B. T. Batsford (Professional), 52, High Holborn, London, W.C.
Whittaker and Co. (Practical and Technical), 2, White Hart-street, Paternoster-square, London, E.C.

BRICKS—
Accrington Brick and Tile Co. (Facing Bricks, Plastic and Semi-Plastic), 8, St. James-street, Accrington.
Gibbs and Canning, Ltd. (White Glazed), Tamworth.
Heather Brick and Terracotta Co, near Ashby-de-la-Zouch.

BRICK AND TILE MACHINERY—
Clayton Howlett Co., Woodfield-road, Harrow-road, W.

BUILDING & QUANTITY SURVEYORS—
Anderson, A. E., 36, Victoria-road, Northampton.
Flew, J., 11, Popplewell Chambers Bradford.

BUILDING COMPOSITION—
White, W., Great Western Works, Abergavenny.

CASEMENTS AND WINDOWS—
Burt and Potts, 38 and 65, York-street, Westminster, S W.
Wragge, Geo. (Wrought Iron, Steel, and Gunmetal), Wardry Works, Chapel-street, Salford.

CEMENT MANUFACTURERS—
Rugby Portland Cement Co., Rugby.

CEILING DECORATIONS—
Heaton, J. Aldam, 26, Charlotte-street, Bedford-square, W.C.

CONCRETE—
Fambrini and Daniels, Excelsior Art Concrete Works, Lincoln.

CURTAIN BLINDS—
Heaton, J. Aldam, 26, Charlotte-street, Bedford-square, W.C.

DECORATORS—
Campbell, Smith, and Co., 75 and 78, Newman-street, London, W.
Lamb, J. (Specialist), 14, Marlbro'-road, Turnham Green.

DEVONSHIRE MARBLE—
Goad, J. and E., Phœnix Steam Marble Works, Plymouth. (See Brompton Oratory.)

ELECTRIC BELLS—
Gray, J. W., and Son, 113, Leadenhall-street, E.C.
Teale and Somers, Electricians, Leeds.
Wright, Archibald J., 7, Beaumont-road, Hornsey-rise, London, N.

ELECTRIC LIGHT APPLIANCES—
Macfarlane, Walter, and Co., Saracen Foundry, Glasgow.

FANLIGHT OPENERS—
Osborn, David, High-street, Berkhamsted.

FIBROUS PLASTER—
Plastic Decoration and Papier Mache Co., ltd, 21, Wellington-street, Strand, London, W.C.

FIREPLACES—
Edwards, F, and Son, 54, Great Marlborough-street, W. (see advt. p. V.)
Teale Fireplace Co. (Teale and Somers), Leeds.

FIREPROOF FLOORS—
Lindsay Neal, W. H., and Co., 15, North Wharf, Paddington.
Phœnix Fireproof Flooring Co., 9, Oxford-street, Manchester.

FIREWOOD SPLITTING & BUNDLING MACHINERY—
Glover, M., and Co., Patentees and Saw Mill Engineers, Leeds.

FURNITURE—
Foster and Cooper, 63, Long-row West, Nottingham.

GASFITTERS—
Beaven and Sons, 38, Eastgate-street, Gloucester.

GRANITE MERCHANTS—
Webb, Percy C., 41, Eastcheap, London, E.C.

GRATES—
Edwards, F., and Son, 54, Great Marlborough-street, W. (see advt. p. V.)

HEATING APPARATUS—
Boyd, Jas, and Sons, Paisley.
Edwards, F, and Son, 54, Great Marlborough-street, W. (see advt. p. V.)
Grundy, J, 30, Duncan-terrace, City-road, London, N.
Teale Fireplace Co. (Teale and Somers), Leeds.

HORTICULTURAL BUILDINGS—
Boyd, Jas., and Sons, Paisley.
Gloucester Railway and Carriage and Wagon Co., Gloucester.
Macfarlane, Walter, and Co., Saracen Foundry, Glasgow.

HYDRAULIC RAMS—
Blake, John, Oxford-street Works, Accrington, Lancashire.

INTERIOR WOODWORK—
Foster and Cooper, 63, Long-row, Nottingham.

IRON AND STEEL GIRDERS—
Walmsley, B, 15, Mawdsley-street, Bolton.

IRONFOUNDERS—
Hayward Bros. and Eckstein, 187, 189, 191, and 193, Union-street, Borough, London, S.E. (see advt. on p. III.)

JOINERY—
Brock, W., and Sons (and Woodwork of all Descriptions), Albert-road, Bristol.
Elliott, Saml, Albert Joinery Mills, Newbury.
Gloucester Railway and Carriage and Wagon Co., Gloucester.

JOINER'S OILSTONES—
Whittle Hill Hone Co., Charley Forest, near Loughboro'.

LIGHTNING CONDUCTORS—
Gray, J. W., and Son, 113, Leadenhall-street, E.C.
Morris & Gold, Wardrobe Chambers, Queen Victoria-st., E.C.
Teale and Somers, Leeds.

LIFTS AND CRANES—
Waygood, R, and Co., Falmouth-road, Gt. Dover-street, S.E.

LIME BURNERS—
Rugby Portland Cement Co., Rugby.

LOCKS—
Colledge and Bridgen, Wolverhampton.

MARBLE WORKERS—
Emley and Sons, ltd., Marble Works, Newcastle-on-Tyne.
Patteson, J. and H., 36 and 38, Oxford-street, Manchester.

MOSAIC WORKERS—
Patteson, J. and H., 36 and 38, Oxford-street, Manchester.

PAINTS—
Torbay and Dart Paint Co, ltd., Dartmouth.

PAPERHANGINGS—
Land, J. and H., 93, Cannon-street, E.C.

PASSENGER LIFTS—
Waygood, R., and Co., Falmouth-road, Gt. Dover-street, S.E.

PAVEMENT LIGHTS—
Hayward Bros. and Eckstein, 187, 189, 191, and 193, Union-street, Borough, London, S.E. (see advt. on p. III)

PAVEMENT ROLLERS—
Gilchrist, Alex., 25, Eglinton-street, Glasgow.

PERSPECTIVES—
Finsbury Tracing and Drawing Office, 113, Pavement, E.C.

PHOTO-LITHOGRAPHY—
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Gibbs and Canning, Ltd. (Glazed Stoneware), Tamworth.

PLATE GLASS—
Newton, John M. (Bevelled and Silvered), 21, Charles-street, Hatton-garden, W.C.

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RAIN WATER SEPARATORS—
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SANITARY APPLIANCES—
Gibbs and Canning, Ltd, Tamworth.
Macfarlane, Walter, and Co, Saracen Foundry, Glasgow.

SANITARY ENGINEERS—
Sanitary and Domestic Engineering Co., Principal: Irwin C. Wallas, The Sanitary Works, Kilburn, N.W.

SCULPTORS—
Read, Herbert (and Church Fitting Maker), St. Sidwell's Art Works, Exeter.
Roddis, J. (and Church Fittings), Aston-road North, Birmingham.

SINKS—
Gibbs and Canning, Ltd. (Cane-colour Glazed), Tamworth.

SLATES—
Tilberthwaite (Westmoreland) Green Slate Co., Kendal.

SPEAKING TUBES—
Gray, J. W., and Son, 113, Leadenhall-street, E.C.

SPECIAL ENGINEERING BRICKS—
Accrington Brick and Tile Co., 8, St. James-street, Accrington.

STAINED-GLASS—
Adam, Stephen, and Co. (formerly Adam and Small), Glasgow.
Camm, T. W., High-street, Smethwick, Birmingham.
Worrall, W, and Co, 75, Endell-street, London, W.C.

STAIRCASES—
Hayward Bros. and Eckstein, 187, 189, 191, and 193, Union-street, Borough, London, S.E. (see advt. on p. III.)

STABLE FITTINGS—
Hayward Bros. and Eckstein, 187, 189, 191, and 193, Union-street, Borough, London, S.E (see advt. on p. III.)
Macfarlane, Walter, and Co., Saracen Foundry, Glasgow.

STEEPLE JACKS—
Morris & Gold, Wardrobe Chambers, Queen Victoria-st., E.C.

STONE—
Thompson's Ancaster Quarries Co, Ltd. (Ancaster), 11, Elmer-street, Grantham.
Fielding, J. (Alton Stone, Red, White, and Mottled), Alton, Staffordshire.

STONE WORKING MACHINERY—
Powis Bale, M., and Co., Appold-street, London, E.C.

STOVES—
Edwards, F., and Son, 54, Great Marlborough-street, W. (see advt. p. V.)
Teale Fireplace Co. (Teale and Somers), Leeds.

TELEPHONES—
Gray, J. W., and Son, 113, Leadenhall-street, E.C.
Teale and Somers, Leeds.

TERRA-COTTA—
Accrington Brick and Tile Co. (and Ornamental Brickwork) 8, St. James-street, Accrington.
Pulham, J., and Son, 50, Finsbury-square, and Broxbourne, Herts.
Thompson, Jabez, Northwich, Cheshire.

TILES—
Carter and Co. (Encaustic, Mosaic, and Faience), Poole, Dorset.

TRACINGS—
Finsbury Drawing and Photo-Copying Office, 113, Pavement, E.C.
Marshfield and Co. (Photo-copied), 5, Little Queen-street, Westminster, S.W.

VENETIAN MOSAICS—
Dr. Salviati, 213, Regent-street, London, W.

VENTILATION—
Acme Ventilating and Heating Co., Liverpool and London.
Blackman Ventilating Co., Ltd., 63, Fore-street, London, E.C.
Buchan, W. P., R.P., S.E., 21, Renfrew-street, Glasgow.
Gibbs, John, and Son, 27, South John-street, Liverpool.
Hayward Bros. and Eckstein, 187, 189, 191, and 193, Union-street, Borough, London, S.E. (see advt. on page III)
Howorth, Jas, and Co, Victoria Works, Farnworth, Bolton.
Teale Fireplace Co. (Teale and Somers), Leeds.

WATER CLOSETS—
Bostel and Son, 73, Ebury-street, S.W.

WIREWORK—
Clark, John, 25, 46, & 47, High-street, New Oxford-street, W.C

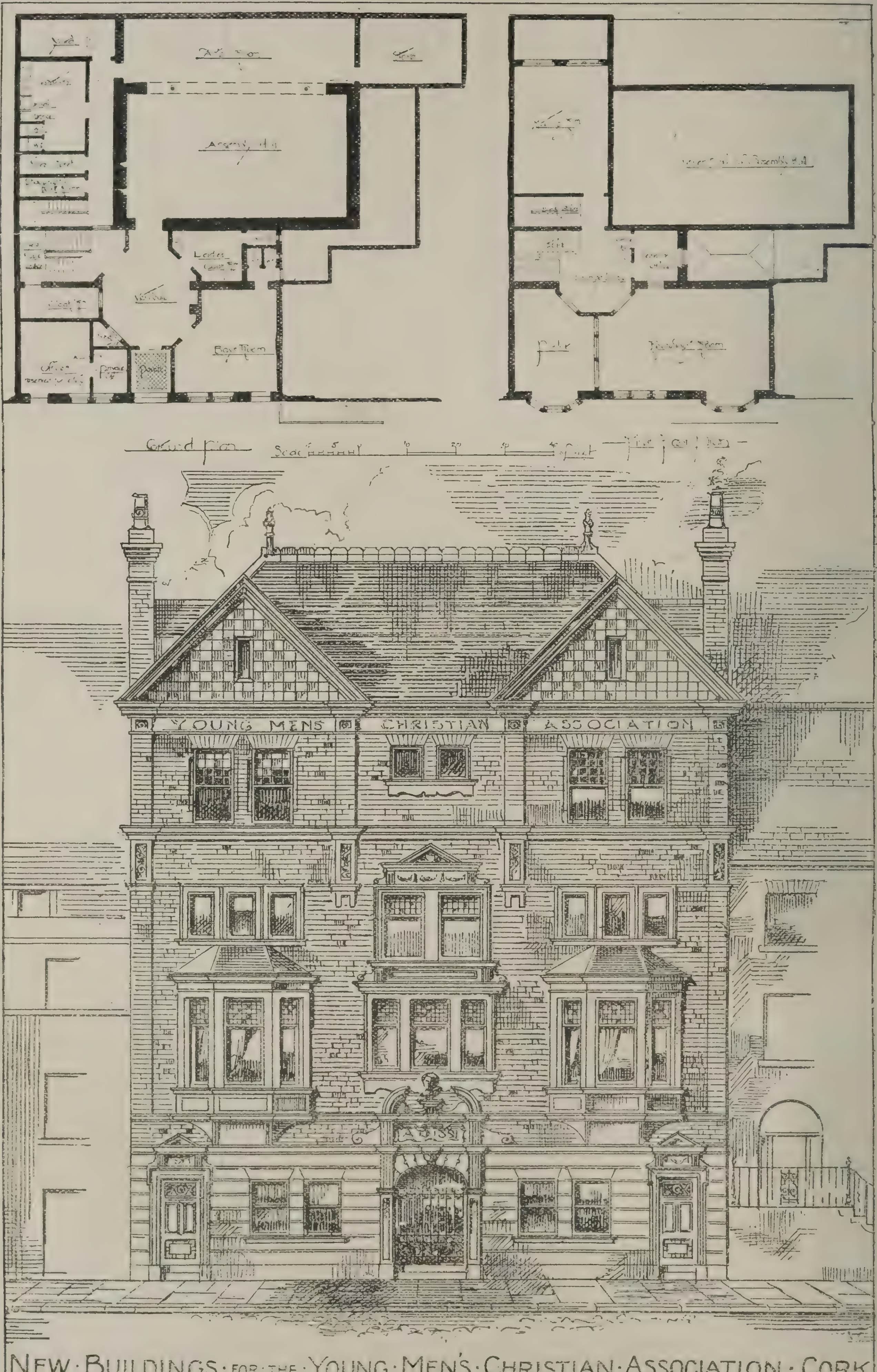
WOOD BLOCK FLOORING—
Gregory, T., and Co., Station Works, Clapham Junction, S.W.
Lowe, Roger L., Worsley-road, Farnworth, Bolton.
Midland Flooring Co, St. Mark's-road, Wolverhampton.

WOOD CHIMNEY PIECES—
Foster and Cooper, 63, Long-row, Nottingham.

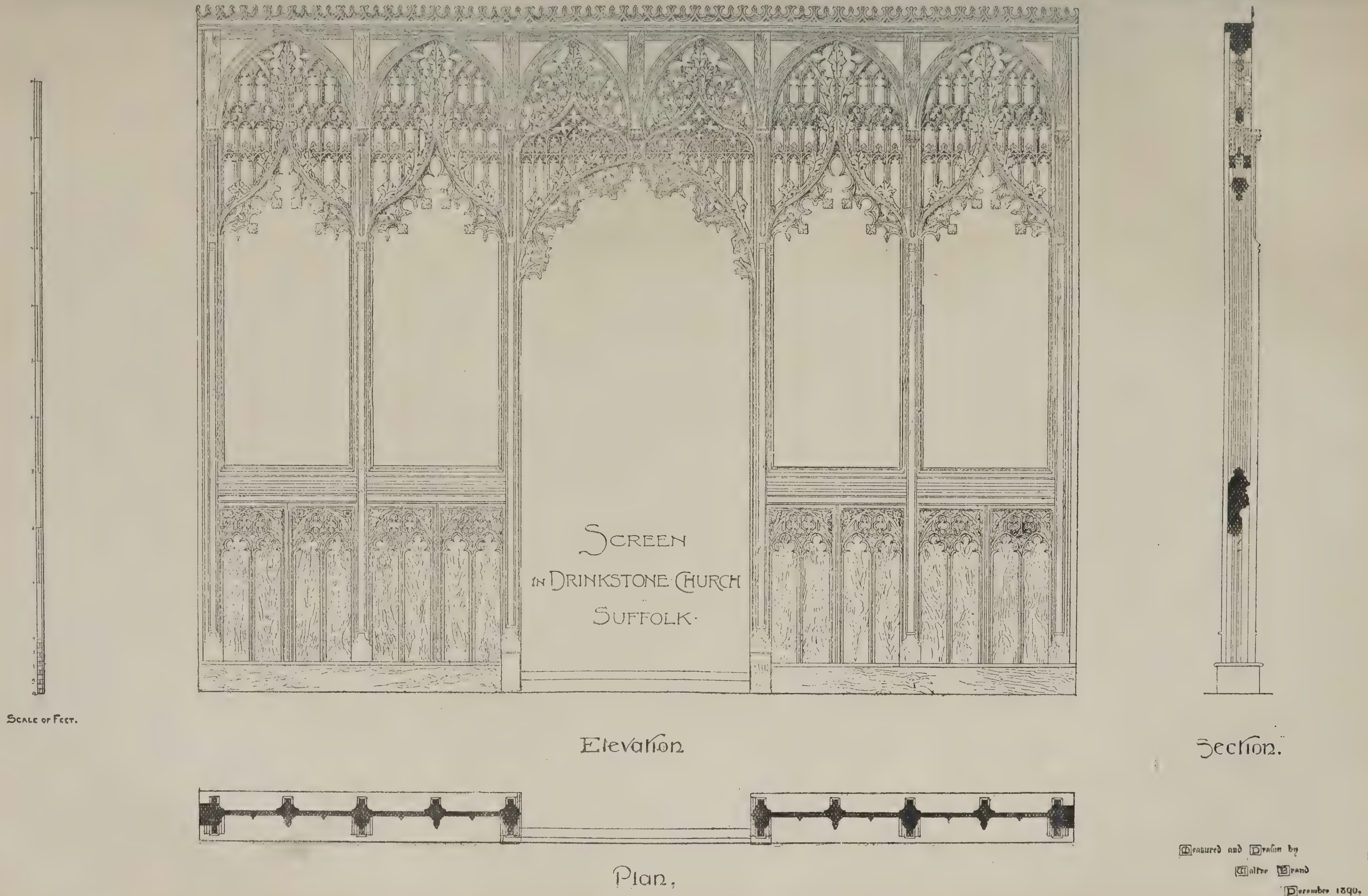
WOOD-WORKING MACHINERY—
Butler, Sydney, Park Works, Langley-lane, Vauxhall, S.W.
Reynolds, F. W., and Co., Acorn Works, Edward-street Blackfriars-road, S.E.

WROUGHT-IRON GATES, GRILLES, &c.
Teale and Somers, Leeds.
Worrall (Specialist), Byrom-street, Liverpool.

ZINC WORKERS—
Thomerson, Chas., 263 and 265, Hackney-road, N.E.



NEW · BUILDINGS · FOR THE · YOUNG · MEN'S · CHRISTIAN · ASSOCIATION · CORK
W · H · HILL · ARCHITECT · CORK ·



SCREEN IN DRINKSTONE CHURCH SUFFOLK.

Measured and Drawn by
Walter Brand
December 1890.

WAYSIDE NOTES.

MR. MACVICAR ANDERSON well sustained the reputation he has earned as President of the Institute for upholding architecture in a practical common-sense light, when, on Monday evening, he addressed the assembly of students at Conduit-street. This is no small gain at a time like the present, when argument and discussion cause so many to take extreme views, either as apostles of the hyper-artistic, or of the commonplace and matter-of-fact. Mr. Anderson's exhortation to the study of planning should be taken to heart by the student, especially such as are likely in the remote future to blossom into competing architects. Time was when elevation and perspective won the prize nine cases out of ten, and the days are yet evil; but the more general appointment of competent assessors has altered the old aspect of affairs considerably, a good plan now frequently carrying all before it. As hinted in the Presidential address, the planner's work is of itself very fascinating, and when the early difficulties of the tyro, and the drudgeries of student days are overcome, planning is its own reward to anyone of the true mould of an architect. Many will confirm the truth of this.

In the last number of the *Board of Trade's Journal* is published a report of the British Consul at Chicago, with respect to the excessive height to which buildings in that city are carried, and from this one may gather that even in America they are pretty sick of the "sky-scraper." It is instructive to learn from this report that the fire insurance people in Chicago do not consider buildings of iron, or steel and concrete, properly fireproof, even when the constructive metal-work is covered with casings of terracotta and like material; and an increased danger in case of fire arises in connection with tall buildings. They are out of reach of the fireman's hose, and, if the fire originates in the upper story, our consular report says that the firemen have to wait till the fire burns down low enough to be within reach of the jet of water! It is stated that these "sky-scrapers" of Chicago run from ten to twenty stories in height, and the highest attains an altitude of 275ft.! The suggestions made regarding the future prevention of this ridiculously tall building are that in streets under 66ft. wide, the height of the building should not exceed once-and-a-half times the width, and that buildings in streets over this width should be limited to a height of 120ft. to the highest part of the roof. It will thus be seen that the people, or a certain section of the people, of Chicago, are willing to tolerate a greater altitude in buildings than we are in this country, in spite of such vulgar intruders into the architectural company as the buildings at Westminster and at the end of Sloane-street.

The Rochester Cathedral restorationists contemplate, I believe, a thorough "restoring-back" to a certain date. If this be really so, the old building may be regarded as destroyed in such portions as are affected by the schemes. I like the weather-beaten old west front as it stands. Judging by the view of this elevation in Dugdale's "Monasticon," the effect of the two flanking towers carried up to above the height of the present turrets, and crowned respectively with octagonal and sprocketed roofs or spires, is not to be coveted, the towers being out of all harmonious relation to the central mass, and crowded too close to it. The old central spire at the crossing of the cathedral, shown in Ireland's "Picturesque Views of the Medway," is altogether a modest affair, and wholly unsuggestive of the pretentious and lofty feature of whose contemplated erection we have heard so much.

All architects should have more than a superficial knowledge of geology, either with reference to materials or sites. Professor Lobley's paper, read before the Society of Architects on Tuesday, dealt with the former aspect of geology with regard to the works of an architect. I fancy that if architects possessed themselves with a real fund of sound information in the matter of building stones, that they would be less timid in adventuring any new material put before them, providing, of course, that from their knowledge of geology and geological principles the stone seemed to recommend itself. In this matter, architects are very shy and conservative, but such an attitude must rise, in great measure, from ignorance. New stones are brought before our notice, and, not having the knowledge that gives confidence, and a power of discerning good from evil, we do not avail ourselves of the opportunities afforded. Papers such as Professor Lobley's should therefore be immensely useful in this way.

A correspondent of the *Standard* thinks that the makers of the proposed new turret-clock for St. Paul's Cathedral will have all their work cut out in beating the Westminster Clock, the time-keeping qualities of which, he says, "are as near perfection as we can ever hope to attain in a turret clock, and are certainly far in excess of the practical needs of the public." The clock is in electrical communication with Greenwich, and it is stated that during a year's continual observation—with the exception of fourteen days, when the signals failed—the error of the clock was insensible on 42 per cent. of the days of observation. It amounted to one second on 29 per cent., to two seconds on 22 per cent., and to four seconds on 2 per cent.; for confirmation of which see the *Horological Journal* for July, 1891. This is surely a wonderful clock, and hard to beat. The correspondent omits to explain the cause of the slight variations of the clock; but I believe that pressure of the wind on the large hand has much to do with this. Moreover, a clock mounted high in a tower, however solidly built, must be more or less affected by vibrations. Putting the Westminster clock in the most favourable position for record-breaking "going," it should give some very extraordinary results indeed.

The advocates of the proposed new street between Holborn and the Strand by way of Clare-market are not letting matters slide for want of a little ventilation of the subject, as witness the recent meeting at the Holborn Town-hall. The object of the meeting was to urge the matter upon the County Council, and put forward the advantages of the route by way of Vernon-place, Bloomsbury, Kingsgate-street, Holborn, Lincoln's Inn-fields, and Clare-market, as against the County Council's scheme for a route by way of Little Queen-street. The respective costs of the two rates are estimated at £600,000 for the one advocated by the meeting, and £933,000 for the County Council's route. Putting aside cost, it has always appeared to me that the proper place for this new street is through Clare Market, and that one well-planned thoroughfare will suffice. Branches to the Law Courts and Waterloo Bridge have been proposed, but the necessity of such additional works does not appear to be evident, whilst Wellington-street and the thoroughfares north of it, and Chancery-lane and Gray's Inn-road, exist. If London is made all street, where are the houses going to stand?

I see from the report of the half-yearly general meeting of the G.E.R. that the company are about to lay out £30,000 in the erection of cottages for their men. It being important that the men should be near their work, the company propose to erect these cottages all over their system. The cost is estimated at £225 single and £450 double. This is a good work among many others of the Great Eastern Railway Company. As regards the extensive building operations that have followed the demolition of the Paul Pindar block of houses in Bishopsgate-street, the Company have for some time had a new arrival platform open, and the statement made at the meeting was to the effect that two new lines with an island platform would be ready by July for passenger traffic during the summer months.

If there is one thing at which I look with doubt and misgiving it is a bundle of statistics. The noble science of mathematics may be made, to the eyes of the superficial, to prove so many lies to be truth that one gets unusually cautious where figures are brought in support of suppositions. Nevertheless, it may be that reliance is to be placed on the statistics lately furnished by a correspondent of the *Standard* with regard to the exceptional healthiness of Folkestone. Folkestone has come out very very advantageously in regard to death-rate of late; but then the influenza epidemic has been so erratic in its choice of places for extraordinary ravages, that ordinary averaged death-rates at different places seem to be upset. Thus Brighton is an exceptionally healthy place, by common consent, with a low death-rate; yet the last few weeks have put it near the head of the lists—at the wrong end. Speaking from practical knowledge of Folkestone, and ignoring statistics, be they good or bad, I should readily admit that it is an extremely healthy and invigorating seaside resort, and not only healthy, but pleasant. There should, however, be no need to extol the virtues of a town so well known and much visited in the holiday season. Folkestone has been—judging as an outsider—uniformly prosperous and flourishing for many year past, and should prosper in the future without the help of statistics, which are always more or less misleading, and never reveal the whole truth. GOTH.

CHIPS.

Work was commenced last week at Castleton, near Rochdale, in getting out the foundations for new machine works. Mr. T. Taylor is the contractor.

It has been decided to isolate completely La Sainte Chapelle, Paris, from the Palais de Justice and other buildings.

The guardians of Toxteth Union, near Liverpool, at their meeting on Thursday, the 21st inst., decided, after prolonged and adjourned discussion, to erect a new workhouse infirmary, in accordance with plans prepared by Messrs. C. O. Ellison and Son, MM.S.A., of Liverpool. The estimated cost is £35,000, exclusive of painting and furnishing.

The late Mr. Magniac having left no will, the administrators of his estate will be compelled to dispose of the famous "Colworth collection." The sale will probably take place in June, at Messrs. Christie's.

A statue of Martin Luther is to be erected in Berlin. The city authorities and the Emperor have each given £2,250 towards the cost.

At a meeting of the council of the Royal Society of Painter-Etchers, held last Friday, Professor Hubert Herkomer, R.A., was elected to the vacant Fellowship; and Charles Bird, and W. T. B. Roberts, late Master of the Winchester School of Art, were elected Associates of the Society.

The vicar of Carnarvon has decided upon having the ancient parish church of Llanbeblig thoroughly restored. The whole church will be reseated and warmed, some of the galleries will be taken down, a new organ-chamber built, and a new organ purchased of Messrs. Halmshaw, of Birmingham. A font for immersion will be placed in the baptistery. A stained-glass window will also be placed in the old sacred edifice. The graveyard will also undergo improvements. The plans and specifications for the works have been prepared by Mr. R. G. Thomas, architect, of Menai Bridge.

The City Court of Common Council have resolved to place a stained-glass window in the Guildhall as a memorial of the late Duke of Clarence.

Messrs. William Godwin and Son, of the Lugwardine Tile Works, Withington, Hereford, have received the following communication from London:—"We much regret that, owing to the death of H.R.H. the Duke of Clarence, the tiles intended for his establishment, and which are on order with you, will not now be required. If you can stop them, or any part of them, we shall be obliged."

The fourteenth annual meeting of members of the Royal Scottish Society of Painters in Water-Colours was held on Friday in Edinburgh. The president, Mr. Francis Powell, occupied the chair. The balance-sheet for the past year showed an income of £302 17s., and an expenditure of £343 17s., the balance at the credit of capital account being £815 18s. 2½d. The following elections took place:—President, Francis Powell, R.W.S.; vice-president, William M'Taggart, R.S.A.; treasurer, A. K. Brown; auditors, William Young and John Smart, R S.A.; secretary, J. Wright Robb.

A two-light window has been inserted in the north aisle of Holy Trinity Church, Weston-super-Mare. It is composed of fragments of ancient painted glass of the 13th, 14th, and 15th centuries. Each light is divided into three compartments, the lowest containing the glass of the 13th century, the middle compartment that of the 14th century, and the upper compartment that of the 15th century. The whole has been arranged and releaded by Mr. Bell, of College-green, Bristol.

FIRES IN LOFTY BUILDINGS.

THE British Consul at Chicago has reported on the attempts being made to limit the heights of buildings there. The Chicago Fire Underwriters' Association, which includes all American and foreign insurance companies, with one exception, of importance in the city, has for some time had under deliberation the advisability of limiting the heights of the tall buildings which have lately been constructed in Chicago, and has adopted a resolution that all office buildings of non-combustible construction should be limited in height to not more than one-and-a-half times the width of the street upon which they are constructed, and on streets of more than 66ft. in width the height should be limited to 120ft. from the street to the highest point of the roof; also that all buildings of other than fireproof construction should be limited in height to 85ft. from the street to the highest point of the roof. The Consul adds that although these lofty buildings have been considered absolutely fireproof and solid, being constructed of steel columns, girders, and joists, with a facing of brick or hollow tile, their safety, in the opinion of the Fire Department, cannot be relied upon in case of fire, for no effective stream of water can be thrown to such a height. If a fire breaks out in the upper part of a tall building, the firemen must wait till the fire reaches a level to which the water can be thrown. For this, and other reasons, such as the dangerous expansion of iron and steel under intense heat, and the possible fall of the upper stories through the lower, the Department regards these buildings as dangerous, more particularly when used for store or mercantile purposes. The municipal authorities have also taken into consideration the question of these tall buildings for this and other reasons, such as the health of the city and the congestion of the streets, likely to result from accumulation of business in a limited area; but at present there does not appear to be any law which can be put in force to restrict them, except on the grounds of safety or health. These buildings are from ten to twenty stories in height, and the loftiest are 275ft. high.

NEW SANITARY REGULATIONS.

BUILDERS of small, as well as large, houses will now have to be very careful about their sanitary provisions. Unhappily for the public health, these matters have been shelved; there has been no law in London to compel the provision of certain offices. Now the operation of the Public Health (London) Act, 1891, which came into force at the beginning of this year, will give power to the London County Council to enforce many things which were left to the option of the builder or owner. The sanitary authority, under the 40th section, may make an examination of any house or building within their district, to find out the course of a drain, or to examine any closet, ashpit, water supply, trap, &c., and for this purpose they can, at all reasonable times by day, after 24 hours' notice to the occupier, enter on any premises and cause the ground to be opened in any place. Under the Metropolis Management Act, sect. 82, which this new provision reproduces, very little was ever done in this direction; tenants suffered in silence, or only complained of any nuisance or bad drainage to their landlords, who took their own view, and did as little as possible. We may now expect quite a revolution; owners and tenants are already busy in rectifying defects in the sanitary fittings and drainage of properties; traps and ventilators are being introduced, and new apparatus substituted. We may anticipate that the effect of these provisions will be to increase the cost of building—certainly to prevent the construction of imperfect drainage and the supply of inferior appliances and fittings. In this manner the plumbing trade will derive advantage, because unskilled labour will be abolished, and only competent hands be employed. By section 39, the County Council can make by-laws with respect to all sanitary fittings and conveniences, such as water-closets, ashpits, cesspools, receptacles for refuse, and the accessories thereof in connection with buildings constructed before or after the passing of the Act. The water supply of every house is one of the things which will be enforced by the sanitary authority, who have power to observe and enforce all by-laws.

Another provision will affect factories and workshops. Those erected before or after the passing of the Act are to be "provided with sufficient and suitable accommodation in the way of sanitary conveniences, regard being had to the number of persons employed in or in attendance at such building, and also where persons of both sexes are employed or in attendance, with proper separate accommodation for persons of each sex." This enactment will very materially affect the larger buildings in London which are occupied as factories and workshops, and we believe that the sanitary authorities are busy in putting the law into operation. The sanitary conveniences of many workshops in the Metropolis are disgracefully inadequate, or are allowed to get into such a state as to be practically unusable. In carrying out this section of the Act, sanitary authorities and architects engaged in carrying out new buildings will do wisely to adopt a more durable and cleanly form of latrine than has been used, such, for example, as the stoneware patent trough, in which kind of closet there is nothing to corrode or get out of order. These are made with partitions. An impetus will, no doubt, be given to manufactures which combine the utmost simplicity of action with durability and cleanliness. We have described and illustrated many excellent forms of sanitary fittings suitable for buildings of this class. Not only newly erected houses will be brought under the control of these sections of the Act, but all buildings that are about being rebuilt or have been pulled down to the ground-floor level. Schools as well as factories and workshops will be subject to these new regulations, which are of the greatest importance to all owners and occupiers.

BOOKS RECEIVED.

Transactions, R.I.B.A., Vol. VII. new series, is on our desk—an interesting volume containing a few good papers. Those on "Decorative Plaster Work," by E. E. Prior, M.A.; "Stucco Duro," by Mr. G. T. Robinson, F.S.A.; "A Ceiling in Gesso and Plaster," by Mr. Walter Crane, and the papers on "Sgraffito," by Mr. Heywood Sumner, are of interest. Other useful papers are those on painting, contributed to by Mr. J. M. Brydon, Mr. W. B. Richmond, A.R.A., Mr. N. H. T. Westlake, F.S.A. The illustrations comprise some interesting examples of decorative plaster-work from Toledo, Seville, illustrating the School of Bramante, and of wrought ironwork, by Mr. J. Starkie Gardner. An excellent portrait of the past president, Mr. Alfred Waterhouse, R.A., forms the frontispiece. —— *The Maintenanee of Macadamised Roads*, by Thomas Codrington, M.Inst.C.E., F.G.S., &c.; second edition, revised and enlarged (London: E. and F. N. Spon), is a new and revised edition of a book which every surveyor ought to possess. In consequence of the abolition of turnpike trusts some alteration was necessary, and the author has taken advantage of this to add new matter. The construction of roads; materials of various kinds, road coating and wear, measurement of traffic and wear, spreading materials, drainage, sweeping, and scraping, repairs, manual labour, and the proportion of expenditure on materials and labour, cost of maintenance, surveyors' duties and management, are subjects that are fully discussed. Mr. Codrington is a practical road surveyor, and his remarks and suggestions are worth consideration. ——*The Carpenters' and Builders' Complete Companion.* (London: Kegan Paul, Trench, Trübner, and Co., Limited; and New York.)—This is a large quarto volume, including treatises on the slide rule, construction of staircases and handrails, carpentry, painting, paper hanging, plastering, a system of estimating, &c., of more service to builders and carpenters in the United States than to English tradesmen.——*An Account of the Discovery of the Remains of Three Apses at Oxford Cathedral*, by James Park Harrison, M.A., Christchurch (London: Henry Frowde, Amen Corner), is an interesting description of the discovery of early apsal remains at the east end of Oxford Cathedral, first communicated to the Royal Archæological Institute. Mr. Harrison's little *brochure* is written to confirm the conclusions then made, which had been attacked by an antiquary. We think the author has made out a good case, and we commend his arguments and plans to the attention of antiquaries. The structural evidence relating to the buttress which masks the centre doorway and the arch in Lady-chapel appears overwhelming.——*Electric-Light Cables, and the Distribution of Electricity.* By Stuart A. Russell, Assoc.M.Inst.C.E. (London: Whittaker and Co.; George Bell and Co.)—Mr. Stuart A. Russell's volume makes a useful addition to the specialist's series. The author's work is mainly devoted to a description of the different systems of distribution and types of cable, in which he attempts to point out the durability of the insulating materials employed, and the relative advantages of different substances. From a careful examination of these conditions, the author gives the preference to copper, to soft copper if the conductor is not subjected to tensile strain, and to hard, drawn copper, or the best conducting quality of silicon bronze, if it is suspended overhead. In the last case the greatest conductivity and strength per unit of length is what is required. It must be remembered that electrical energy is converted into heat which is wasted, besides being detrimental to the insulating covering, and in some cases fusing the conductor. The resistance is accompanied by a fall of pressure, and therefore it is necessary to reduce the expenditure of energy as much as possible. The resistance of the conductors varies with the material, and is proportional to quotient of length by the sectional area. Cost is important also. These data are summarised in a table, and the author proceeds to discuss the conditions of economy in working, moderate rise of temperature, and moderate force of pressure. Each system of distribution is considered separately. The systems known as the "series system," "parallel system," combinations of these, "three wire," multiple wire systems, &c., are described, and the arrangements and grouping of lamps illustrated by diagrams. The forms of conductors and joints, insulating materials, indiarubber, guttapercha, Bitite, fibrous insulators, lead, &c., are explained. The author considers the objections to overhead lines, which are worth attention, and the construction of conduits for underground lines, which are of various materials. The volume will be found a useful textbook for the electrical engineer and managers of companies. ——*The Art and Craft of Cabinet Making*, by David Denning (London: Whittaker and Co.), is a practical handbook to the construction of cabinet furniture for amateurs and young cabinet-makers, and from a general glance over the various chapters, which treat of forms and uses of tools, the development of furniture, woods, glue, and screws, and the appliances, joints, and details, we think Mr. Denning's little book will be a welcome guide to all amateurs and apprentices. Veneering and brass work are specially treated, and the examples of construction given of various sideboards and cabinets, fancy tables, writing-table, bedroom furniture, wardrobes, washstands, pedestal cupboards, &c., are practical and useful. Every operation, the joints used, tenons, dowel-joints, rabbets, bevelled edge panels, stop chamfering, stopped beading, flutes, mouldings, &c., are separately explained and illustrated by clear diagrams. The remarks about sham "antique" furniture and the mistaken ideas prevalent of style are well worth perusal by all furniture buyers, who are often misled in thinking articles they have bought are Tudor, Stuart, Georgian, or Chippendale, when they are mere imitations, or pieces of furniture with features and peculiarities which are characteristic of a much later age.

Sir John Gorst opened on Tuesday the Conservative Club at St. Helen's, Lancs, which has been altered and redecorated at a cost of £2,000. Messrs. Waizbohm and Sons were the chief contractors, and the decorations were executed by Mr. R. McNelly.

The students from Wellington College will reassemble next week temporarily in various hotels at Malvern. Meantime active steps are being taken to carry out the whole of the recommendations of Dr. Bristowe and Mr. Rogers Field. These include the reconstruction of the gasfittings, the drains, and surface drainage. It is expected that the work will be completed before the commencement of the summer term.

William Foggin, builder, of Newcastle-on-Tyne, died on Wednesday week, aged 69 years. He carried out much of the Roman Catholic building work in the city and district. He built the Catholic Church of St. Andrew's, in Worswick-street, and also the Catholic schools at the Manors, the convent schools at Villa-place, the Presbytery at St. Mary's Cathedral, the Freemasons' Hall in Maple-street, the Catholic church dedicated to Our Lady and St. Oswin, at Tynemouth, opened about a couple of years ago, and a number of other public buildings in Newcastle and the district.

Building Intelligence.

Birmingham.—The new branch free library in Saltley-road is approaching completion. It is the largest branch yet built in the city, and is placed at the corner of Lingard-street and Saltley-road. The entrance is at the corner, and it gives access through a vestibule to the principal room, which extends the full length of the very narrow site. This single room, 82ft. long by 32ft. wide, is to be a lending library, a reference library, and a reading-room in one. The shorter frontage masks the librarian's room and a suite of cloak-rooms and lavatories. The large room has a coved roof of open timberwork, 19ft. from floor-line to springing. The floor is a noiseless one of wooden blocks laid upon concrete. It is lighted on one side by eight large three-light mullioned windows, and the opposite wall is broken up into arcades corresponding to the windows. The books of the lending library will be stored in open oak "presses" within the arcades. There is space here and in the librarian's private room for 10,320 volumes. A counter 58ft. long runs down the right-hand side of the hall in front of the presses. Externally over the vestibule there is a clock tower 10ft. square, with spire 72ft. in height—*i.e.*, 32ft. above the roof ridge; the clock has four dials. The walls are of Ruabon brick and terracotta, and the style is English Renaissance. A frieze and tympani over the windows and arcades are occupied by terracotta panels, modelled by Mr. B. Creswick, teacher of design at the Municipal School of Art. The design of the frieze is a conventionalised ornament suggested by the giant parsnip, and these contain sixteen figures illustrating the principal avocations pursued in the city. The tympani contain other subjects. The building has cost £4,000, and has been built by Messrs. W. and J. Welsh, from designs by Messrs. Cossins and Peacock.

Rearsby.—The parish church was reopened by the Bishop of Peterborough, Dr. Creighton, on Thursday, the 21st inst., after restoration carried out from plans by Messrs. R. J. and J. Goodacre. In 1860 the north wall of the church was rebuilt, new pews and a new pulpit put in, and an organ added, the amount then expended being exactly the same as now, namely, £1,400. In the present restoration the clerestory walls have had to be taken down, and on the north side the arcade and the piers have also been rebuilt from the foundation, the old masonry being again used. The nave is now covered in by a new oak roof resembling the one removed, and has a leaden surface. The chancel has been rebuilt, as have also the west wall of the north aisle, and a portion of the north wall. The aisle floors have been relaid with tiles by Messrs. E. Smith and Co., Coalville, and the pews have been restored and refixed with new oak kerbs and boarded floors. Mr. H. Cockram acted as clerk of the works, Mr. S. Cotton, of Rearsby, was the general contractor.

Westcombe Park.—On Saturday last the new church of St. George, Westcombe Park, was consecrated. The church is in the Early French style, and when completed with chancel, tower, and spire, will cost £10,000. The interior and exterior are faced with red bricks, relieved by Bath-stone dressings and strings, and the roof open-timbered. The floors are fireproof, and covered with wood block flooring. The church has been carried out from the designs of Messrs. Newman and Newman, F.R.I.B.A., architects, of 31, Tooley-street, and built by Messrs. Balaam Bros., of Shenton-street, Old Kent-road.

* * *

COMPETITIONS.

Blaina.—In the competition for the Blaina Reading Institute, the plans sent in by Mr. F. R. Bates, of Leicester-road, Newport, Mon., have been selected, and he has been appointed to carry out the work.

* * *

Alterations have been made to the offices of the London and Midland Bank, Cornhill, embracing the ventilation, which is now carried out on the Boyle system, the latest improved form of the patent self-acting air-pump ventilator being adopted for the extraction of the vitiated air, and fresh air admitted by their improved air inlets.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

The Society of Architects.—A meeting of this society was held on Tuesday evening at St. James's Hall, Piccadilly, Mr. E. Tidman, F.S.I., treasurer, in the chair. Mr. William Howard Smith, city architect of Carlisle, was elected as a member. A paper on "Building Stones: their Structure and Origin" was read by Prof. J. Logan Lobley, F.G.S., of Liverpool, and is fully reported on p. 162. The lecture was illustrated by a "geological clock" (as the author termed a chronological table of sedimentary strata), and by numerous lantern views. At the close a hearty vote of thanks was accorded the lecturer, on the motion of Dr. C. Collingwood, seconded by Mr. F. J. Lewis.

Birmingham Architectural Association.—On January 19th a paper, entitled "Four Suffolk Churches," was read before the above society by Mr. Paul Waterhouse, A.R.I.B.A. The churches dealt with by the lecturer were those of Southwold, Blythborough, Covehithe, and Walberswick, of which the two latter are for the greater part in ruins. After apologising for bringing before his audience the architecture of so distant a part of England, Mr. Waterhouse proceeded to give an account of the churches in question, detailing something of their history, characteristics, and present state, and dwelling on the marked peculiarities which emphasise the church work of the particular period and locality represented by them. The lecture was illustrated by photographs and by sketches, mostly the work of the author, though some were by Mrs. Paul Waterhouse. In explanation of the building methods of the early 15th century, quotations were made from Gardner's "Dunwich" (a rare antiquarian work published in 1735), which preserved among other miscellaneous information on the buildings of the neighbourhood, a verbatim copy of the contract for building Walberswick Church, bearing date "the fourthe yeare of King Henry the Sexte." The lecturer pointed out as two prominent features of the procedure of the time, the absence of an architect and the explicit directions that the various details of the design were to be imitated from such points as were most admired in the then existing churches of the neighbourhood. Mr. Waterhouse dwelt on the terrible architectural results of the Cromwellian Iconoclastic fury, which was particularly savage in the eastern counties, and concluded his admirable paper with an imaginary picture of the glories which must have existed before the destruction of those days. In proposing a vote of thanks to Mr. Waterhouse for his able paper, Mr. W. H. Bidlake said that the country in which the churches described lay was one which, from its historic associations, and from the fact that it is a country which has, from being the seat of a wealthy commerce, become the scene of agricultural pursuits, appeals strongly to the imagination. The severe outlines of the churches of the eastern counties appeared to him particularly impressive, standing as they do, in the wide, flat lands of the district; and the churches have a great apparent stability, notwithstanding the weakness caused in appearance by the almost continuous clerestory windows. The vote of thanks was seconded by Mr. Doubleday, and supported by Mr. F. Barry Peacock (vice-president), Mr. W. Hawley Lloyd, and others, and was unanimously passed.

Leicester Master Builders' Association.—The first annual meeting of the members of this association was held at the Bull's Head Hotel, on Wednesday week. The president (Mr. D. Garrett) occupied the chair. The annual report stated the committee's opinion that, after conference with the trade societies, a fairly sound and workable code of rules had been made in all the branches, and they hoped that all alike will do their best to loyally carry them out. They had been now in use about nine months, and several other matters of great importance have been dealt with by the committee, such as the responsibilities of builders, who, although insured, were still liable to actions at common law, and the question of retendering for work after estimates are apparently accepted—both of which questions have been satisfactorily settled. The alterations to the existing forms of contract between architects and builders have not yet been finally agreed upon. The form of contract for sub-contractors issued by the committee is being generally adopted. Mr. Starkey moved, and Mr. Riddett seconded, the adoption of the report, which was agreed to. On the motion of Mr. Clarke, seconded by Mr. Tyers, the balance-sheet was adopted. Mr. D. Garrett was re-elected as president, Mr. G. Hewitt was reappointed as vice-president, Mr. F. Major was re-elected treasurer, and Mr. W. Yates was again appointed secretary. The following were appointed the committee for the ensuing year:—Messrs. H. Bland, A. Chambers, H. Herbert, J. O. Jewsbury, J. E. Johnson, J. H. Kellett, E. B. Pipes, G. Hardington, and J. Riddett.

Northern Architectural Association Students' Sketching Club.—The second annual social gathering and exhibition of sketches of the above club was held on Monday evening last, when 80 or 90 members and friends accepted the club's invitation. The exhibition included the work done by members at the fortnightly excursions, and Mr. C. Spooner kindly lent his Royal Academy Studentship drawings, which were greatly admired by those present. The president, Mr. W. S. Hicks, in opening the proceedings, congratulated the members on their work during the past year, which compliment was seconded in some remarks by Mr. Arch. Dunn. A programme of vocal and instrumental music was given by the members and their friends, including Mr. Arch. Dunn, jr., Mr. J. H. Beere, Mr. W. E. Fenwicke, Mr. B. Mulcaster, Mr. J. Cresswell, Mr. H. Oswald, Mr. Roland Rich, Capt. Macdonald, Mr. E. Connell, Mr. Fred Ridley, and C. S. Errington. Messrs. R. B. Dick and J. W. Boyd proposed votes of thanks to the artistes and the president for their services, the latter of whom received musical honours, and a most successful gathering was brought to a close by the singing of the National Anthem.

Nottingham Master Builders' Association.—The annual meeting of the Nottingham Master Builders' Association was held on Friday at the Mechanics' Institute, Mr. J. W. Woodsend presiding. After the general business had been disposed of and the officers elected for the ensuing year, notices from the bricklayers' and labourers' societies asking for an advance of wages and code of working rules were read and discussed. It was the unanimous opinion of the members that the present state of the building trade in Nottingham did not justify any advance on the present rate of wages.

Royal Cambrian Academy.—The annual general meeting of this academy was held on Saturday at Plas Mawr, Conway, Mr. Clarence Whaite, R.W.S., occupying the chair. The report showed that the academy had made great progress during the year, and that its financial position is satisfactory. Mr. Whaite was re-elected president, Mr. Edwin. A. Norbury vice-president, and Mr. W. L. Banks treasurer and secretary. Joseph Knight, R.I., was elected a full member, and the following were also elected to full membership from the list of associates:—Benjamin Fowler, B. Fisher, and J. Clinton Jones. The following were elected associates from a long list of candidates:—Arthur Baker, F.R.I.B.A. (the honorary architect of the academy), Robert Fowler, R.I., Harold Swanwick, and Chisolm Cole. The exhibition will open on the 6th of June and close on the 29th of October, and, so far, promises to be the most successful yet held in the Principality.

* * *

Under the will of Mr. John James Lowndes, late of 2, Chelsea-embankment, who died on the 2nd ult., a chalk drawing, by Dante Gabriel Rosetti, entitled "Triplex Rosa," has been bequeathed to the trustees of the National Gallery, and an onyx vase in a gilt silver setting, and a piece of old Italian needlework, set in a black frame, to the South Kensington Museum.

A new Wesleyan church, which has been erected at Swinton at a cost of nearly £7,000, will have its doors formally opened on Thursday by the Mayor of Salford. The building consists of a nave, chancel, choir vestry, minister's vestry, and morning chapel, the whole being crowned by a spire 120ft. high. The structure is Gothic in style, from the designs of Messrs. W. Waddington and Son, Burnley, the builders being Messrs. R. Rawlinson and Son, Swinton. This is the third chapel which has been erected on the present site.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

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ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front Page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No front page or paragraph Advertisement inserted for less than 5s.

SITUATIONS.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is ONE SHILLING for TWENTY-FOUR WORDS, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., L., LI., LIII., LIV., LVIII., LIX., and LX. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

RECEIVED.—J. F. M.—C. S. and Co.—M. S. B.—Clyto.—E. and F. T. Co.—J. L. R. (Guildford).

"BUILDING NEWS" DESIGNING CLUB.

FOURTH LIST OF SUBJECTS.

D.—A dining-room chiffonier and chair in mahogany, suitable for an architect's house. The sideboard to be 5ft. long, and not more than 2ft. in the deepest part of the piece, which is to be 6ft. high. The lower part is to provide spacious cupboards for decanters, glass, &c In the centre of the main body, below the sideboard level, a good deep drawer is to be arranged, suitable for accommodating a tablecloth, &c. In the upper part accommodation is to be contrived for the display of small works of art in glazed cupboards. The style to be left to the competitor. Scale, 1in. to the foot. Plans of lower and upper part, two elevations, a section, and sketch.

Or E.—A pair of labourers' cottages, suitable for an exposed mountain district in a stone country. Each house to contain a porch, living room, 14ft. by 12ft., scullery about 10ft. by 12ft., pantry, woodhouse or wash-house, with copper in it, a coal-place, ash-place, and w.c. Upstairs, one large and two small bedrooms. Site is situated on the side of a hill, with a fall of 1 in 10. Walls stone, roof covered with stone slab slates. Convenience, economy, and picturesqueness to be considered. Scale, 6ft. to the inch. Two plans, three elevations, section, and sketch.

DRAWINGS OF HALL RECEIVED.—"Graham," "Pastime," "Peterborough," "Sanitas," "Sphinx," "Old Postage-Stamp," "Jamrach," "Symbol," "Sector." "Nil Nisi Bonum," "Vulcan," "Ich Dien," "La Cigale," "Excelsior," "Amor Patriæ."

Correspondence.

"ARCHITECTURE: AN ART, A SCIENCE, A PROFESSION, OR——?"

To the Editor of the BUILDING NEWS.

SIR,—The accompanying advertisement shows, at any rate, in what light the Wesleyan community at Blaina, Monmouthshire (and possibly their brethren throughout South Wales also), regard the profession of architecture!

TO ARCHITECTS.—Competitive Plans and Specifications required (free of charge) for New Wesleyan Chapel and Schools at Blaina, Mon. Sittings about 700; cost not to exceed £2,000. The Building Committee to select the design most suitable for the purpose, and the successful competitor to give his personal supervision in carrying out the work, on the usual trade terms. For further particulars apply to the Rev. Joseph Wells, Blaina, Mon. Plans to be delivered by February 2nd.

Here is a chance which no architect who looks upon himself as a tradesman should miss.—I am, &c.,

F. BALDWIN,
Hon. Sec. Cardiff Architects' Society.

Cardiff, Jan. 25.

RE LONDON SCHOOL BOARD v. JOHNSON.

SIR,—You doubtless have watched with great interest the progress of the above case, and, with many others, are pleased at the result.

A large number of persons are desirous of presenting Mr. Johnson with some public recognition of the courageous stand he has made against a great public body who have had at their command (and have used it) the purse of the ratepayers of London to persecute him with.

Mr. Johnson has greatly suffered in mind, as well as in bodily health, throughout the trying ordeal he has had to so cruelly undergo.

It will be remembered that the work which was in question had been completed for five years, and it speaks highly of Mr. Johnson's honesty of purpose that after the exhaustive inquiry of 24 days before the arbitrator he should be able to arrive at a decision which enabled the learned judge to give a verdict so satisfactory to the defendant. Yet, although the decision was so favourable to Mr. Johnson, he will unfortunately be the loser of a large sum of money by these unjustifiable proceedings, and having known him for a period of nearly twenty years as an upright man, I, at the request of numerous friends, have undertaken to obtain subscriptions on behalf of the above, and venture to ask the favour of your kind co-operation in this desirable object.—I am, &c.,

WILLIAM F. PENFOLD.

Auction and Estate Agency Office, High-street,
Upper Tooting, S.W., Jan 18.

P.S.—Cheques should be crossed "Johnson Fund, London and Westminster Bank, Southwark."

CHIPS.

Saturday in next week, the 6th of February, has been appointed for the private view of the Spring Exhibition of the 19th Century Art Society, at the Conduit-street Galleries.

A meeting was held in the Council-chamber of the Worcester Guildhall on Friday night, under the auspices of the Worcestershire Diocesan Architectural and Archæological Society, to consider the practibility of compiling a new history of Worcestershire. It was unanimously decided to proceed, and a committee was appointed, with Sir E. Lechmere as president.

A bust of the late Rev. Henry White, of the Savoy, will shortly be placed in the City Art Gallery at the Guildhall. The sculptor is Mr. J. R. Essex, Devonshire-street, Portman-square, and the original model of the bust appeared in the Royal Academy Exhibition last year.

A London correspondent states that Mr. Alfred Waterhouse, R.A., has lately received £40,000 under his brother's will, and Val Prinsep, A.R.A., who married the daughter of the late Mr. F. Leyland, has come into a third share of a million of money, left to Mrs. Val Prinsep by her father.

The public offices, Colwyn Bay, are being warmed and ventilated by means of Shorland's Patent Manchester Grates, the same being supplied by Mr. E. H. Shorland, of Manchester.

In our description of Ralston House, Bromley, Kent, which appeared in our issue of the 15th inst., p. 90, it was stated that on the first floor were "dining-room and ball-room." This should have read "dressing-room and bath-room."

The Local Government Board has just issued three sets of model by-laws, to be adopted by sanitary authorities in the Metropolis, under the Public Health (London) Act, 1891. One series requires every cistern used to contain drinking-water to be emptied and cleansed every six months. Another requires water-closets to be properly supplied with water for flushing; and the third deals with the prevention of nuisances arising from offensive matters and from the keeping of animals.

By invitation of the Mayor of Luton the members of the corporation, together with the various officials, assembled in the council chamber on Wednesday week, to spend a social evening and to take leave of the borough engineer and surveyor, Mr. E. J. Lovegrove, who is on the point of leaving the town to take a similar post at Richmond. Mr. Lovegrove was presented with an address illuminated on vellum, framed and glazed.

Intercommunication.

QUESTIONS.

[10708.]—**Architect-Appraiser.**—I should be glad to know whether it is necessary for an architect to take out an appraiser's license (value £2) before he can make valuations of property? There seems to be some doubt on this question, and I should like to have the matter cleared up.—M. SEANOR.

REPLIES.

[10695.]—**Bricks and Brick Making Machines.**—There are plenty of hand-presses still in use in terracotta works for moulding bricks of an ornamental character. I append a list of makers of terracotta and brick machinery for use of "Currie":—W. Johnson, Awley-road, Leeds; P. Bowden, Notting Hill, London; Clayton, Howlett, and Venables, Harrow-road, London; John Whitehead and Co., Preston, Lancashire; Gill, Pullham, and Tuke, Leeds; Rowlands Bros., Bletchley; Messrs. Edge and Sons, Shifnal; W. H. Hughes and Co., Ruabon; Worten Bros., Coalville; Renshaw, Manchester.—F. W.

[10697.]—**Keeping Surface-Water out of Cesspool.**—Your brickwork, even if good, is a half-brick too thin, and your puddle evidently bad. If you can reduce your tank's capacity, I advise knocking off the cement, and lining it with "hygeian rock"—to do which, after coating the bottom, build a 4½in. brick and cement wall to sustain the composition vertically (the patentee will instruct you), and if the cavity is kept clean and well filled, the remedy is certain. Should your cesspool be covered, with only a manhole, the fumes will be unbearable; then well rough the cemented surface, and use at least 1¼in. of cement and clean sand, in equal proportions, instead of the rock. I have used both.—A. C. B.

[10700.]—**Traps.**—I sympathise with "G. B." in his reply on page 155, that a larger size of drain-trap than 4in. is advisable on a drain from water closets. I would prefer either 5in. or—where it is wished to have a small surface of water on the house side or well of the trap—a 6in. trap, with the surface of the water in the well about 4¾in. diameter. This style is largely used by the Sanitary Protection Association of Edinburgh. I omitted to mention in my reply on page 155 that in some cases the cause of a trap not working freely might be that the drain-pipe beyond the trap, if air-tight, was air-locked for want of ventilation or some means for allowing escape of air out of the drain-pipe. This implies either that the mouth or outlet end of the pipe is below the water, or that an unknown trap exists beyond the known one, &c.—W. P. BUCHAN.

[10700.]—**Traps.**—You say, "Although the closet flushes 4 gallons at a time, the force of the water when it reaches the trap is not sufficient to clear the paper and soil out." You may apply an immediate remedy by sending for a "Quick-Motion Trap" (6in.) from the works of Messrs. Wm. Ingham and Sons, of Wortley, near Leeds, the makers of these traps. All drain traps with round tops have the same defect as is mentioned in the question.—Q. M.

[10702.]—**Bookkeeping.**—I have a good and simple system for contractors and builders, worked sheets of which I can supply. If "Pictor" will write to me, I think a modification of or the same system would suit.—F. J. W., Eastbourne House, Argyle-street, Ryde, I.W.

[10703.]—**Deal Floors on Concrete.**—I laid some flooring in this manner five years ago. The coke-breeze concrete (2in. thick) on 4in. of ordinary Portland-cement concrete, was left for a month to get thoroughly dry before the floor-boards were nailed down. I saw this flooring about a month ago; it has stood perfectly, and is as solid to walk upon as on the day it was laid. The boards were not, and ought not to be, tongued.—C. F. M.

[10703.]—**Deal Floors on Concrete.**—I have practised this system these eight or ten years, and it answers well. The boards are liable to "cockle," and certain to quickly decay, if the concrete beneath is not perfectly dry. The plan I find answer best is to put in the usual 3in. or 4in. in thickness or more of concrete, as may be required, as early as possible, to give time for drying. There is no harm done by walking or working upon the concrete, if of good quality, when it has quite consolidated. When dry, lay 1¼in. or 1½in. in thickness of coke-breeze concrete, or in place of coke, crushed soft-brick rubbish, if free from mortar and screened through a ½in. sieve, does equally as well. Float the same to a true and smooth surface, and allow it to remain a month, if possible, before nailing the boards thereto, to insure the concrete not retaining any moisture; ¾in. flooring cut down the middle, to make 3½in. by ⅝in. about, and not tongued, which I consider harmful, is the kind of covering board I like, and 2in. cut floor brads I find the best to retain a firm hold of the concrete. The success of a floor of this kind depends largely upon the concrete retaining no moisture at the time the boards are laid. One caution is necessary, not to cover the floor with linoleum, kamptulicon, or canvas; the atmosphere being excluded on both sides, dry-rot is almost certain to result.—THOMAS POTTER, Alresford, Hants.

[10705.]—**Ventilation of Stables.**—I should admit the fresh air 2ft. 6in. above top of manger and 5ft. from floor on the other side of stable. It is not necessary to take the air-inlet grating near to ground. An elbow, as shown at C in your correspondent's sketch, is quite sufficient.—C. F. M.

[10707.]—**Fan-Vaulting in Brick.**—"Bricky" can see an example of modern fan-vaulting in brick in the subway connecting the Crystal Palace with the Crystal Palace Railway Station, Sydenham. Its cost of execution would depend very much upon the quantity to be done. So little of this kind of work is done, that it would be difficult to value it beforehand. Surveyors and estimaters generally undervalue such work. We should be inclined to say, as a safe price, from 5s. to 6s. a foot super., cut and set, including bricks.—F. W.

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Cardinal Manning has bequeathed a portrait of his father to the National Portrait Gallery.

Legal.

OWNERS AND DRAINS.

DRAINS in old houses especially are becoming a very serious subject for the owners of such property. At common law a landlord is safe enough, as he cannot be compelled to do or pay for any repairs or drainage whatever, even though it was required to render the house fit for habitation. Leases generally are so drawn that all this falls upon the lessee. But, even when this is not so, the lessor cannot be made liable except under his express covenant for that purpose. When, therefore, the drains of an ordinary house get out of order it will usually be found that if held under a lease the burden falls on the lessee by reason of his stringent covenant to repair; and, at all events, it will not have to be borne by the owner unless he has expressly agreed to do such work. But, owing to the numerous statutes that have been passed of late years affecting the sanitary state of dwellings from a public point of view, the rights of lessor and lessee no longer depend solely upon the lease; nor are their liabilities entirely governed by the common law. If a sanitary authority has ordered drainage work to be done, then this order will be against the owner; and even though the occupier or tenant does the work, he will be able to recover the cost from his landlord.

This position was well exemplified by what happened in the recent case of "Spencer v. Watson" (reported elsewhere), heard on Jan. 19, in the Marylebone County Court, before Judge Stonor. There the plaintiff, as tenant of a house, found the drains out of order, and called in a builder, who said they must be connected with the main drain; and for this he applied to the Vestry, and on May 4 last year it was done. The builder then went on with the work, and on May 8, at his suggestion, an order was obtained from the Marylebone Vestry calling upon the defendant as owner, under the Metropolis Management Act and the Nuisances Removal Act, 1855, to do all the works in question, including what had been already done. The defendant declined, and said that under his lease the plaintiff should do it; though this was since admitted to be a mistake, as there was no such covenant. The plaintiff now sued for the cost of all the works, two-thirds of which were done before the order of the Vestry. The Judge held that the defendant could not be liable for this earlier work, but decided that he was bound to pay the cost of what had been done by the plaintiff since the date of the order, on the ground that there was a statutory duty cast upon him as owner to do such drainage works; and as the plaintiff had been bound to do it under penalties he could recover the expenses. So the plaintiff gets one-third of his outlay, and would have had it all had he obtained the order from the Vestry before beginning.

Fred Wetherfield, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

Tecton.—Sub-Contract.—Condition.—This is more a question of fact than of law. Unfortunately the subcontract was verbal, so that what was really agreed upon is matter of personal evidence. If the sub-contractor agreed to wait the three months for the 20 per cent. balance, then, of course, he cannot claim payment earlier. But if he denies this, and sues, then the judge or jury must decide.

Ch. H.—Contract.—Schedule of Prices.—In the absence of the schedule of prices, which the contractor should have supplied before beginning the work, but which you cannot now accept as applying to deviations from the contract, you must as architect measure up and value extra works in question according to the prices current at the time it was done, and if the contract is properly drawn, your decision should be final and binding on the contractor, who is himself in default.

M.—Right of Light.—Grant.—By your conveyance of this plot of land, you were, in fact and in law, granted a right of light to the extent you name, and the purchaser of the adjoining land from your vendor bought subject to this reservation. I think you are quite right, and that you would succeed in an action if necessary.

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At the meeting of St. Paul's Ecclesiological Society held on Wednesday evening at St. Paul's Chapter-house, E.C., Mr. J. T. Micklethwaite, F.S.A., read a paper on "The Growth of a Parish Church," illustrated by numerous plans and sections.

LEGAL INTELLIGENCE.

Compensation for Insanitary Property.—An important decision in regard to the principles on which compensation should be awarded for property which has been condemned as insanitary was given by the Queen's Bench Court on Friday, in the case of "Gough v. the Mayor and Corporation of Liverpool." Pursuant to local Acts of 1864 and 1879, a grand jury had condemned certain houses in Liverpool belonging to the plaintiff, and Mr. Hunter Rodwell, Q.C., was appointed arbitrator to fix the amount of compensation. At the first hearing he awarded the plaintiff £300, on the principle that the finding of the grand jury that the dwellings were unfit for human habitation was conclusive and must be taken into consideration, and he, therefore, assessed the damages merely on the value of the site and building materials. Upon a special case, however, stated by the arbitrator, a Divisional Court held that the claimant was entitled to the market value of the property as producing rent, and fixed the compensation at £667. Upon appeal by the corporation, the Court of Appeal agreed that the proper principle was the rent-producing value at the time, but varied the judgment of the Divisional Court by sending the matter back to the arbitrator, on the ground that, as the question had come before them in the form of a special case, the Court had no power to fix the amount of award. At the second hearing the arbitrator, although the surveyor for the corporation fixed the amount, according to the principle laid down, at £667, only awarded £468, and stated no reasons for so doing. Upon appeal, he has been upheld, the Court deciding that though an arbitrator is bound to take the rent-producing value of the property at the time as the basis of his award, he may, if he think fit, deduct from the amount thus arrived at what he considers just on account of the condition, probable duration, and state of repair of the buildings, included in which would be the insanitary nature of the property.

In re J. Trist.—At the Portsmouth Bankruptcy Court on Tuesday week, John Trist, of Chetwynd-road, Southsea, builders' merchant, trading as John Trist and Co., came up for his public examination. The statement of affairs showed liabilities of £1,006 2s. 3d., and a deficiency of £746 19s. 1d. Debtor said he commenced business in 1880, and had previously been a Unitarian minister. He commenced business at Southampton, engaging in the coal trade. He remained in Southampton for seven years. In 1884-5 he had a number of bad debts, and with a desire of doing better he transferred his business to Portsmouth. He had supplied materials to speculative builders (some of whom were now bankrupt), and had taken over and finished some houses at North End. The debtor was allowed to pass.

Employers' Liability.—Brannigan v. Robinson.—Queen's Bench Division, Jan. 20 (before Mr. Justice Lawrance and Mr. Justice Wright).—The plaintiff was a labouring man, and had been in the employment of the defendant, who at the time had in hand the building of a new theatre at Ashton-under-Lyne. As a preliminary operation some buildings which occupied the site had to be removed. While the plaintiff was at work the brickwork of a gable fell upon him and hurt him seriously. He thereupon brought an action in the Ashton County Court for damages under the Employers' Liability Act, and he recovered a verdict of £178. This decision was now appealed against, and it was submitted that the defendant was not liable under that statute. Mr. Justice Lawrance, upon the conclusion of the argument, expressed his opinion that the County Court judge was right. In his judgment a workman was as much entitled to succeed where the negligence was that of the employer himself, as where it was that of a person who was in the service of the employer. Mr. Justice Wright had come to the same conclusion, but with much hesitation and doubt. The statute, in his opinion, applied as much to the insecurity of a wall which was being pulled down as to the insecurity of a wall which was being built up. The appeal was dismissed with costs, but it was intimated that the question involved was one of importance and novelty, and arrangements were made for a further appeal.

Landlords, Tenants, and Drains.—At the Marylebone County Court on Tuesday week, Judge Stonor decided a case which bears upon the liability for the repair or renewal of defective house drains in London. It was an action by Messrs. Spencer, Turner, and Boldero for £38, which they had paid in getting certain works done to the drains of 9, Alpha-road, in compliance with an order of the Marylebone Vestry. The defendant, Mr. Watson, was the landlord of the house, which the plaintiffs held from him under lease. In the spring of 1891 the drains got out of order, and the plaintiffs instructed a builder to examine them and put them in order. The renovation of the drains was carried out by the builder, under the direction, and with the approval, of the vestry. On May 3, the vestry, on the representation of the builder, made an order under the Metropolis Management Act, 1855, on the owner (the defendant, Mr. Watson) to do all the works in question, including that which was already done. The defendant declined to do the work, on the ground that the plaintiffs were bound by their lease to do it themselves. It was now admitted that the lease contained no such provision. The plaintiffs thereupon completed the work, and now sought to recover the amount expended from the defendant, their landlord, it being admitted on their behalf that about two-thirds of the sum claimed was in respect of work done before the date of the order of the vestry. In giving judgment, his Honour said it was quite clear that at common law the defendant was under no liability to repair the drains or to refund to the plaintiffs money expended by them in doing so; and the question was whether the defendant was under any such liability under the Metropolis Management Act of 1855. In any case, under the vestry order he was not liable for work done previous to the notice of the order and his refusal to comply with it. But the judge held that he was liable for the work done subsequently, on the authority of "Castleberg *v.* Kenyon," decided in the Queen's Bench Division in June, 1879. His Honour, therefore, gave judgment for the plaintiffs for one-third of the whole expense of the works, which, by consent, was taken at £12 12s., with costs.

Public Carriageways on New Estates.—The London County Council v. Edmondson and Company.—(Appeal Court, Jan. 26, before Justices Lawrance and Wright).—The question in this appeal was whether the construction placed by Mr. Haden Corser, the police magistrate, upon the 35th section of the London County Council (General Powers) Act of 1890 was correct. The original hearing and decision were reported and commented upon in the Building News for Sept. 18, 1891, p. 391, last vol. The respondents owned an estate at Islington which was being laid out for building. On one side of the estate was Aberdeen-road, and on the other Highbury New Park, both carriageways. There was a narrow way, which ran from one thoroughfare to the other, and the respondents gave notice of their intention to widen this way, and they did widen some 350ft. of it, but there was no evidence that they intended to widen it the whole way, and if this were not done the widened road would not directly communicate with a carriageway at each end. The section said that no road, passage, or way which should not directly communicate at both ends with a public carriageway should be formed into a public carriageway without the consent of the Council, who might impose conditions. The Council objected to what the respondents proposed, and summoned them, but the magistrate said that the Council should show that it was not ultimately intended that the widened way would not communicate at both ends with a public carriageway. This it was submitted to their lordships that the Council were not bound to do. On the other side it was said that the Council sought to impose upon the respondents a condition that they should widen a part of a road which was not upon their own land.—The Court, after a long argument, said that the principal question seemed to be whether the Council had a right to require that there should be a road across from one carriage way to the other, or whether it would be a sufficient compliance with the Act that the road should start from one carriageway and return to another instead of proceeding straight. They thought that this state of things would be a sufficient compliance with the Act. Otherwise, on many estates it would never be possible to make roads without going over other people's property.—The appeal was dismissed with costs.

A Clerk of Works' Action for Libel.—At the Sunbury Petty Sessions on Monday, William Batchelor, of Railway-road, Teddington, was summoned by Thomas Morris, of 4, Vicarage-road, Teddington, for unlawfully and maliciously publishing a certain false, wicked, scandalous, and defamatory libel, on December 3, and he was further summoned for a similar offence on December 16. The proceedings arose out of certain matters connected with the sewerage scheme of the Teddington Local Board. For plaintiff it was stated that Mr. Morris was clerk of the sewerage works at Teddington, and the defendant had formerly been in the employ of the local board, but was discharged. On the 3rd December defendant wrote to Mr. Frampton, the chairman of the local board, the following letter:—"Sir,—Having received certain information concerning the sewerage works which I have every reason to believe, I am advised to lay it before the board. (1) I am informed that since Mr. Acock left the sewage farm, Mr. Morris, clerk of works for the board, has been acting on behalf of the contractors, Mr. King having told the workmen they were to go to Mr. Morris for their orders. (2) That this was with the consent of Mr. York, the board's surveyor. (3) That during the time Mr. Morris has been acting as the clerk of the works for the board, and also on behalf of the contractors, certain parts of the work have been scamped, with his knowledge, and to his orders. Sir, I am able to inform the board of one place in particular where the work has been scamped to a serious extent, which, according to my informant, is sufficient evidence to prove the character of the man they have had to represent them." This was the libel published on Dec. 3. The libel of the 16th of Dec. consisted of a letter published in a local paper, and containing the same charges against the complainant. Mr. Frampton deposed that the defendant called upon him on the 3rd of December, and handed him a letter, which he asked him to lay before the local board. The witness told him he would not do so, as it contained statements of a libellous character, whereupon the defendant said he would bring it before the ratepayers in some other way. Cross-examined: The witness admitted that the local board had been engaged in sewerage operations for some time, and that the scheme had turned out to be unsatisfactory. He would not admit, however, that it had broken down altogether. How do you account for the failure of the drainage scheme in Teddington?—I don't think that has anything to do with me. Have not the sewers been opened by the board?—Yes, to repair leakages. And arising from the contractors' faulty construction?—Yes. And has not the consulting engineer reported to you that the whole of the work of the contractors was perfunctory and incomplete?—He reported that it was incomplete. Defendant was committed for trial on the first charge, bail being allowed, and the second was dismissed.

RUINOUS PREMISES.—At Torquay, on the 4th inst., Colonel A. P. Keating, Teignmouth, was summoned by the Marychurch Local Board for neglecting to comply with a notice from Mr. D. Bowden, surveyor, to take down or secure a building at Barton, which was in a ruinous state and dangerous to passengers and occupiers of neighbouring buildings. Mr. Grant Wollen, who represented the Local Board, said in February, 1890, the surveyor reported that the buildings were in a dangerous condition, and in the following December notice was served on Colonel Keating to take down the house. This, however, was not done, although further letters were written; but in the meantime the Board had a hoarding erected in front of the dangerous building at a cost of £3 12s. 6d.; and he now asked for an order that the building be taken down. The defence was that the property belonged to trustees. The Bench made an order for the payment of £3 12s. 6d., the cost of the hoarding, and 12s. costs, and ordered the dangerous building to be taken down within three days.

COMPENSATION FOR SUBSIDENCE OF A CHAPEL.—Mr. Royle, of Manchester, the arbitrator in the dispute between the trustees of the St. Stephen's Congregational Church, Milnrow, and the Local Board, has just made his award. The trustees claimed £500 for damages done to the chapel by the subsidence of earth consequent on sewerage works on the highway adjoining. The Local Board offered £150, the offer, however, to be withdrawn if not accepted within twenty-four hours. The case came on at Liverpool Assizes, but the hearing was stopped by the judge, Mr. Justice Wright, who suggested a friendly arbitration, Mr. Royle being appointed arbitrator. Having investigated the case and heard witnesses and the speeches of counsel, he now awards the trustees £364 as damages, the board to pay all costs.

EMPLOYERS' LIABILITY.—At the Leicester county court on the 13th inst., George White, labourer, sued Messrs. F. Major and Son, builders, Leicester, for £50 for injuries alleged to have been sustained while in the defendants' employ, and in consequence of negligence on the part of one of the partners of the defendant firm, who was directing the work plaintiff was doing. This action was heard at the December court, but the jury were unable to agree on their verdict, and were discharged. The evidence for plaintiff was that he was engaged with others to pull down a building in Milton-street, Leicester. White noticed that one of the walls was unsafe, and was about to push it down, when Mr. Arthur Major stopped him. The wall afterwards fell on plaintiff, and he was injured. The defence was that Mr. Major did not know the wall was unsafe, that it would not have fallen but for a heavy gust of wind, and, further, that just previous to the accident the plaintiff and two men had been called away to do other work, but that plaintiff did not go. The jury found for the plaintiff, £25, and judgement was entered accordingly.

IN RE JAMES GREENWOOD.—A sitting for public examination was held last week before Mr. Registrar Hope, under the failure of James Greenwood, builder and contractor, 80, Cannon-street, City, and Maltby-street, Bermondsey. The receiving order was made on November 4th last, the liabilities being returned in the statement of affairs at £12,330, of which £5,541 are unsecured, with an estimated suplus in assests of £7,136. The debtor commenced business about 26 years ago in partnership with his father and brother. His father retired from the firm in 1877, and the partnership with his brother was dissolved in September, 1889, and the debtor afterwards traded alone under the style of James Greenwood and Son. At the time of the dissolution he had a large amount of capital, and he attributed his failure to having taken over expensive machinery and premises, and to losses on the trading and on contracts. He stated that he accounted for the latter by having taken contracts at too low a price. The estimates were usually prepared by himself. In some cases he accepted contracts on low terms in order to keep the machinery moving. His loss on the trading was returned at £7,000 during the short space of two years. He was examined with reference to the circumstances attendant on the execution in November, 1889, of a post-nuptial settlement, by which he assigned properties at Sutton and elsewhere to trustees for the benefit of his wife, and stated that he was perfectly solvent at the time. The debtor passed his examination.

ADVERTISING HOARDINGS AND THE BUILDING ACT.—At Bow-street, on Tuesday, before Mr. Vaughan, the Partington Advertising Company appeared to a summons taken out at the instance of the London County Council, for unlawfully erecting a wooden structure, or erection of a removable or temporary character, on a piece of waste ground on the south side of Parliament-street, without the license of the Council under 45 Victoria, sec. 13, cap. 14, and 51 and 52 Victoria, cap. 41. Mr. Lawriston, a surveyor under the London County Council, described the hoarding as being 54ft. long and 18ft. high, and held in position by scaffold poles. Cross-examined, he said that he believed that a hoarding had been up there for several years, but that it was blown down in September last. Mr. Haddon Chambers, for the defence, contended, firstly, that the hoarding had been in existence for several years, and that, according to the Act, notice must have been given within six months of its erection. Mr. Vaughan thought that this was a new hoarding. Mr. Chambers still contended that putting up a hoarding after it had been blown down did not make it a new hoarding. His second point was that the hoarding was on ground specially exempted from the control of the London County Council under the Act. It was ground belonging to the Receiver of Police, an official appointed under the Crown, and was therefore Crown Land, and, as such, exempted from the operation of the Act. Evidence was called in support of this contention. Mr. Vaughan suggested that if the summons were adjourned, the Council would probably make no objection to granting a license for the hoarding. Mr. Burton, on behalf of the County Council, remarked that the hoarding would have to be reduced in height, and that it projected beyond the street frontage. Mr. Chambers thought that to apply for a license would be to make a surrender of his position that on Crown land no license was needed for the hoarding. Mr. Vaughan adjourned the summons.

THEATRES ON PIERS.—The company which owns the pier at Llandudno proposed to construct a theatre at the shore end of the pier, and submitted plans to the Improvement Commissioners, who refused to consider them, on the ground that a structure in such a position would injuriously affect the Promenade. The Pier Company applied for a mandamus against the Commissioners, but on Wednesday Justices Lawrance and Wright held that the company had no power to construct the theatre, and the rule for a mandamus was discharged.

THE ASSAULT ON A SURVEYOR.—THE QUEEN v. JUSTICES OF ESSEX.—(Before Justices Hawkins and Willis.)—On Wednesday a rule was moved for, calling upon the Justices of Essex to show cause why a writ of mandamus should not issue to compel the Justices to hear an appeal on behalf of William Stark, a builder and contractor of East Ham, who had been sentenced to 14 days' imprisonment without the option of a fine, for assaulting Mr. W. H. Savage, the surveyor of the East Ham Local Board. The Court granted a rule nisi.

THE BATTERSEA FIRE.—The adjourned inquiry into the death of the two girls, resulting from a fire at a draper's shop on Battersea Rise, was resumed yesterday (Thursday) before Mr. Braxton Hicks, at the Battersea vestry-hall. Mr. Barnard, the solicitor who is watching the case for Mr. Hardcastle, said the premises had been viewed by two district surveyors, who were prepared to give evidence if required. The coroner said he did not think it would be necessary to call upon them that day, as he was going to take the evidence of the shop-girls as far as possible. Ada Pearce, who was getting the grass from the window in 309 when it caught fire, said she had plenty of time to warn the other employées, and go upstairs and into the other shop, No. 307, before the fire became dangerous. Jane Lock, who lived in the house, said the Sun Insurance Company would not insure her things because of the unprotected state of the lights in the window of the shop. Other witnesses were called, who were in the house at the time of the fire, and the inquest was adjourned until next Thursday.

WATER SUPPLY AND SANITARY MATTERS.

ACCRINGTON.—Colonel Walter Mardon Ducat, R.E., held a Local Government Board inquiry at the town-hall, Accrington, a few days since, concerning the corporation's application to borrow £12,740 for works of sewerage, street improvements, new stables, and public lighting. The plans and estimates were prepared by the borough engineer, Mr. William J. Newton, Assoc.M.I.C.E. There was no opposition. Col. Ducat inspected the districts where the various works are to be carried out, also the new stables and abattoirs, and expresed himself as well pleased with the sanitary arrangement, the planning, and the substantial character of the buildings, and the work throughout.

THE COATHAM WATER SUPPLY.—The award of the arbitrator in the recent case of the Kirkleatham Local Board and the Stockton and Middlesbrough Water Board was received at Middlesbrough on Friday, and fixes the amount to be paid by the local board for mains, pipes, fittings, &c., at £25,424, each party to pay their own costs and half the costs of the award.

CRANLEIGH SEWAGE PURIFICATION.—A Local Government Board inquiry was held on the 14th inst. before Mr. T. Codrington, C.E., to consider the application of the Hambledon Rural Sanitary Authority for a loan to carry out works of sewage disposal for the parish of Cranleigh, the treatment of the sewage on land having proved an expensive failure. Mr. C. Nicholson Lailey, C.E., of 16, Great George-street, Westminster, who had prepared the scheme, explained that the method of disposing of the sewage was that known as the international system, by which the sewage was first treated in tanks and then passed through polarite filter beds, now rapidly coming into general use. There was no opposition to the scheme, which was considered highly satisfactory.

THE ARTESIAN WELL IN THE CITY.—The experiment of sinking the artesian well for the supply of the artisans' dwellings recently built by the City Commissioners of Sewers in the Minories has proved a success. The supply from the well yields 100,000 gallons a day of water, which, according to the analyses of Dr. Sedgwick Saunders, is of the purest quality. Col. William Haywood, the engineer to the Commissioners of Sewers, under whose direction the works have been carried out, has reported that the cost of sinking the well has been £3,500, and the expense of laying the requisite mains and pipes to connect it with the artisans' dwellings will be £1,690. When this has been done, the annual cost of pumping the water will be £140. The cost of the present water supply to the dwellings is £81 per year; but the supply is five times the quantity required for the dwellings, and the surplus 80,000 gallons a day could be utilised. The Commissioners decided on Tuesday to proceed to laying the water on to the dwellings.

THE SHIPLEY LOCAL BOARD AND BACK-TO-BACK HOUSES.—Although the by-laws of the Shipley local board prohibit the erection of back-to-back houses, the clause to that effect has been practically a dead letter, and the type of house has been accepted by the approval of plans in many instances. This fact was especially referred to by representatives of the West Riding County Council at the inquiry into the application by the Shipley and Windhill local boards for the amalgamation of the two districts, and undertakings were given that the practice should be discountenanced. Afterwards plans were submitted to the Shipley local board proposing the erection of blocks of back-to-back houses. One lot were allowed, to complete a row, but the other plans showing two new blocks of four were referred back. These plans were again considered, and then the matter was deferred until the new Shipley local board took office. The result was that, in spite of protests, the plans were approved by a majority. The action has not passed unnoticed by the County Council. The sanitary committee has made a report, and has directed a communication to be addressed to the local board pointing out the illegality of the approval, and threatening that unless the illegal approval is withdrawn the whole matter will be brought before the notice of the Local Government Board.

STAINED GLASS.

KILLINGHALL CHURCH, HARROGATE.—Stained glass has been inserted into two of the south-aisle windows by Mrs. Cautley—one window being in memory of her mother and the other of her late husband, Dr. Cautley. The first window represents the Resurrection and the Ascension of our Lord. The window to the memory of Dr. Cautley illustrates the text, "And they brought unto Him all sick people that were taken with divers diseases, and He healed them," and shows the Saviour employed in healing the sick, the lame, and others. These windows have been designed and executed by Messrs. Powell Bros., of 30, Park-square, Leeds.

Our Office Table.

WE are glad to see that at length the qualities of Mr. Thomas Graham Jackson's work as a draughtsman and architect have been appreciated by the members of the Royal Academy, as testified by his election on Wednesday night as one of the three new associates of that body, and all, however widely many differ from Mr. Jackson's views on architectural examination, federation, and registration, will unite in congratulating him on the tardy honour accorded him. The *Daily News*, in commenting on the elections, falls into an amusing error in classifying the architect of the New Examination School and for most of the modern college work at Oxford, with Messrs. Forbes and Bates as a "very young man." A portrait and biography of Mr. Jackson appeared in our issue of Feb. 7, 1890. The other two fresh A.R.A.'s are Mr. Stanhope A. Forbes, the *genre* painter, whose Salvation Army picture of last year ("Soldiers and Sailors") and his "By Order of the Court," an auction sale in a poorly furnished cottage, were popular features of the last two Academy shows; and Mr. Harry Bates, whose altar-piece for the late J. D. Sedding's church in Sloane-square, figure of "Socrates," and group of "Hounds in Leash," are works of undoubted merit and vigour.

IT is evident that the Glasgow Corporation will have to encounter serious opposition to their Building Regulations Bill next session. The builders object to it; its phraseology has been smartly criticised by local lawyers, and on Wednesday, at a representative meeting of Glasgow merchants and warehouse proprietors, it was unanimously resolved "That the Glasgow Building Regulations Bill is unreasonable in its terms, and is uncalled for in the interests of the community; and that the Bill, if passed into law, would interfere with the due development and proper utilisation of property, and would thereby hamper the conduct of business, and unnecessarily increase the rents of warehouses, shops, and dwellings." A committee was appointed to wait upon the Police Commissioners with a view to inducing them to abandon the Bill, and, failing that, to petition against it. Arrangements were also made for raising funds to oppose the Bill in Parliament.

THE City Council of Glasgow discussed at great length, at their last meeting, the question of appointing a manager for the supervision of the Improvement Trust property. It was stated that the Trust owns 1,000 dwelling-houses, 300 or 400 of which are under £5 a year rent. The Trust possess houses, to speak of which as disgraceful would be quite inadequate. This was attributed by a member to the ignorance of the trustees regarding the condition of their property. The net return from rental is £16,000; but to raise this there is an expenditure of £6,400, or, adding the unlet property, which amounts to £2,132, of £8,500, being more than 50 per cent. of the entire net revenue. It was asserted that the Trust owned property in which it was a wonder human beings could live. On a division, the motion to appoint a manager was carried by 29 to 22.

THE best pavement for city traffic, according to Mr. Samuel, C.E., in an address recently given to the Engineers' Club of Philadelphia, is one with an 18in. concrete foundation, overlaid with a 2in. plank flooring, thoroughly covered with asphalte on both sides, and, on top of these, cedar blocks set on end, with ½in. joints filled with beach pebbles and asphalte. It gives a sure footing for horses, is comparatively noiseless, and easily kept clean, and can be repaired in places without interrupting traffic or breaking up the rest of the street.

M. E. BARTET, a French expert, has just reported as to the best time to cut oak, elm, and beech underwood. When it is done in the middle of March or April, nearly all the shoots of the oak or elm are made before the end of June; but if the cutting is deferred until the end of August it is only in the spring of the following year that these make their first growth. The more the cutting is delayed beyond May, the more the shooting is retarted, and the proportion therefore increased of shoots in the second year. The beech is slower in putting out growth than the oak or the elm, and it is sufficiently early to cut the beech in the middle of August, so as to render them incapable of shooting until the following year. The time of cutting seems to have little effect on the proportion of stumps which put forth shoots, and those which are reduced to sterility obtain their maximum proportions in oaks and beech when cut between May and July. The elm shows the least sterility from cutting, the oak occupying the middle place between the elm and the beech. In the elm, the number of fertile stumps changes very little with the time of cutting; for the oak, August appears the only time unfavourable. The time of cutting does not exercise a marked influence on the average number of shoots from the fertile stumps of oak and elm, but with the beech the differences are very great.

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MEETINGS FOR THE ENSUING WEEK.

SATURDAY (TO-MORROW).—St. Paul's Ecclesiological Society. Annual Meeting, St. Paul's Chapter House. 2.30 p.m.

MONDAY.—Society of Engineers. Westminster Town Hall. 7 p.m.
Surveyors' Institution. Discussion on "The Four Course System." 8 p.m.
Leeds and Yorkshire Architectural Society. "Spanish Architecture," by F. W. Bedford, A.R.I.B.A.

TUESDAY.—Institution of Civil Engineers. "Gold Quartz Reduction," by A. Harper Curtis. 8 p.m.
Glasgow Architectural Association. "The Architecture of the Human Figure," by Francis H. Newbery. 8 p.m.

WEDNESDAY.—Civil and Mechanical Engineers' Society. "Main Drainage Extension in Towns," by J. F. Reade. Westminster Palace Hotel. 7 p.m.
Society of Arts. "Dust, and How to Shut it Out," by T. Pridgin Teale. 8 p.m.
Carpenters' Hall Free Lectures. "Drainage of Buildings and Construction of Sewers," by Professor H. Robinson. 8 p.m.

FRIDAY.—Architectural Association. "Suggestive Domestic Work seen in past A.A. Excursions," with lantern illustrations, by Maurice B. Adams, F.R.I.B.A. 7.30 p.m.
Society of Arts. Howard Lecture No. 1, "The Development and Transmission of Power from Central Stations," by Professor W. Cawthorne Unwin, F.R.S. 8 p.m.
Royal Institution. "Metals at High Temperatures," by Professor Roberts Austen, C.B., F.R.S. 9 p.m.

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Architectural Association, 9, Conduit-street, W.—NOTE.—The date of the Sixth Ordinary General Meeting, given in last week's advertisement, should have been January 29th, instead of February 29th. February 5th, the Seventh Ordinary General Meeting at 7.30 p.m. Paper by Maurice B. Adams, Esq., F.R.I.B.A., on "Suggestive Domestic Work seen on past A.A. Excursions," with lantern illustrations.

SESSION 1892-93.—Students proposing to join the Association with a view to taking up the Courses of Instruction at the beginning of next Session, are reminded that delay will be avoided if their nomination forms are forwarded to the hon. secretaries not later than the end of March. The subscription of an ordinary member elected after the last day of April covers the ensuing Session.

ERNEST S. GALE
F. T. W. GOLDSMITH } Hon. Secs.

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THE EXAMINATIONS OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.—NOTICE IS HEREBY GIVEN that, after the close of the year 1893, all gentlemen who desire to qualify for Candidature as ASSOCIATE of the Royal Institute of British Architects (except in special cases submitted to and approved by the Council) will be required to enter for the PRELIMINARY Examination, and having passed it, work up through the INTERMEDIATE to the FINAL Examination, which in 1894 will take the place of the present "Examination in Architecture." The only examinations to which young Architects who are in practice, and who desire to become Associates without passing the Progressive Examinations, can enter, take place twice in the year 1892 and twice in the year 1893. Those, therefore, who may not be prepared to enter for the "EXAMINATION IN ARCHITECTURE," before the close of 1893, should take immediate steps to secure registration as Probationers, which they can do by passing the Preliminary Examination or obtaining the grant of exemption therefrom.

ASTON WEBB, Hon. Secretary.
WILLIAM H. WHITE, Secretary.

The Royal Institute of British Architects, 9, Conduit-street, Hanover-square, London, W., 25th January, 1892.

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A new wing, which has been added to the North Ormesby Cottage Hospital, Middlesbrough, was opened last week by Viscountess Falkland. On the ground floor of the new building there is a large room for out-patients, with a dispensary, doctor's room, and a dressing-room. The first floor contains the nurses' day and bedrooms and bathrooms. Mr. Thomas Dickson, of Middlesbrough, has executed the work from designs of Mr. J. M. Bottomley, of the same town. The cost has been £2,006.

As the result of a joint meeting of representatives of the Glasgow corporation and of the directors of the Caledonian Railway Company, Mr. W. R. Copeland, deacon-convener of the Trades House of Glasgow, has been appointed arbiter in connection with the Central Railway in room of the late Mr. Galloway.

Trade News.

WAGES MOVEMENTS.

COVENTRY.—At the end of last year the bricklayers, plasterers, and labourers employed in the building trade at Coventry forwarded a three months' notice to the master builders for an increase of wages. Two years ago the wages of bricklayers and plasterers were advanced from 7d. to 7½d. per hour, and they are now asking for 8d., as well as for several alterations in the working rules. In August, 1890, the labourers, who were receiving 4¾d. per hour, came out on strike and asked for 5¼d. This being refused the men returned to work, and were paid at the old rate of 4¾d. per hour until April last, when the masters agreed to increase the rate to 5¼d. The present demand is for another farthing, making the rate 5½d. The masters have held a meeting to consider the demands, and though of opinion that the increase cannot be granted, they stated that they were willing to meet delegates appointed by the men, and if they could not agree they would refer the matter to an independent arbitrator.

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CHIPS.

Mr. Gawthorp, of Long Acre, has just issued a book of designs and examples in wrought metal-work, which will deservedly find a place in architects' offices. Designs are shown for lecterns, oil, gas, candle, and electric-lighting, altar-crosses and lights, alms-dishes, &c., in polished brass, and for chancel screens, gates, railings, font-covers, grilles, signs, fittings for lighting, &c., in hammered iron in all styles.

New R.C. schools in Granville-street, Kilburn, were opened last week. They accommodate 350 children, and have been built at a cost of £2,500, including site, from plans by Mr. E. D. Hansom.

The tenor bell of the cathedral church of Winchester, which was found to be defective, consequent on a crack in its base, has been removed from the belfry by Messrs Mears' men, and has been taken to London to be broken up, the new bell being ready for hanging. The old bell was cast early in the last century by Phelps, who founded the great bell of St. Paul's, and the Messrs. Mears are the descendants of the famous bellfounder, and have cast the new tenor. The old one weighed over 1½ tons.

Mr. Arnold B. Mitchell, A.R.I.B.A., read a paper on "The Vaulted Roofs of the Middle Ages," at the London Institution, Finsbury-circus, on Monday evening last.

The London County Council resolved on Tuesday to invite applications for the post of second officer of the fire brigade, at a salary of £350 a year, rising by £25 a year to £500, with quarters, coal, and gas, the value of which (£100) should be taken into account in calculating pension; and that the limits of age of candidates should be fixed at thirty and forty years. At the same meeting the offices committee reported to the council that they had under consideration three sites, either of which, subject to price, would be suitable for the erection thereon of new offices and a council chamber. Authority was given the committee to enter into negotiations.

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TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

BARNES, SURREY.—For the erection of the new church of St. Michael and All Angels. Mr. C. Innes, architect:—

Balaam Bros. (accepted).

BRISTOL.—For new front and other alterations at Nos. 112 and 114, Victoria-street. Mr. J. H. La Trobe, A.R.I.B.A., architect. Quantities supplied:—

Baston	£215	0	0
Church	210	0	0
Walters	210	0	0
Forse	200	0	0
Hayes	199	0	0
Davis	187	0	0
Cowlin (accepted)	173	0	0

All of Bristol.

BRISTOL.—For fittings for grocer's shop, Clifton. Mr. J. H. La Trobe, A.R.I.B.A., architect:—

Forse (accepted)	£495	0	0

BRISTOL.—For additional works at the city of the central electric-lighting station at Temple Back, for the city council:—

Durnford and Son (accepted)	£6,670	6	6

(The lowest tender received.)

BRISTOL.—For erecting and constructing a 16-chamber brick kiln (Sercombe's patent), with flues and 80ft. chimney shaft, for the Netham Brick and Tile Works Co. Mr. Herbert J. Jones, M.S.A., Bristol, surveyor:—

Krauss, A.	£2,990	0	0
Galbraith, W.	2,768	0	0
Wilkins, G. H.	2,750	0	0
Cowlin and Son	2,743	0	0
Wilkins and Sons	2,645	0	0
Eastabrook and Sons	2,497	0	0
Humphreys, G.	2,374	0	0
Perrott, J. (accepted)	2,346	0	0

All of Bristol.

CHESHAM.—For construction of new road, curbing, channelling, sewering, &c., New Town, Chesham, Bucks, for Mr. D. G. Patterson. Mr. Geo. H. Green, Chesham, surveyor:—

Capper, St. Alban's	£771	0	0
Mead, Chesham	650	0	0
Hill, Maidenhead	597	0	0
Morecroft, Acton (accepted)	570	0	0

GREAT YARMOUTH.—For the erection of grand-stand at recreation ground, for the Great Yarmouth town council. Mr. J. W. Cockrill, A.R.I.B.A., Assoc.Mem.Inst.C.E. Quantities by the borough surveyor:—

Beckett, G., Southtown	£1,237	10	0
Leggett, J.,	1,175	0	0
Rand and Cooper	1,170	0	0
Cork	1,150	0	0
Barnard, M., Southtown	1,098	13	8½
Bray, J. F. W.	1,088	0	0
Bracey, W.	1,056	6	0
Eastoe	1,055	12	5
Beech	1,033	0	0
Stevens, East Grinstead	1,028	0	0
Flaxman	1,024	0	0
Grimble and Watts	1,020	0	0
Bond, A. E. (accepted)	1,015	0	0

Rest of Yarmouth.

LICHFIELD.—For the erection of a new workhouse infirmary, for the board of guardians:—

Low and Son, Burton-on-Trent (accepted), £8,000.

For replacing the brick floor of the workhouse chapel with boards:—

Thornloe, J. (accepted)	£55	0	0

HASTINGS.—For the erection of five blocks of artisans' dwellings in Castle-road. Mr. Mark J. Lansdell, architect:—

Accepted tenders.

Excavations:—			
Davis, G.	£536	5	0
Underpinning:—			
Davis, G.	43	10	0
Patent stone steps, landing, &c.:—			
Elliott and Co.	113	15	0
General buildings:—			
Moon and Garner	4,320	0	0

KINGSTON, HEREFORDSHIRE.—For alterations to the sewage outfall works, for the improvement commissioners:—

Hamer, B.A. (accepted)	£95	10	0

LONDON.—For erecting new sanitary blocks, laying new drains, and supplying new sanitary fittings and other works, at the Orphan Working School, Haverstock-hill, N. Mr. C. Bell, F.R.I.B.A., architect. Mr. E. Tidman, C.E., F.S.I., consulting sanitary engineer:—

	A.	B.	C.	D.
Clarke and Bracey	£2,431	£1,695	£257	£4,383
Holliday and Greenwood.	2,383	1,559	197	4,139
Burford and Sons..	2,446	1,295	145	3,886
Wall	2,195	1,348	104	3,647
Irwin Wallas	2,127	1,285	177	3,589
Allen and Sons	2,135	1,310	105	3,550
Bryan, G., and Sons	2,067	1,334	107	3,508
Sharp, G.	2,130	1,070	160	3,360

A.—Buildings. B.—Drainage and sanitary plumbing. C.—Cleansing. D.—Total.

NEWCASTLE-ON-TYNE.—For a three-manual organ, to be erected in Brunswick-place Chapel:—

Harrison and Harrison, Durham	£1,000	0	0

(Accepted.)

PICKERING.—For a footway bridge over the river Severn at Brawby, for the Pickering-Lythe highway board:—

Thackray (accepted)	£26	10	0

ROCHDALE.—For the fitting-up and completion of new mills, for Messrs. Richard Kay and Brothers:—

For high-pressure steam-piping for heating:—
Whitehead, G., Bury-street, Heywood (accepted).
For four steel boilers:—
Earnshaw and Co., Heywood (accepted).
For shafting and rope-driving:—
Woods, J. and E., Bolton (accepted).

SOUTHGATE.—For the erection of a residence in the Old Park, Southgate, for Mr. J. B. Freeman. Mr. P. B. Freeman, 6, Gray's Inn-square, architect:—

Monk, A., Edmonton (accepted).

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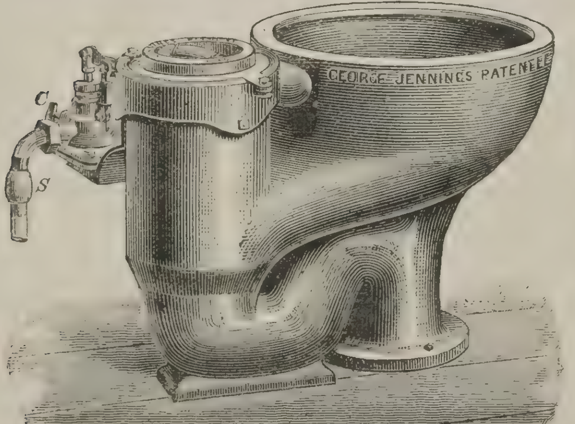

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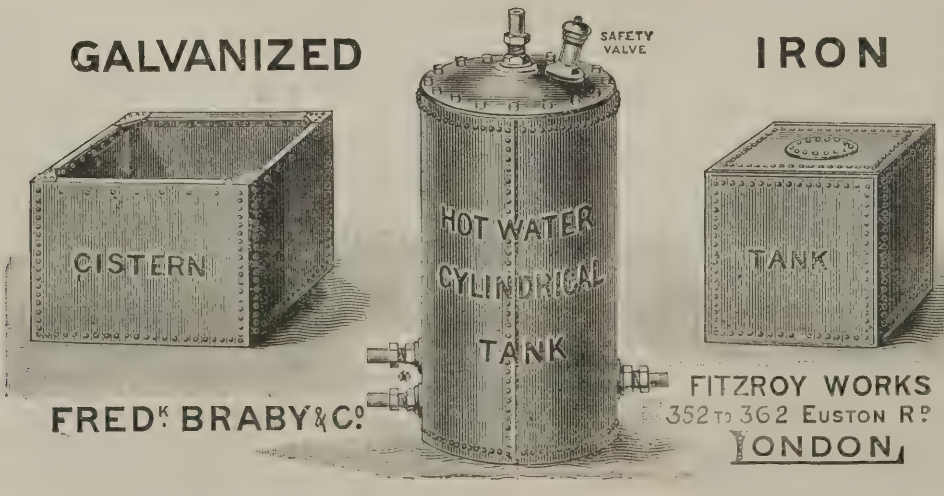

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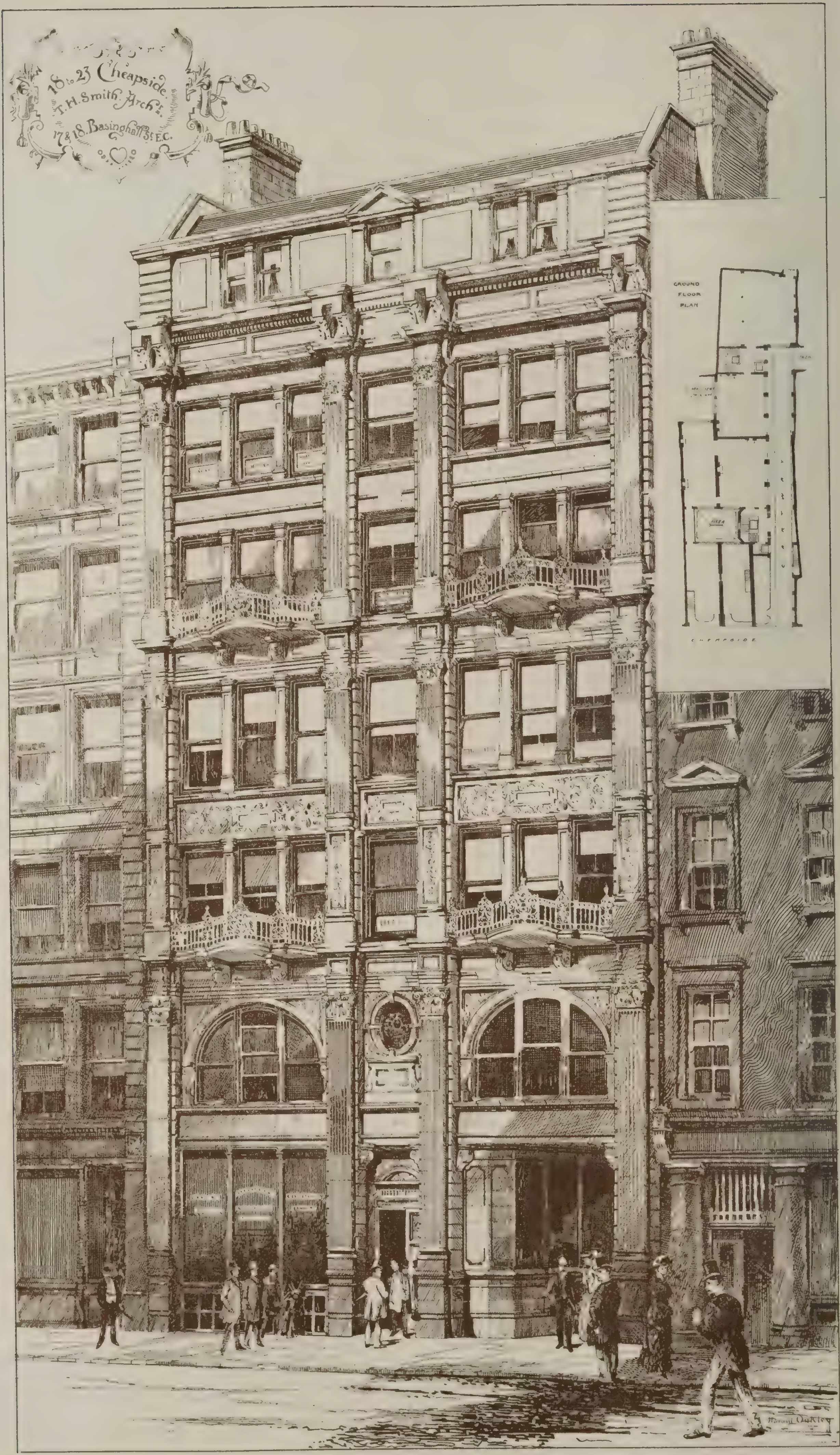
18 to 23 Cheapside.
T. H. Smith, Archt.
17 & 18 Basinghall St E.C.
GROUND FLOOR PLAN
CHEAPSIDE
Harry Oakley

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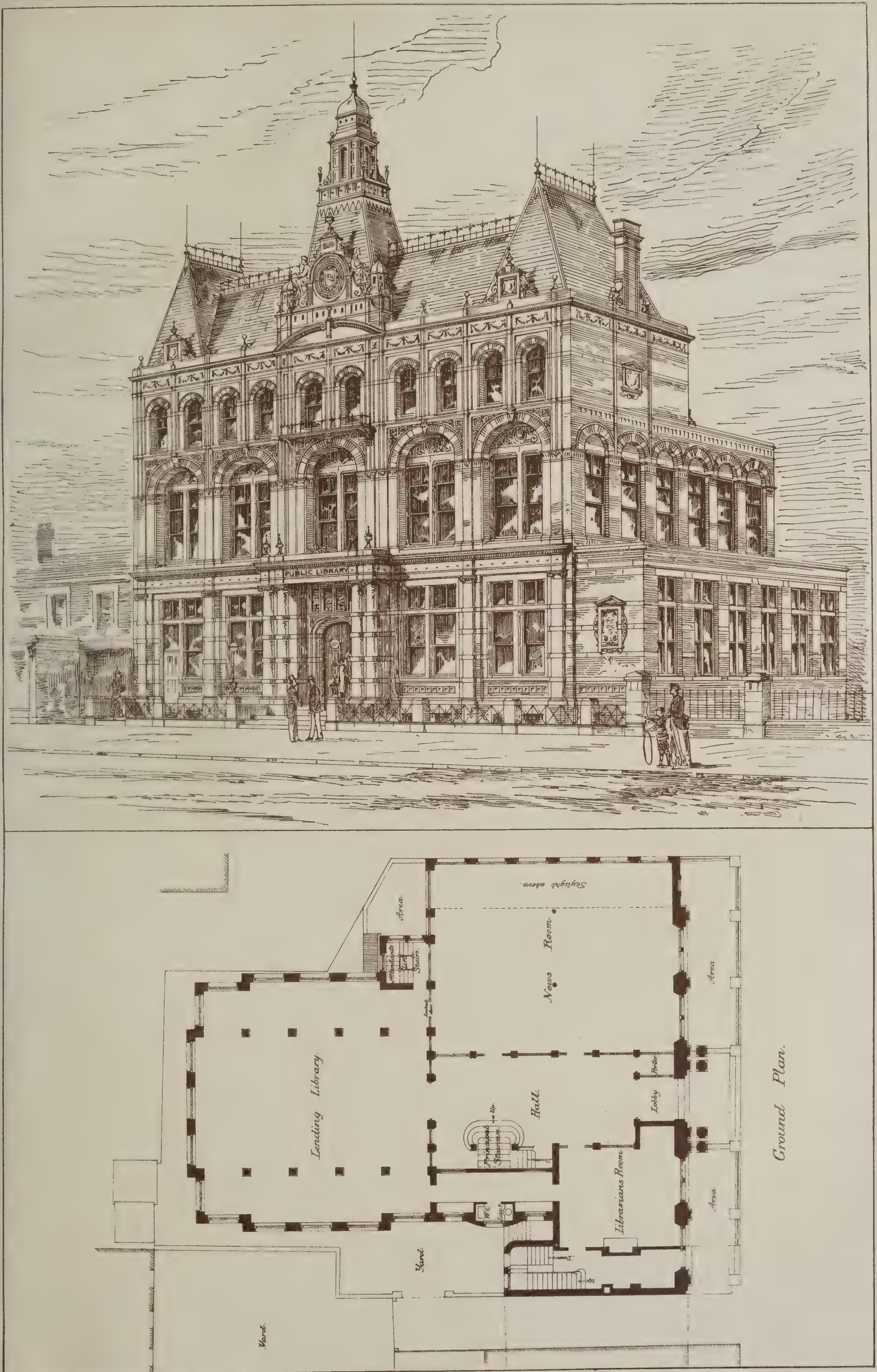

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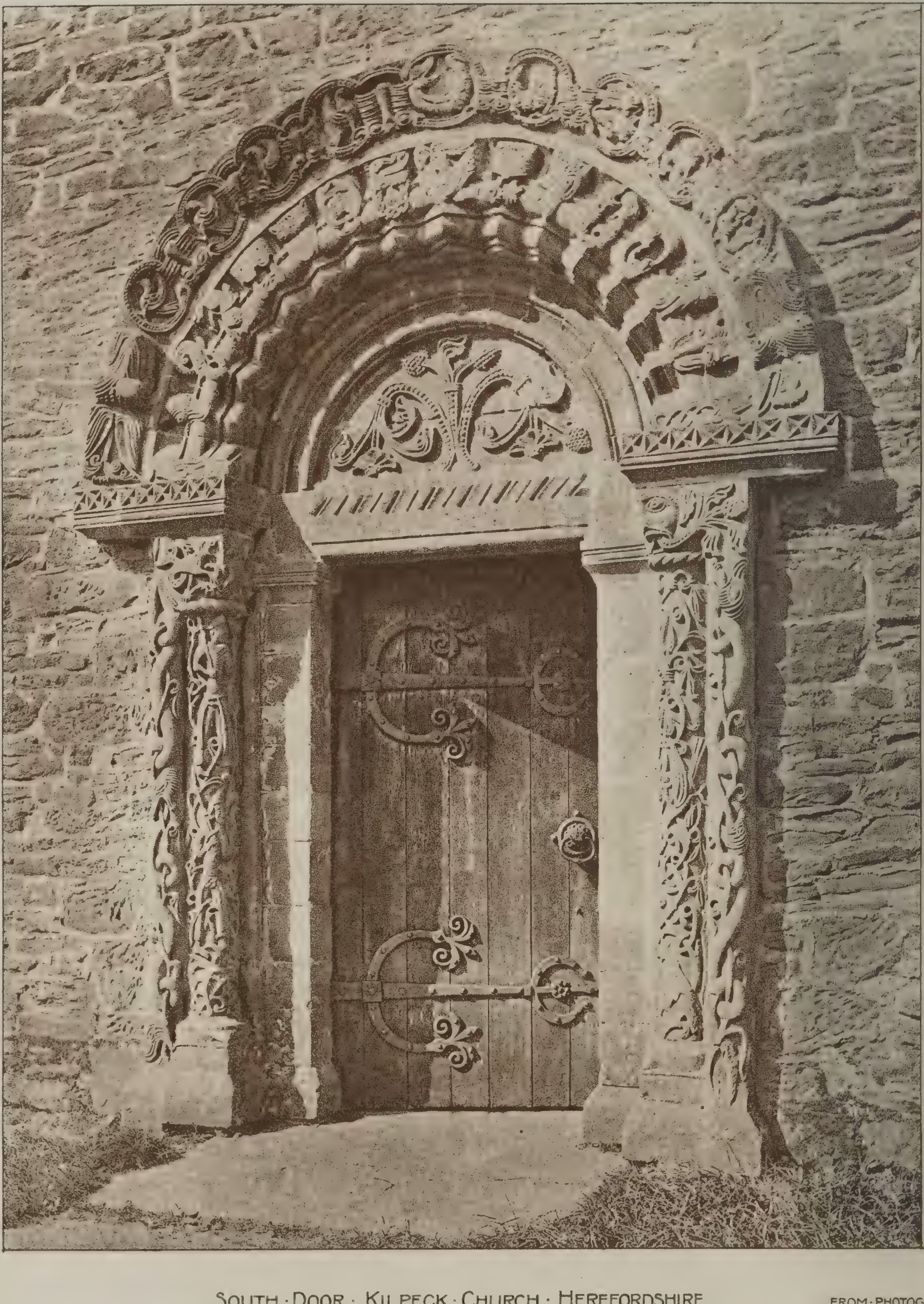

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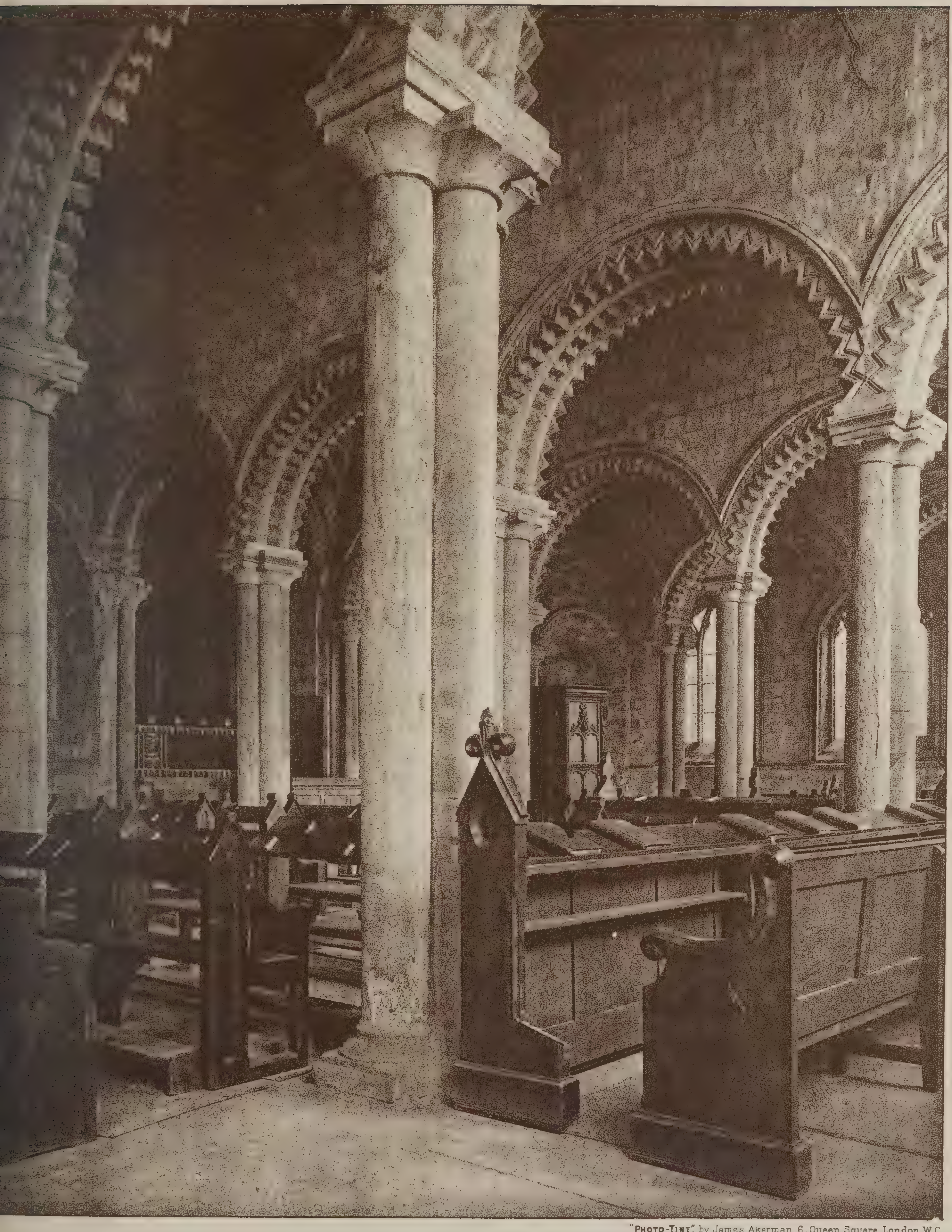

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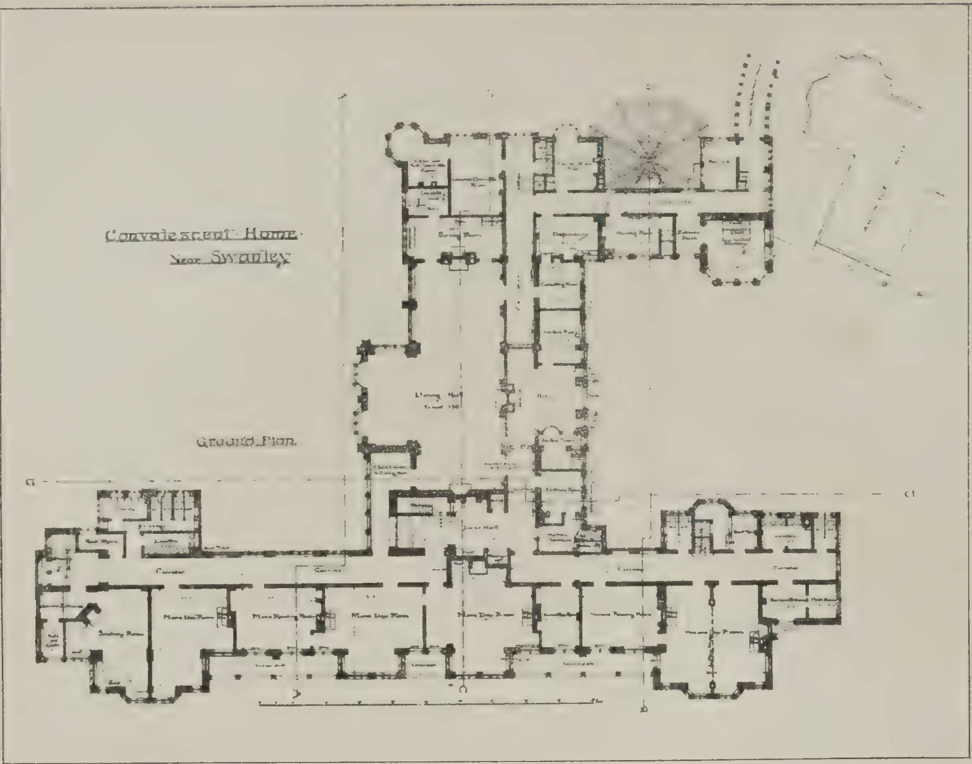

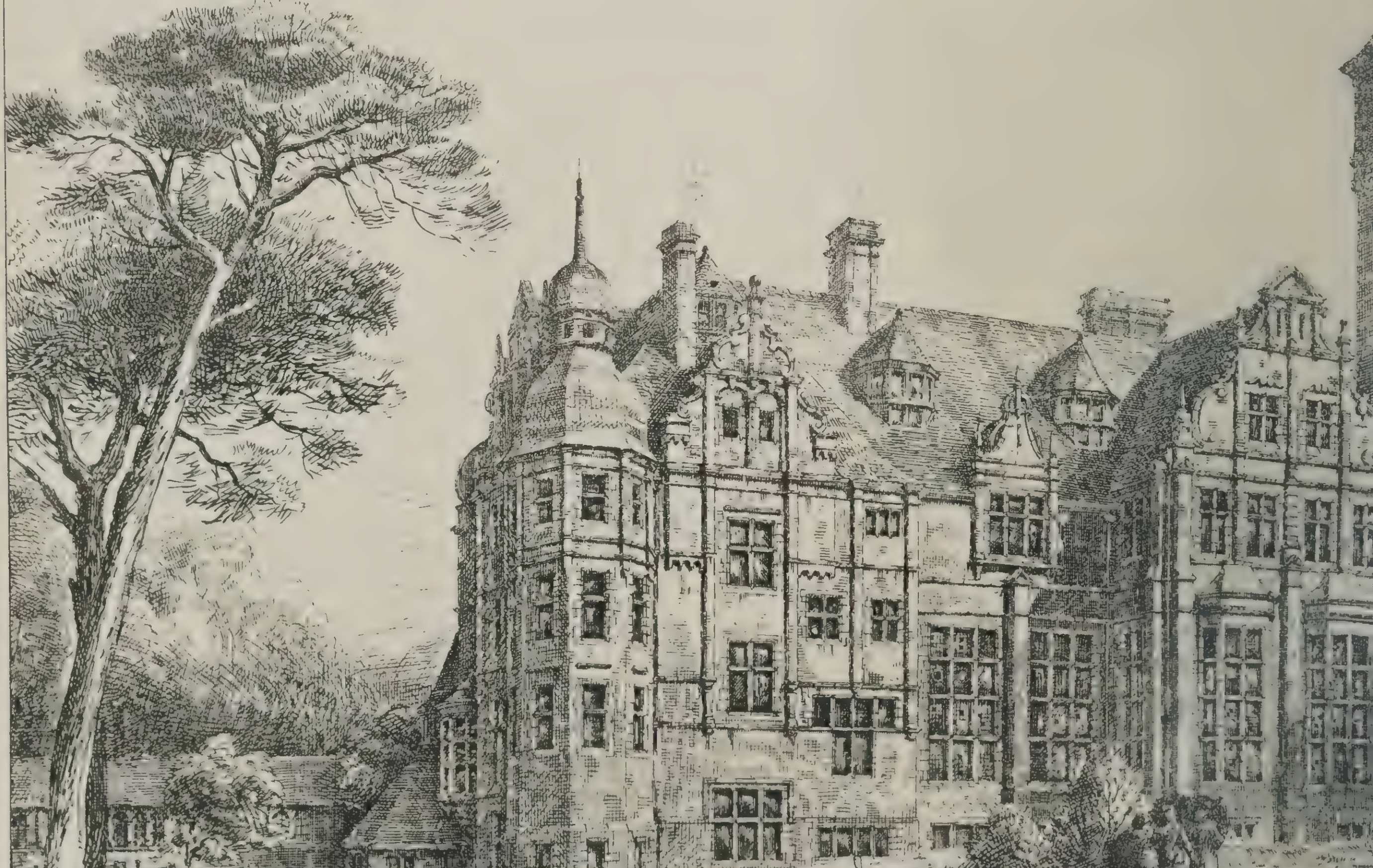

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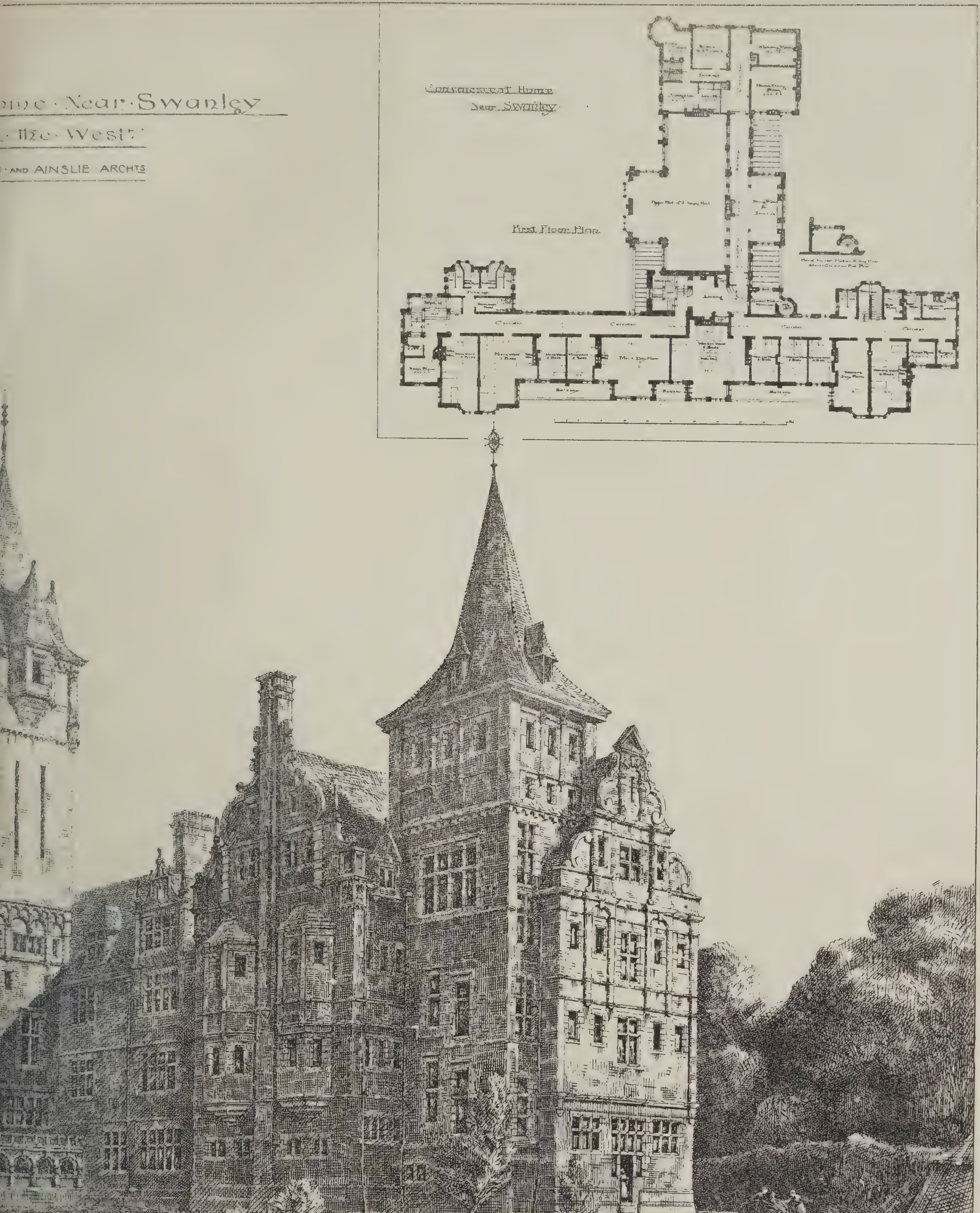

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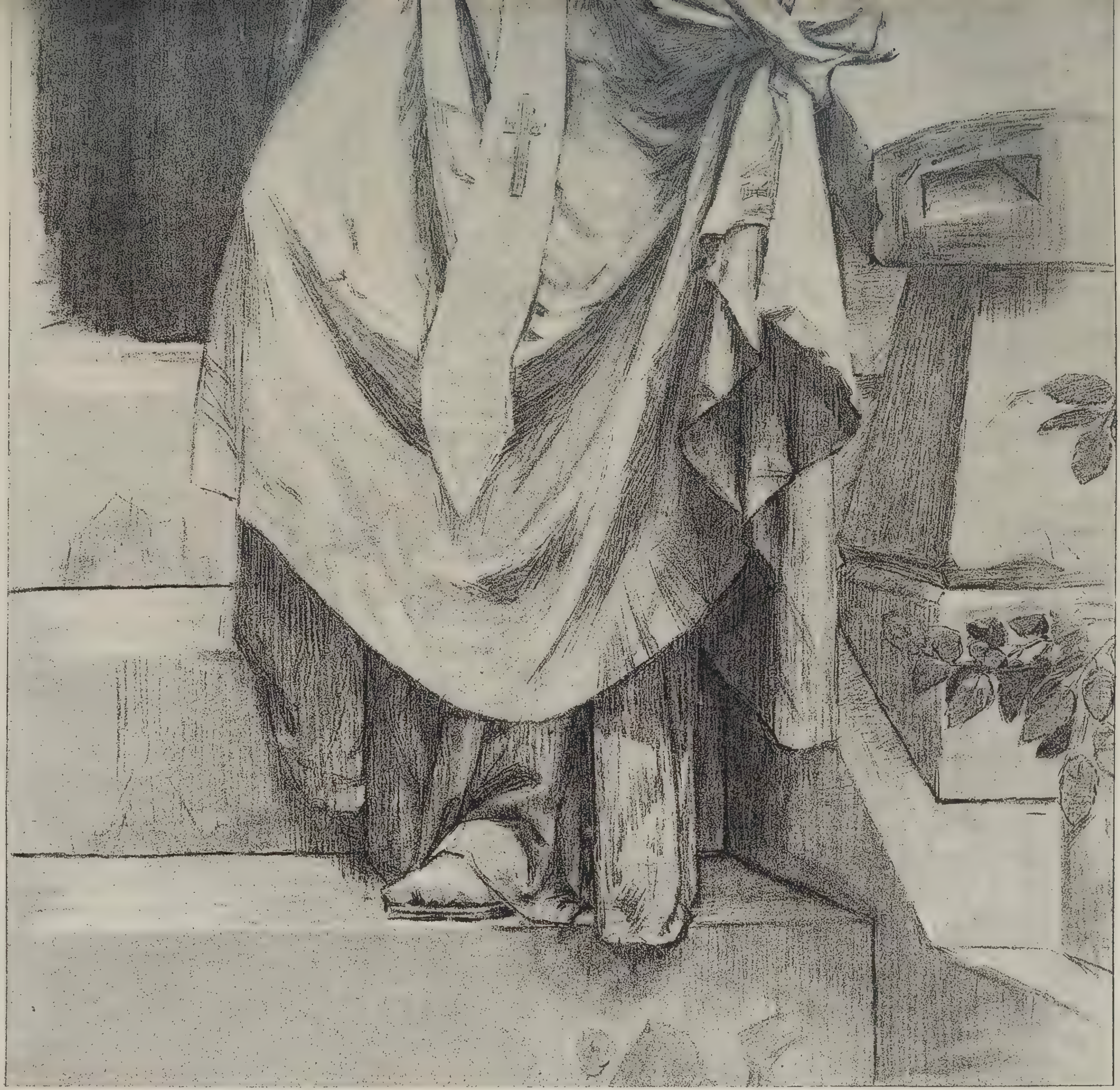

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CARTOON · OF · FIGURE · FROM · "ST AUGUSTINE · PREACHING · CHRISTIANITY · IN · ENGLAND"
BY · PAUL · RAPHAEL · MONTFORD ·

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXII.—No. 1935.

FRIDAY, FEBRUARY 5, 1892.

ARCHITECTURAL TEACHING.

ONE of the characteristic marks of the architectural teaching of the present day is its practical tone. It is no longer a matter of Orders, or Styles, or theoretical proportions, but one of actual building, of dimensions, and of materials. The architect must now be a builder first and fundamentally before he presumes to make a plan or design an elevation; and, according to some of those who have set themselves up as instructors, the young architect must be so much of a surveyor as will enable him to prepare his own set of quantities, to make a valuation or a specification of repairs. A low view of architecture as an art, some will say. Perhaps—nay, probably it is, to those who have not the power to endow the prosaic, to make the commonplace artistic, and to give grace to the utilitarian. These practical teachers of art may sometimes lack the original genius or artistic endowment themselves—they may look at architecture only as building; but the real artistic designer can make use of all these branches, and, so to speak, turn them to an architectural account. Take, for example, the constructive problem of placing a roof on four walls—one of the commonest operations of the builder. The practical inartistic builder would not trouble about such questions as how to dispose the roof to the best advantage, what proportion of height to span should be given, whether a simple span or a roof with hipped ends would be best: but these are exactly the points which the architect would trouble himself about. He would certainly try one or two proportions to scale, sketch the effects of gabled and hipped ends before deciding on the construction of roof, and would probably come to the conclusion that simple high-pitched, hipped roofs, such as the typical chateau roof one sees on the towers of French chateaux, would be more pleasing than a flat hipped or gabled roof. The ordinary builder would, in all probability, select the latter, believing it to be more economical as a covering, without any thought for the proportion, and be content to cover a lofty warehouse of oblong shape by a flat roof, than which nothing can look more hideous. Extreme simplicity may be the result in both the artistic as well as in the non-artistic methods; but while one would show thought and art, the other would be thoughtless and feelingless. We might easily extend this line of argument to the designing of some of the commonest utilitarian structures, to show that building may be either nothing but mechanical labour or a product of the artistic functions. We can make it either, one or the other, just as we begrudge or bestow thought on it. In this way, then, the architectural student can turn his knowledge of commonplace building to account. To him it need not be a mere matter of so much brickwork and timber and labour, but the problem of how to combine material and labour to the best advantage, and make them subserve an artistic end. So with other labours which appear prosaic.

Mr. Macvicar Anderson's vindication of the art of planning addressed to students at the Institute, a full report of which will be found in our last issue, is well timed. We have so often urged the claims of planning to be considered the very fundamental of good design, that it would be superfluous to go over the ground and arguments used by the president. Yet it is well to endeavour to eradicate the commonly-received idea that planning is a prosaic matter like specification writing, and again and again to insist upon its being the very root of good architecture, and to be as much a question of art as making an elevation. Till it is recognised as the only foundation of a good design, involving the exercise by the imagination—in short, till it is considered to be an art, all the lecturing in the world about the importance of a good plan will be thrown away. How many men there are who look upon planning as drudgery, as having no reference whatever to the design of a building, as something upon which the elevations may be made to hang together? It is hopeless to impress such minds with the idea of an art of planning, as they cannot realise what architecture is in its entirety. When they conceive that a design for a building depends as much upon its internal as it external distribution, and that all that is important in a design is the outcome of plan; they may begin to realise the value of the study, and to regard it from other than a mere prosaic point of view. Look at the artistic possibilities evolved out of plan, how it shapes outline and masses, giving prominence to certain features, and scope to the imagination. But, of course, only to the artistic mind are these things possible, for a man may make a skilful plan without knowing how to develop it; hence Scott's remark that "mere planning" will not by itself "produce a noble building." To the great bulk of those who make plans of buildings, a clever plan means simply one satisfying convenience and utility without any further concern. What is wanted is to encourage the idea that plan and external design are correlative factors—that one is as important as the other, that there is as much art in the design of a plan as there is in the design of an elevation; that both are integral parts of the whole.

The vital importance of making the study of plan a prominent one in future architectural education is obvious. Hitherto it has taken no higher place than one of the commonest and utilitarian functions of the architect, the exercise of a kind of adroitness in disposing entrances, passages, and rooms to be convenient, in which blind chance had as much to do as intention and skill. But it is now beginning to be recognised that there is something that can be learned—a problem to be thought over. Art can be called to the solution, even that art which sees how to avoid disagreeable results, if it does not aim higher. For instance, we have many daily experiences of this. Plans are required for a hall on a plot of land of trapezoidal shape at the corner of two roads meeting at an acute angle. There are only three possible solutions: to make the hall partake of the inclination of the sides, producing a wedge-shaped building; to make it rectangular, and thereby sacrifice some of the space on one or both sides; or to so dispose the outer walls as to make the building utilise the irregularity of the site. The first idea would be the conception of a novice or ignorant person; the second of the man who only regarded the practical requirements of structure and roofing; the latter of the artistic mind who could see the value of giving projections or transepts at the end of his building where the land was widest. What would be the actual results? A distorted building, with twisted roof or flat, would be the result in the first case, a barn-like structure in the second, and a building of artistic form and broken outline in the third case. It would be very instructive to discover how much of the architectural merit of our great buildings has been due to plan. Certainly a poor, ill-devised plan may be made presentable by artistically-designed elevations, but never a work of true architecture. All our successful architects have been good planners, because in their mind's eye they keep the internal and external effect constantly in view.

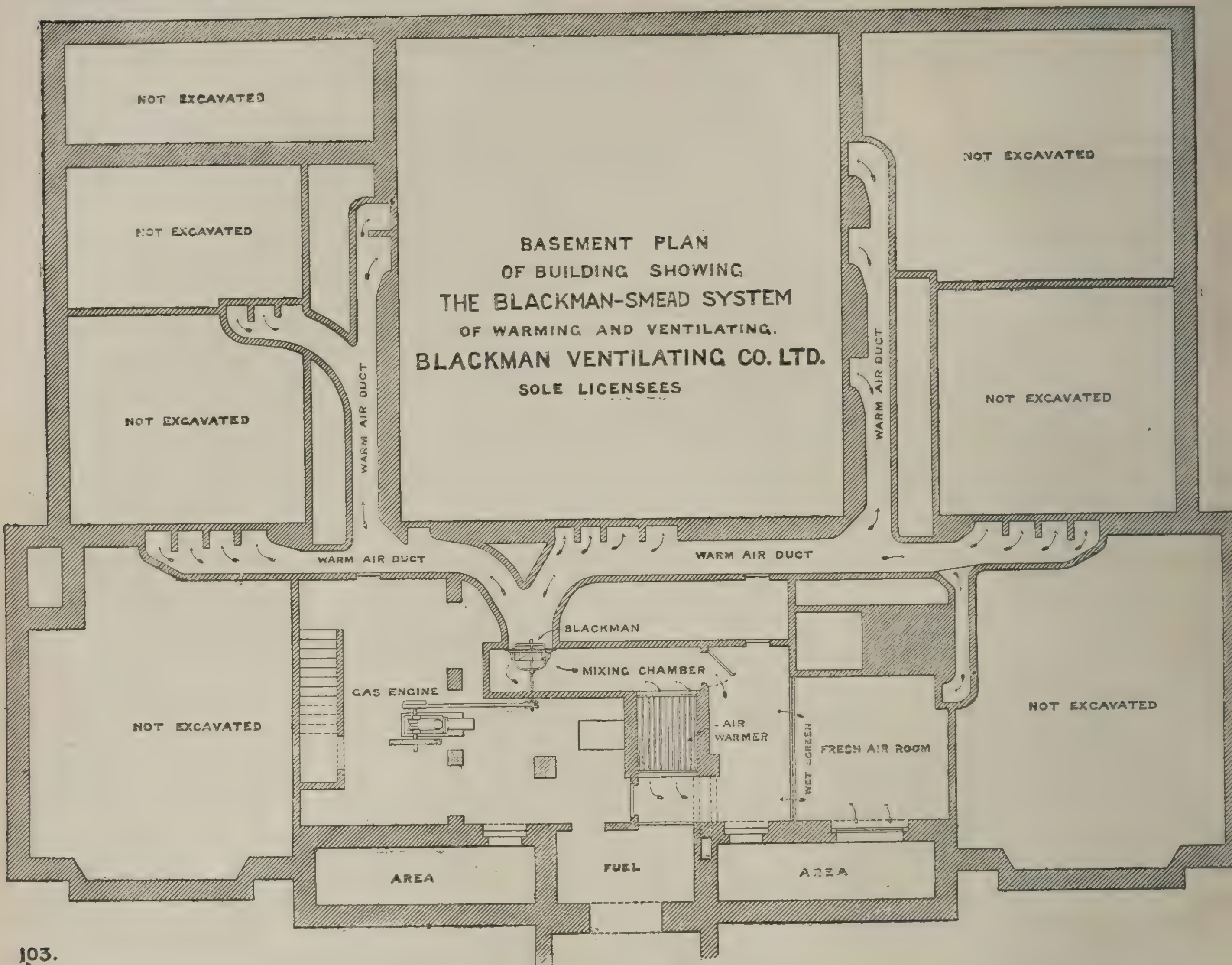
The practical teaching of the day has the misfortune of separating utility from art—of making, in a word, the studies of construction, of plan and of materials distinct from that of architecture. We see the consequence of this teaching in the way in which special divisions of the art is taken up. For example, the surveyor tells us that it is in the interest of architects that specifications should be prepared and written by the quantity surveyor; that even the working drawings and details would be better prepared by him under the architect's general direction. The engineer engaged in iron construction makes out a strong case that the constructive scheme and working details of an iron structure should be left to him; and we have many in our profession who think that the architect's duty is only to design the elevations of a building to a plan prepared by a practical man. In each of these instances there is the presumption that the practical and utilitarian construction is a totally distinct thing—that, in fact, building and architecture are distinct occupations requiring different capacities and methods of instruction, and that they cannot be conjoined; and as long as this idea prevails, or is suffered to prevail by an apathetic profession, the studies will be pursued with different objects.

* * *

AN OPPRESSIVE BUILDING LAW.

MANY vacant sites, that have been left in the proximity of old buildings by the demolition of premises for street improvement, are lying idle. Around these desolate and often dirty and objectionable plots, windows with the ominous words "Ancient Lights" appear; and many of these lights are near the ground, and placed in positions that render it almost impossible to build on the site without interfering with them or obstructing the light. In many cases the plots are too small for any but one-story buildings to be erected without compensation, and the wonder is why the authorities could not have acquired the premises in the rear. The new street has, in many cases, been widened by cutting through a row of houses on one side of the old thoroughfare, leaving only a portion of the courtyards at the back, quite insufficient for the purpose of building a new frontage of shops to the road. These slices of property unavailable for building may be seen on the side of almost every new widened thoroughfare—Charing Cross-road, Gray's Inn-road, the neighbourhoods of Covent Garden, Clare Market, &c. The removal of buildings in the rear of other property at once raises the value of the remainder; they acquire rights which they never possessed before—a condition of things which renders it extremely difficult to deal with intersected properties in large towns. The question is one which calls for immediate legislation in the interests alike of the public and building owners. How are buildings of any dimensions to be erected? What should be the regulations for controlling private rights of light, and how should compensations be assessed?

The law of light has lately received some attention. The Institute of British Architects appointed some years ago a special committee to take into consideration these questions, and a quantity of useful information and evidence was collected. Professor Roger Smith made a report on the proceedings of the committee, in which that gentleman made certain suggestions that would make procedure less oppressive. Since then another committee has been considering the question, and has drawn up a report, the main objects of which are to lessen the delay and cost in carrying out new buildings and alterations



103.

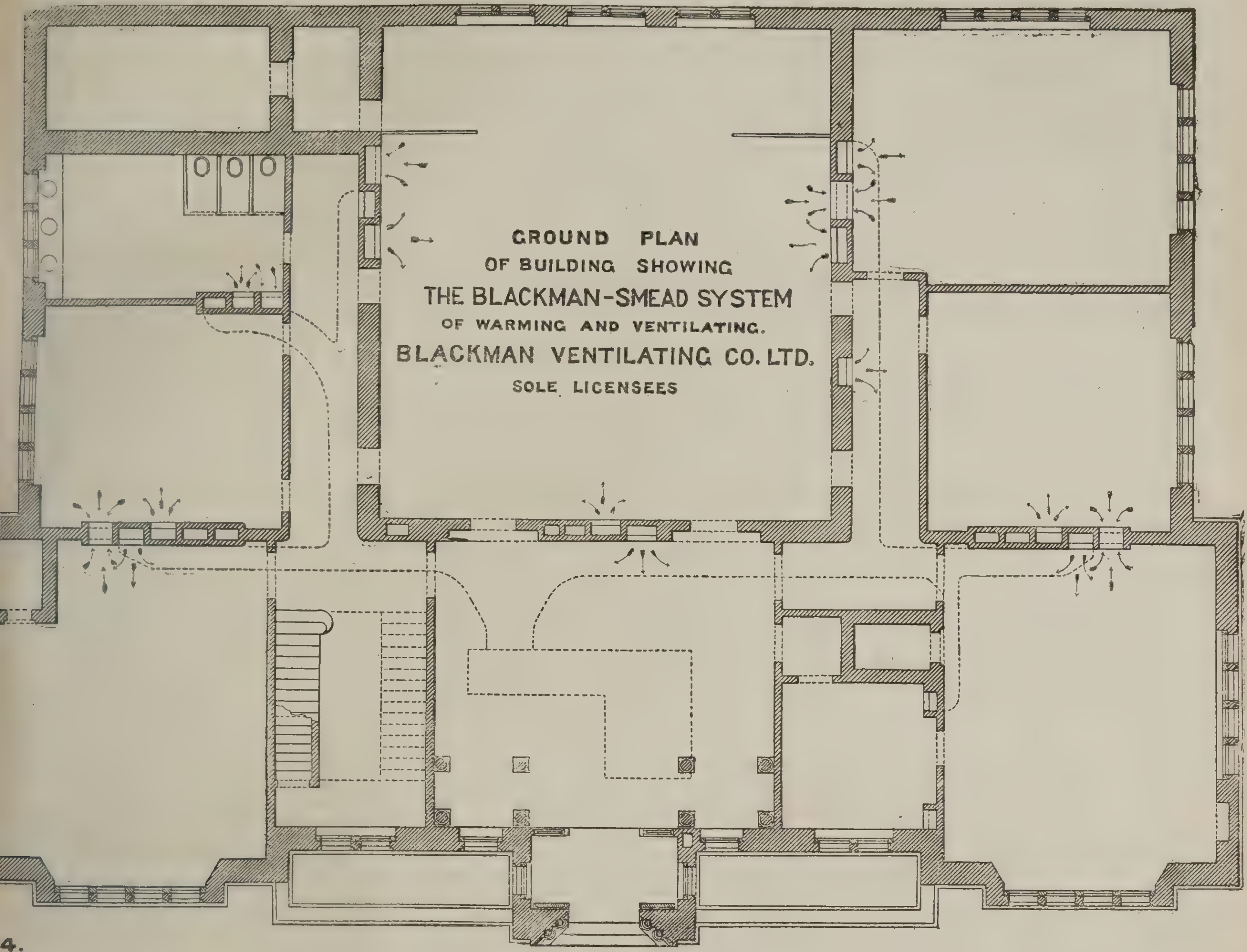
to old ones. The report proposes in brief that the owner or occupier of any tenement who considers his ancient lights will be or have been imperilled by the erection of new premises or alterations, shall have the right to inspect the drawings prepared by the building owner, and take such particulars therefrom, or the building if erected, as may enable him to ascertain whether there is ground for complaint; that if he considers his lights will be interfered with, he may, within seven days, give notice of his objection to the building owner, together with the name and address of a surveyor. Upon acknowledgment of the receipt of such notice the building owner shall send the name of his surveyor, and that such surveyors shall, within seven days, meet and discuss the objections, and come, if possible, to an agreement, or, if not, refer the matter to an umpire. Other clauses give power to either party to appeal to a tribunal composed of two barristers, three Fellows of the Institute, and two Fellows of the Surveyors' Institution.

It is not to be denied that these rules will facilitate building operations which now are retarded owing to vexatious proceedings at law. But we should have preferred a formulation of some rules that would have been accepted in certain cases without reference. One of the regulations that ought to have the sanction of legislation is to what extent a neighbour's rights should be observed by a building owner; in other words, what they are. Also to determine the amount of obscuration that is detrimental, as the angle of light ought not to be difficult in a large number of instances. If these principles are not determinable in ordinary cases, it is impossible to expect that a tribunal can satisfactorily adjust them. As it is now, a neighbour can enforce his rights in so summary a manner as to leave the building owner quite powerless; and as we have had ample evidence to show, the dominant owner can make his own terms or refuse. Now, a person who desires to build on a plot adjoining old premises cannot do so for fear of extortionate demands being made upon him; or, if he does venture, he has to submit to an injunction of the Courts. Then the question of light is a matter of opinion with the Court; as nobody knows what the Master of the Rolls' idea of infringement will be.

With regard to the private rights of owners of property intersected or cut through for public improvements, Parliament can at least abrogate or modify private rights. Now, if public bodies, like railway companies, can compulsorily purchase under their Acts, why should the rights of light stand in the way? Such at least is an argument that has been used; though it may certainly be carried so far as to rob private owners of property of their light and air—very elements of health. We ought not to rob or confiscate that which we cannot create; but we can determine at least how far building may be permitted under certain conditions of notice being given and a fair rate of compensation. In short, we contend simply that it should not be in the power of a neighbour to exact his own terms, or prohibit building by legal and vexatious procedure.

WARMING AND VENTILATING PUBLIC BUILDINGS WITH OR WITHOUT MOTIVE POWER.

A LECTURE on this subject was recently delivered before the Glasgow Philosophical Society by Mr. John D. Sutcliffe, of Manchester. The lecturer remarked that for the past eight years he had entirely devoted himself to the subject of mechanical ventilation, and wished to draw a few conclusions from the experience gained when inspecting and reporting upon over 8,000 buildings. Twenty years before mechanical ventilation was thought of in Scotland it had become recognised in America as the only safe plan on which large buildings could be ventilated, for as far back as 1851 the Association of Medical Superintenders unanimously agreed that all hospitals should be warmed by fresh air passed over pipes containing steam at low pressure or hot water, and placed in the cellar of the building heated, and further that a system of forced ventilation in connection with the heating was indispensable to give purity to the air. In Scotland, Mr. William Cunningham, a flax spinner, of Dundee, was the first to employ a mechanical system of positive ventilation to schoolrooms, and the lecturer believed that if Mr. Cunningham had been able to devote his whole time to ventilation he would have soon found out the weak places in his system, one of which, the author pointed out by means of illustrations, was to admit the fresh air at each end of a room, and to draw it off on each side, thus producing an even distribution of the warmed air. Mr. Sutcliffe exhibited a series of illustrations showing how the warm air really behaved in a room, taken from an article by Mr. Briggs, architect, of Bridgeport, Mass. In the first case the warm air was admitted at the floor and exhausted near the ceiling, in accordance with the theory that warm air must be bad


GROUND PLAN
OF BUILDING SHOWING
THE BLACKMAN-SMEAD SYSTEM
OF WARMING AND VENTILATING.
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air. As they let the warm air out and left the occupied portion cold and foul, they were always closed in winter, and consequently the ventilation was *nil*, or bad. In the second case the air was admitted at a height of 8ft. on one side, and taken out near the ceiling on the other side, necessarily leaving the whole of the space below 8ft. without any warm air. The third example approached a little nearer to the right method, as the outlet was brought a little lower down; and in the fourth case the arrangement was still better, the outlet being brought to the floor, although the inlet was still kept about 8ft. high. The fifth instance came very much nearer the perfect system, as the inlet was at the floor level and the outlet also at the floor, leaving but a very small space unoccupied. The most perfect system was, the lecturer remarked, that shown last: in this the inlet was a little above the breathing line, and the outlet on the floor line. Unfortunately, the latest buildings which had been mechanically ventilated copied the faults as well as the virtues of Cunningham's system, with one notable exception, that the cumbersome and expensive air-pump was replaced by the Blackman air-propeller, which, as Mr. Cunningham had generously remarked, was much simpler and cheaper. At the present time in every trade throughout the world the Blackman fan was doing good work, over 10,000, averaging 36in. diameter, being used for industrial purposes alone, with immense improvement to the condition of the workers. The lecturer proceeded to explain in detail the American Smead method, which was a warm-air system as distinguished from a steam-heating or hot-water system. The author had never seen a hot-air apparatus working satisfactorily in this country, and the chief reason for their failure was because the furnaces were not of sufficient capacity, and no proper system of changing the air was adopted, and therefore the air was scorched. Mr. Smead gave the following reasons why this system was to be preferred—1st, because the first cost of the Smead was about one-third less than for first-class steam heating; 2nd, expense of fuel was from one-third to three-fifths less; 3rd, there was no possible danger from explosion with air-warmers, whilst with steam there was constant danger, whether the pressure were high or low; 4th, there were no water-pipes to freeze or burst; 5th, repairs for steam-boilers, pipes, and pumps would cost in the first ten years ten times as much as for the Smead, and the repairs had always to be made by a skilled mechanic, whilst any caretaker could repair a worn out air-warmer; 6th, the Smead would warm the air in any weather; 7th, with it the building could be warmed in one hour from the time the fires were fairly burning, whilst with steam five or four hours were required; 8th, three-fourths of the force generated by the burning fuel in steam apparatus was lost in the form of mechanical motion, and did not appear as temperature in the room; whilst in the Smead seven-eighths appeared in the room as temperature, and only one eighth as loss; 9th, with the Smead, absolute uniformity was secured throughout the building; whilst with steam-heating apparatus, the rooms furthest away from the boiler were 10° to 15° colder than the nearest rooms, in extremely cold and windy weather. Heat manifested itself in two ways—namely, as temperature and as expansion. Water at the normal pressure could be heated to only 212° Fahr. However much fuel was consumed, the water would still remain at 212° Fahr., but the force generated by the consuming fuel was not lost, but was transmitted to the water in the form of expansion, and the water was converted into steam. Now, if the water were confined, and this tendency to expansion resisted, the temperature could be raised to almost any extent; but if not thus resisted the temperature would not rise above 212° Fahr. The mechanical work of forcing the steam through the pipes was performed at the expense of temperature. If a building were warmed by steam three-fifths of the force generated by the burning fuel was consumed in the form of mechanical motion. On the other hand air could be heated to 600° Fahr., so that nearly all the force generated by the burning fuel appeared as temperature, whilst scarcely a particle appeared as mechanical motion. Few persons understood how the air in a room was warmed. It was generally thought that the air in immediate contact with the burning fuel or heated stove was warmed, and that this air warmed more air, and so on, until all the air in the room was heated. This was not so. In the case of an open fire, the air next to the burning fuel was warmed, and for the most part went up the chimney. A small part, however, rose, and the cold air took its place. The lecturer exhibited a diagram, showing plans and sections of two buildings, the one warmed and ventilated on the "aspiration" method, and in its details known as the Smead system, and the other a mechanical method, known as the Blackman-Smead system. By "aspiration" he meant heated chimneys or shafts for the removal of foul air. "Mechanical" ventilation was produced by the action of fans creating an air movement regular and unvaried, in stated volumes, removing the foul air, and drawing in fresh, pure air to take its place. The Smead plans showed a school at Pawtuckett, Massachusetts, which he believed to be one of the finest schools in America. Much more was made of the basement in America than we make of it in this country, for four air-warmers were employed, and two large ventilating stacks. The air entered the fresh-air rooms, passing afterwards under and over the four heaters, and then found its way through the vertical air ducts to the rooms above. The warm air rose through the flues, and was distributed through the rooms, returning to the foul-air chamber on the same side of the room as it left the warm-air register. It was then brought down into the foul-air duct in the basement, and from this foul-air duct it was carried underneath the closets. The action of this warm air was to evaporate all the moisture in the excreta, and the air was then drawn forward by the ventilating shaft, which, by the way, had a large heater fixed to it, and so the foul air was carried above the top of the building. The class-rooms were carefully warmed, and there was also a large warm-air register in the floor in each corridor. This register was always open, so that if the teacher closed off all the warm air from the schoolrooms, there was still an exit for it into the corridors. Special arrangements were devised by Smead for admitting all warm air, or all cold air; but the teacher must have the full quantity coming into the room, warm or cold, so that it was quite impossible to stop the ventilation. There were no valves to the outlet ducts; these were always open. Mr. Sutcliffe next explained the Blackman-Smead system of ventilating and warming, which differed from the Smead in the important point that it was a mechanical as against a system of "aspiration," the reason for the difference being that the air of an over large town needed filtration, and the filters offered such an obstruction to the air that nothing less than motive power would drag it through them. The accompanying illustrations show the application of the Blackman-Smead system to a building by the single duct system. The figure marked Fig. 103, the lecturer continued, gives the plan of the basement, showing gas-engine, tubular air warmer, fan, wet screen, and air ducts. The Blackman fan pulls air from outside into the fresh-air room, thence through the wet screen, which will intercept the soot or dust. The cold air then passes to the tubular air warmer, which raises its temperature to 100° or 120° Fahr., and thence into the mixing chamber, into which cold fresh air can be admitted by the door. The Blackman forces this air through the horizontal duct to the vertical flues that lead to the rooms above. The building can thus always be flooded with pure warm air in winter and pure cool air in summer, and as each room has its own separate flues, any room can be supplied with warm air in winter and cool air in summer independently of the rest. Fig. 104 gives the plan of the ground floor, with the warm air and ventilating flues. The corridors also receive their supply of fresh air from independent flues, and are so kept warm and sweet. The ventilating flues run up to the roof space, where horizontal ducts lead the vitiated air to the tower, where it escapes into the open air. The inlets are placed about 7ft. above the floor of the room, and over these are fan registers by which the flow of air is controlled. The exhaust registers are near the floor line, so that the vitiated air is drawn off through the ventilating ducts to the tower. The lecturer further gave explanations of the Blackman-Smead system of warming and ventilating by the double duct system, in which one horizontal duct is placed above another. At the entrance to each duct a Blackman is placed, which forces cold air into the lower duct and warm air into the upper duct. From the sides of these horizontal ducts, flues are carried up to each room in the building. At the bottom of each flue is an opening into the cold-air duct, by which cold air can enter the flue. Above this is another opening, which admits warm air to the flue. Between the two openings is a valve hung in a frame, and controlled by a chain from the room above. When the valve is down, warm air only is allowed to pass up the flue into the room. If the room becomes too warm, the valve can be raised, which will allow cold air to enter the flue and mix with the warmer air, thus reducing the temperature of the admitted air without restricting its volume. By this means continuous ventilation is assured at whatever temperature may be desired. In conclusion, the author gave the following practical data as a guide to the size of inlets for warm air and outlets for vitiated air. In large schoolrooms and public buildings the best results are obtained when the fresh-air inlets are placed about 7ft. above the floor-level, and the foul-air outlets on the same side of the room and at the level of the floor. With the "aspiration" method of ventilating, the outlets should be larger than the inlets, and the dangers of cold draughts would then be reduced. In buildings ventilated by the "mechanical" method, the area of the inlets for fresh air should be larger than the outlets, and then the rooms are placed under a little pressure, and all the air from crevices, &c., flow outwards, and no draughts are felt. The rule in estimating the area of inlets for admitting fresh air, and the area of outlets for getting rid of the impure air, must depend upon the number of persons who will occupy the room, and not upon the size of the room.

BUILDING STONES: THEIR STRUCTURE AND ORIGIN.

(*Concluded from p.* 162.)

THE organic origin of a limestone is most conspicuously shown by the shell limestones, often called marbles, for they are almost, if not quite made up of fossil shells, of considerable size, cemented together by calcareous matter. The fossil shells composing the chalk require a microscope for their detection, but the shells that make up the forest marble, the Purbeck and the Sussex marbles, are at once seen and recognised as "familiar objects of the sea-side" or the river bed. Forest marble, an Oxfordshire rock of the Lower Oolites, is a mass of marine shells, and the Purbeck marble and the Wealden marbles of Sussex are made up of fresh water shells. In the forest marble there is a variety of shells, but in the fresh water limestones just named there is but one genus represented, the *Paludina*, one species of which in the Purbeck marble is a small one, and in the Sussex marbles a large one. As is well known the Purbeck marble was in great request with the builders of Early English churches, and in the great example of that architecture—Salisbury Cathedral—was very extensively used. But in the Temple Church in London, not only in the slender attached pillars, but also in the recumbent figures of the knights, the sections of the multitudinous *Paludinæ* may be very well seen. The beautiful encrinital marble of the carboniferous limestone of Derbyshire also conspicuously displays its organic origin, the interesting forms and figures on its polished surface being but sections cut at various angles of portions of stems of ecrinites, or stone lilies as they are sometimes called, that flourished on the beds of the carboniferous seas. In the carboniferous shell and encrinital marbles it will be noticed that a considerable part of the mass of the stone has no organic structure, but is crystalline calcareous matter. The amount of this part of the mass is less in some and greater in other stones, and is so great a proportion of the whole in some limestones that the organisms they contain are but few and far between. Such, for instance, are some of the Derbyshire marbles, the Irish marbles, the beautiful grey Anglesea marble, and the splendid richly-coloured Devonshire marble. And in some Palæozoic limestones the whole is non-organic in structure, as in the black marbles of Ireland and the Isle of Man. The great steps of St. Paul's, it may be mentioned here, are from the carboniferous black marbles of Poolvash, near Castletown, in the Isle of Man. The formation of these hard, compact crystalline limestones, which, taking a good polish and being ornamental, are called marbles, is well illustrated by what is now taking place in the coral-rock regions of the tropics, where recent coral rocks are so altered by the action of water as to be converted from a mass of coral to an almost entirely compact crystalline rock. That the climatic conditions were here favourable for coralline growth and development is abundantly shown by the coral structures that have remained unobliterated, and which form beautiful and interesting markings in the carboniferous marbles of Derbyshire and Anglesea, and in the Devonian marbles of Devonshire. There are some compact marine limestones in the cretaceous rocks of the South of England of considerable interest. One is now much used in building operations in London, and well known as Kentish rag. It occurs in thin beds in one of the divisions of the Lower Greensand called the Hythe Beds. The Kentish rag is not a pure limestone, some specimens containing a considerable amount of silicious matter. Its structure is such that it is only adapted for dressing with a rough face in small-sized stones, and is therefore only used for ashlar work. In the Upper Greensand of Surrey is a fine calcareous stone, soft when worked, but hardening on exposure, that is largely quarried at Merstham and Godstone as a firestone, but in ancient times it was used as a building stone, having been employed at Windsor Castle and Westminster Abbey. A somewhat similar stone is the Totternhoe stone near the base of the chalk. Although the Secondary and Palæozoic rocks supply the chief British limestones, perhaps the greatest limestone of the world is a Tertiary rock of the age of the sands of Hampstead Heath, and newer than the clay on which London stands. This is the Nummulitic limestone of Middle Eocene age, that extends from France eastwards to the confines of China. It supplied the builders of the Pyramids of Egypt with material, and it supplied to the builders of Paris the beautiful stone which has been so instrumental in giving due effect to Baron Haussmann's magnificent plans. It is a compact and pure limestone, with, in some places, as in Egypt, an abundance of the fossils that have given it the name of Nummulitic limestone. These fossils, circular, about the size of a halfpenny or farthing, are the remains of a marine genus of the class Foraminifera. The Paris stone is called the calcaire grossier, and does not display the nummulites as do the blocks of the Great Pyramid. Another Tertiary well-known limestone is the Maltese stone of Miocene age, the adaptability of which for fine and delicate carvings was so well shown at the Colonial Exhibition. In the Isle of Wight there is a Tertiary limestone called geologically Bembridge Limestone, that has long been quarried for building purposes, and was used in the building of Winchester Cathedral. There is a peculiar and important limestone that may, perhaps, be named here. This is dolomite or magnesian limestone, which contains, as its name implies, a considerable amount of magnesia, it being a carbonate of lime and a carbonate of magnesia. It is a compact stone of a warm cream-colour, and may be seen in London at the Houses of Parliament and the Museum of Practical Geology, Jermyn-street, both of which edifices are built of it. Some of the oldest abbeys and Castles of East Yorkshire are built of Magnesian limestone, but in London the sulphuric acid of our abnormal atmosphere attacks it with injurious effects. Magnesian limestone is of Permian age, and may have been formed by chemical precipitation in inland lakes or seas, or it may have been produced by the conversion of ordinary limestone into one containing a proportion of carbonate of magnesia by the addition of that mineral by water action, and the subtraction by similar means of some of the carbonate of lime. Inland salt lakes are known to contain the chloride of magnesia, and hence we may probably conclude that this has been the source of the magnesian part of dolomite. Although much of the substance of all ordinary compact limestones has been formed by chemical precipitation of carbonate of lime from water holding it in solution, yet the bulk of these rocks were originally due to organic action, but there is an important and historic limestone that is entirely due to chemical precipitation. This is the great building-stone of Rome, travertine. Of this material was built the Coliseum and the other great edifices of Imperial Rome, for it was into a city of Travertine, not of Marble, that Augustus changed the old brick-built Rome. Travertine has also been the great building material of Rome from ancient times to the present day, St. Peter's, and the churches and basilicas of mediæval times being built of this hard limestone, which is conveniently obtained from the neighbourhood of Tivoli, where it is even now in process of formation in the fresh waters coming from the Apennines. These mountains are largely composed of limestones of Cretaceous age, called the Apennine limestone, and their streams consequently contain much calcareous matter in solution. On the waters losing some of their carbonic acid, solid carbonate of lime is thrown down, and thus great masses of hard compact limestone are formed. At the Lago di Zolfo in the Campagna the formation of travertine may be conveniently seen now going on. Another example of a purely chemically formed limestone is the very beautiful translucent material, now commonly called onyx stone, or onyx marble, but more correctly Oriental alabaster; for, of course, it has nothing to do with onyx. This was the original alabaster, the alabaster of the ancient world and the Bible, and was obtained from quarries in Egypt and Algeria. The latter supplied Rome and Carthage, but they were lost for hundreds of years, and only rediscovered at Blad Recam in the year 1849. The

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[*] By Prof. J. Logan Lobley, F.G.S.; a paper read before the Society of Architects, Jan. 26, 1892.

irregular circular markings indicate the stalagmitic origin of the stone, for it has been the infilling of cavernous hollows in limestone rocks. This Oriental alabaster differs essentially from modern ordinary alabaster, which is not a carbonate but a sulphate of lime, a much softer material than the carbonate. It is, in fact, but a fine massive form of gypsum, and is only adapted for interior work and ornaments. In salt lakes that contain sulphate of lime in solution, it is precipitated by the evaporation of the water before the chloride of sodium or common salt. We thus see how beds of gypsum and alabaster have been formed. In England these beds chiefly occur in the Triassic rocks in which are also our great workable beds of salt, the result of the evaporation of the salt lakes of the Triassic epoch. There is a special class of limestones which now demands our attention. These are the true marbles. The term marble is generally used, as we have seen, as a name for a hard limestone that takes a polish, and so forms an ornamental stone. But a marble in the strict geological sense must be a metamorphic rock, and possess the peculiar structure produced only by metamorphic action. This metamorphic action has been the result of great heat, and a pressure which has prevented the evolution and escape of carbonic-acid gas. An ordinary limestone or mass of chalk subjected to such heat and pressure is converted to a mass of crystalline granules of calcite of very uniform size, each of which has its own independent lamellæ, showing a twinned arrangement, and cleavage lines. Such is the structure of pure white statuary marble, whether Italian or Greek, and of all the beautiful and very varied veined marbles of the south of Europe. The chalk of Rathlin Island, off the north coast of Ireland, has been converted into finely granular marble by the heat from the lava that formed the dykes of basalt now traversing the old chalk beds; and the compact material formed into carved cameos, and sold as lava of Vesuvius, is simply limestone altered by the volcanic heat of Vesuvius when blocks have been torn from the underlying great bed of Apennine limestone at unusually violent or paroxysmal eruptions. The marble of Carrara is the statuary marble of Italy, but in Greece there are two famous pure white marbles, the Parian and the Pentelic, the latter of which was the building stone of the Parthenon of Athens. Although the Carrara marble of Italy is a splendid material for statuary, the Greek marble surpasses it in brilliancy of surface, and Italian sculptors can detect an antique statue of Greek marble by the brightness of the stone. The structure of these marbles is so like that of lump-sugar, that the name "saccharine marble" is used. The beautiful colours and veinings which so many marbles display are due to the more or less irregular dissemination of various mineral matters throughout the mass, and which have not been destroyed, like the organic structures, by the metamorphic action to which the original limestone has been subjected. The origin of a white or veined true marble is, therefore, the same in the first instance as that of other limestones, as, for instance, the Carrara marble is altered Apennine limestone of the same general age as the Chalk of the North Downs, and the alteration it has undergone has been due to great masses of the rock having been subjected to high thermal conditions, while covered over by such thicknesses of rocks as were necessary to give the requisite pressure. The Argillaceous rocks worked for building material are the slate rocks, for although clays are abundantly used for bricks, tiles, and terracotta, and some shales, as the Ludlow mudstones, are locally used for rough walling, no clay rocks produce valuable stone except the slates. Slate rocks are metamorphosed clays, and are of various geological ages. The fine slates of Carnarvonshire are some of Cambrian and some of Silurian age, while those of Valencia, on the south-west coast of Ireland, are Devonian, and those of Cork are Carboniferous, and on the continent of Europe there are Mesozoic and even Tertiary slates. The term slate, like that of marble, requires definition, for some fissile limestones, locally used for roofing purposes, are incorrectly called slates, as the Stonesfield slate of Oxfordshire, and Collyweston slate of Northamptonshire. A true slate, like a true marble, is a metamorphic rock, and so has a changed structure, from which organisms have been eliminated by the metamorphosing heat, and possesses new characters that make it a quite different rock in all except chemical composition.

The great and essential character that distinguishes a slate is slaty cleavage, which is quite distinct from ordinary rock cleavage in having its direction across instead of parallel or coincident with the plane of original bedding or deposition. Thus a flagstone or the thin Oolitic limestones of Stonesfield and Collyweston split quite in accordance with their bedding-planes, but a Penrhyn or Festiniog slate splits either at right angles, or at a high angle, with the original stratification of the unaltered rock. It is now established, through the observations and experiments of Sorby, D. Sharpe, and Professor Phillips, that this new and remarkable character has been given to the rock by the great lateral pressure to which it has been subjected, and which has changed the direction of the longer diameters of the particles forming the mass from a horizontal to a more or less vertical direction, and has, in addition, to some extent elongated them. This action of the forces of nature has been imitated artificially with successful results, an arrangement of layers of matter having been converted by great pressure at the sides into a mass in which no layers were to be found, but instead vertical cleavage planes. The pressure to which these rocks have been subjected has been accompanied by great heat, which has converted clay rocks into the semicrystalline stone called slate, and imparted to it a very close and dense texture, which makes it weigh 170 to 180lb. to the cubic foot, and gives it a resistance to a crushing force of 20,000lb. to the cubic inch. The transverse strength of slate is greater than that of any other stone. The mineral of which all argillaceous rocks are essentially composed is kaolin, a pure white clay, consisting of silicate of alumina. The chemical elements of all clay, shales, and slates are therefore aluminium, silicon, and oxygen, and we must consequently trace the origin of slate through the history of the formation of a bed of clay. Kaolin is produced by the decomposition of the felspar of felspathic rocks such as the granites. This is washed into streams and rivers, and so is conveyed to the sea where, consisting of matter in an extremely fine state of division, it is carried further from the shore than is the silicious sand, and so is deposited separately, which produces an accumulation of argillaceous or muddy material that subesquently becomes a bed of clay. Like sandstones, beds of clay are not altogether or even mainly directly derived from the parent source, for old clays furnish material for newer clays, and these again are subjected to denudation, and provide argillaceous matter for still newer argillaceous accumulations. Clays of the older rocks that have long been subjected to vertical pressure have been compacted and hardened into shales and mudstones, and when these at great depths have been subjected to high temperatures and to great lateral pressure, they have been converted, as we have seen, into the hard and strong roofing slate. The extreme tenuity into which slate will split, and the perfect parallelism of the planes of cleavage, as well as the density and strength of the material, are well exemplified by the specimens exhibited in the Museum of Practical Geology, where there is one specimen five feet long and only 1-16th of an inch in thickness produced by simple splitting. Talc is the name of a mineral consisting of a silicate of magnesia, and is represented by various forms as steatite, French chalk, asbestos, jade, &c., but the building stones formed of silicate of magnesia are the Serpentines. Being essentially magnesian, the beautiful stone called serpentine is of an entirely different character from sandstones, limestones, and slate rocks, since they, with the exception of dolomite, are devoid of magnesia, and in dolomite it is present as the carbonate, not the silicate. Although the resemblance between serpentine when polished and some polished marbles is very great, yet it will be seen they are essentially different stones, marble being a carbonate of lime, and serpentine a silicate of magnesia. Serpentine is a metamorphic rock, but unlike, again, marble and slate, it is an altered igneous rock. Much has been written on the production of serpentine, but it may be concluded that the great intrusive masses of the rock, such as that at the Lizard in Cornwall, have been produced by the alteration of igneous rocks that have been rich in olivine which contains about 84 per cent. of silicate of magnesia. Such a rock is the lherzolite of the Pyrenees, an ultra basic rock, and of the very high specific gravity of 3·35. This rock seems to fulfil the conditions necessary for the production of serpentine by the action of permeating water. M. Daubrée, by fusing serpentine with the addition of magnesia, obtained a product possessing the characters of olivine. Serpentine is a compact rock, with the smooth surface characteristic of the magnesian rocks, and a dull or very faint lustre of various prevailing colours, usually green or red, and streaked or veined with steatite and other minerals. The chief locality in the British Islands for serpentine is the Lizard district of Cornwall, where it has all the appearance of an intrusive mass, but is traversed by dykes of gabbro or dillage-rock. But serpentine also occurs in Anglesea, Galway, and other places in Ireland; Banffshire and other places in Scotland and the Shetland Islands. It has been contended that some serpentines may have been derived from dolomites by metamorphic action, and the Serpentinous ophicalcites of the Laurentian rocks of Canada are doubtless altered sedimentary rocks. A very numerous, varied, and important group of building stones may be formed under this heading, for felspar is the prevailing mineral of the granites in their great variety—the syenites, the porphyries, and of the acidic volcanic rocks. Ordinary felspar is a silicate of alumina and potash; and a variety of great importance, called labradorite, is a silicate of alumina and lime. It is the former, usually called orthoclase, that is the mineral constituting this group of stones. The most important of these as building stones are those comprised under the name granite. The granitic rocks are very various, but all granites must contain felspar and quartz. To these may be added mica, hornblende, talc, and other minerals; but ordinary typical granite consists of felspar, quartz, and mica. Granites are therefore very different in character from all the stones previously mentioned, which each consist mainly of but one mineral. The minerals forming granite are likewise, although intermingled and closely packed, yet separate and distinct, and clearly separately displayed to the eye. Since felspar is sometimes grey and sometimes pink and sometimes a rich rose colour, and the prevailing tint being mainly due to the colour of the felspar, granites vary in colour accordingly. That granite has been produced by the crystallisation of its component minerals from a magma in a fluid or fused state, there can be no doubt, and it is possible to ascertain the order of the separation and solidification of the minerals. It is found that the grains of felspar and mica are partly embedded in the quartz grains, and hence it is concluded that the quartz was the last to solidify. It was also found by Sorby and Zirkel that quartz grains contained minute cells partly filled with water. The size of the grains varies very much, some granites being very fine, some very coarse, while many are of medium texture. In the well-known grey Aberdeen granite and the pink Peterhead granite we have perhaps the most typical granites, since they are moderately fine grained, and regularly intermingled felspar, quartz, and mica granites. In some granites distinct crystals of felspar are conspicuously seen. These are called porphyritic granites, some of which are highly ornamental, as is the beautiful rose-coloured Shap granite, seen in the chain posts in front of St. Paul's, in which there are large crystals of rich coloured felspar. The Luxullianite that was used for the Wellington sarcophagus in the crypt of St. Paul's is another beautiful example of a porphyritic granite, and the stones of London Bridge display crystals of felspar of extraordinary size, and afford an excellent illustration of an English grey porphyritic granite. This granite is from Dartmoor, while the granite of Waterloo Bridge is from Cornwall. The exceedingly tough mineral, hornblende, is a constituent of many granites, which form from their great durability excellent road material, and have accordingly been long largely quarried at Mount Sorrel in Leicestershire and in the Channel Islands for the macadam of London streets. But hornblendic granite has been put to a much more interesting, if not so practical, a use, by being employed by the ancient Egyptians for those great monoliths—obelisks and colossal statues—that after three thousand years command the admiration of the world. This granite was quarried in Upper Egypt at no long distance from the seat of government at the time and the places where these fine works were first erected. It was in later times that they were brought to a great distance from their quarries and re-erected in Lower Egypt. Lower

Egypt has in its turn given them up to adorn the public places of Rome, and Venice, and Paris, and lastly London, where, on the Thames Embankment, stands the great obelisk named long after its first erection "Cleopatra's Needle." As the place where this granite was worked was called Syene, the name syenite was given to the Egyptian hornblendic granites. The petrologists have, however, now decided to restrict the term syenite to a rock consisting of felspar and hornblende, which not containing quartz would not be granite. Thus the Egyptian granite, although from Syene, is not syenite, but hornblendic granite. It has been disputed whether there is any grey granite in Egypt. The two famous columns of the Piazza San Marco, Venice, one red and the other grey, are both reputed to be Egyptian, though brought to Venice from Tyre in 1127 by the Doge Michielli. The column on which stands the group of St. Theodore and the Crocodile is doubtless of the red granite of Egypt, but that surmounted by the Lion of St. Mark, of grey granite, if it be Egyptian, is the only great monolith known of Egyptian granite not red, although there are some small works of grey granite reported to be of the granite of Egypt. Granite enjoys a high reputation, and deservedly so, for strength and durability, yet its crushing weight is less than that of slate, being 13,400lb. to the cubic inch, while that of slate is, as before stated, 20,000lb. The great granitic masses of the British Islands and other countries are doubtless true igneous rocks, yet there is as little doubt that some granites are highly metamorphosed sedimentary rocks, for they have been traced back to the original unaltered rock. Although the term "porphyritic" applies rather to the structure than to the composition of a rock, yet the name porphyry usually means a felspathic rock in which there are distinct crystals of felspar imbedded in a matrix of amorphous felspar. These crystals are often small and of a beautiful green or red colour. Such rocks as granite, syenites, and porphyries, although igneous, are not volcanic in origin, since they have been cooled and solidified from a fused state below the surface, and are now exposed only by the removal of the rocks by which they were formerly covered, and so are called Plutonic. But there are some true volcanic felspathic rocks used as building stones. In Italy, especially in Naples, the light pumicious tufa of which so many hills in that volcanic land are formed, is largely quarried as a building material for ordinary houses, the fronts of which are covered with stucco. This tufa has been the product of old volcanic action before the present coast line was formed, when the ashes from volcanic vents fell on to the surface of the sea and subsequently sank to the bottom, where they accumulated and were consolidated into a rock that was afterwards upheaved into land and subsequently sculptured by nature into hills and vales. Unlike other rocks which have been produced by volcanic action, volcanic tufa contains organic remains, that of the neighbourhood of Naples having both shells and plant remains, which clearly testify to its submarine accumulation. The whole of the hilly land forming the site of the city of Naples and its suburbs is composed of volcanic tufa, as are also the famous seven hills of Imperial Rome. In Germany, too, the felspathic volcanic rocks of the Rhine Valley have been worked for building stones and millstones for many centuries, quarries at Andernach having furnished stone to the Roman builders of Cologne. These rocks, well displayed at the Sieben Gebirge and the Drachenfels, are chiefly trachyte, an acidic volcanic rock, of which felspar forms the greater part. Such, too, are the volcanic rocks of Auverge in central France, which have supplied material for some of the buildings of the city of Clermont. Hornblende or amphibole is, as has been before stated, a very tough mineral, and forms a constituent of some granites and of syenite which may therefore be classed under hornblendic as well as under felspathic stones. Hornblende is a silicate of magnesia and lime with iron and manganese, and is of a dark green or black colour. In addition to hornblendic granite and syenites, this mineral is a constituent of the diorites or greenstones, basic Plutonic igneous rocks. They are little used for building stones, but one, the beautiful orbicular diorite or Napoleonite, of Corsica, forms a handsome ornamental stone. For use as paving stones, diorites are of great value, and they are very largely quarried for this purpose at Penmaenmawr in North Wales, and at Bardon Hill in Leicestershire. Near the town of Dudley in Staffordshire, at Rowley Hill, there is a highly interesting igneous rock called Rowley rag, which has been largely quarried for paving purposes, and has also been melted and cast into ornamental articles. It is highly hornblendic and exhibits columnar structure very conspicuously. The mineral giving name to the Augitic group is sometimes called pyroxene, and is very similar in composition and general aspect to hornblende, having magnesia for base, and being of a dark or black colour. With labradorite felspar, it forms the ordinary black lavas, and the basalts and dolerites, which are merely old lavas. These rocks are therefore volcanic, and are formed when a flow of lava issues from a volcano. Basalt and dolerite having a similar composition, differ considerably in texture, basalt being a compact rock with its component minerals so intimately intermingled that they are separately indistinguishable to the eye, while in dolerite the texture is much coarser, and the minerals, though intermingled, can be easily separately seen without the aid of the microscope. Old lavas, or basalts, develop a remarkably columnar structure, as is most conspicuously displayed at the Giant's Causeway at the north of Antrim, and at the Isle of Staffa in the Hebrides. This structure, the result of vertical splitting, is due to shrinkage of the homogeneous mass. Basalt was used by the ancient Egyptians for sculpture, and several examples are now in Rome, the most noticeable being the lions at the foot of the steps of the Capitol. An old form of basalt, the melaphyre, has been used with good effect in the tomb of Napoleon at Paris. The lava-rock of the Neapolitan district is largely used for building purposes, the town of Torre del Greco being chiefly built of it. At the eruption of Vesuvius in 1631, there was an enormous flow of lava which formed seven great rivers of molten rock, that, reaching the sea, produced projecting headlands. This rock is now quarried on the shore of the Bay of Naples, near Torre del Greco, and and incipient columnar structure may there be detected. Lava has been abundantly used in Italy for paving purposes from early times. The Via Sacra and the Appian Way still display the lava pavement of old Rome, and quarries of the rock are close to the famous road over the Campagna at Capo di Bove in an old lava flow from the now extinct volcanic craters of the Alban Hills that terminates near the tomb of Cæcilia Metella. Blocks of lava also form the pavement of the modern city of Naples, and, as is well known, that of the ancient city of Pompeii, where the great polygonal blocks of lava from the pre-historic lava-flows of Vesuvius are grooved by ruts worn by the wheels of Roman chariots. There is much basalt in the British Islands, for volcanic activity has here been great in the past. Old lava forms almost the whole of the county of Antrim, and much rock in Mull and other islands of the Hebrides, as well as at Edinburgh and other parts of Scotland. So, too, in Wales, Cumberland, Shropshire, Staffordshire, and other counties in England; but except as a road metal it does not seem to have been economically worked. The consideration of the structure and origin of building-stones cannot fail to forcibly remind us that the work of constructing the solid rocky framework of the earth has by no means terminated. Still, the physical forces of nature acting on the exterior of the globe are incessantly working, and laying down and accumulating vast masses of silicious and argillaceous materials; still, animal life, in the coral-animals of the Tropics, the Foraminifera of the Atlantic, and the Mollusca of all seas, is extracting from the waters mineral matter which is left, when its producers die, in a solid and enduring form to supply materials for limestone rocks; still, the chemical forces of nature are completing the rocks so commenced and entirely forming others; and still, the internal forces of the globe are producing volcanic action and pouring forth floods of lava to form hard basaltic rocks as in the geological epochs of the far distant past. Life is short, Art is long, but Nature is eternal.

ARCHITECTURE OF SOUTHERN ITALY.

At a meeting of the Leeds and Yorkshire Architectural Society, held on Monday night, Mr. F. W. Bedford gave a lecture, illustrated by lantern views, and entitled "Some Account of the Arts in Southern Italy and Sicily." Mr. W. H. Thorp, President of the Society, introduced Mr. Bedford. The lecturer described the geographical position of the land, its climate, and the beauty that nature has lavished upon it, which made it the coveted land through many generations, and consequently the field of struggle between the older and newer civilisations, and said that, in speaking of the art of Sicily, we must have clearly in our minds its position, thus placed midway between Athens and Rome, and Rome and the mighty power of Carthage. The climate, too, had great influence on the arts, its bright sun and blue sky being reflected in the brilliant colour of its temples. The temples are now the sole remains of the wonderful Greek civilisation that flourished in these parts. The Temple of Juno Lacinia, erected in the 5th century B.C., a pure type of Doric, was built, he said, as were all the temples at Girgenti or Agrigentum, of a warm yellow and red calcareous stone, which was covered with an extremely thin and fine coating of stucco made of powdered marble, and afterwards painted in the brightest colours with ornamental designs. The Temple of Concord, a little to the west, was one of the best preserved temples in existence, owing to its having been converted in the Middle Ages into the church of "St. Gregory of the Turnips." It was similar in plan to the Temple of Juno, somewhat later, but also belonging to the best period of Doric art. After describing other temples, he said it was difficult to picture in our minds what must have been the effect of these temples in the days of the Greeks—this long succession of noble buildings, situated in one of the most beautiful spots in the world, on the edge of a precipitous ridge, converted by the consummate art of the Greeks into terraces and platforms from which they viewed the sparkling sea beyond. It was unfortunate that we had no remains of the domestic and civil architecture of the Greeks, or of their paintings. However, in tracing the influence of the Greeks on the native tribes of the countries they colonised, they could gather some idea of the Grecian houses and their decorations from what was seen in the town of Pompeii. The most interesting period of the art history of Sicily and Southern Italy commenced with the invasion of the Normans. The architecture of the Normans was quite different to that of Normandy or England. The Norman invaders were warriors, and did not devote themselves at first to the arts. They found the inhabitants of the island Greeks and Saracens, in a high state of civilisation and culture. The Normans employed the Saracens in the building of their churches and palaces; the Saracenic art was again swayed by Byzantine influences. The Normans, however, introduced many features of their native land, so that the result as we saw it was a mixed style of great interest. The first building of the Norman period in Sicily was the Cathedral at Cefalu, erected by Roger in 1131. It was Basilican in type, with the unique feature of twin Norman towers in front. It contained the most beautiful mosaics in Sicily, completed in 1148, of a far higher class of art than the Roman ones of the period. The Capella Palatina in the Royal palace at Palermo was built at the same time as the Cathedral of Cefalu, and the mosaics were little, if any, later. Above a high dado of marble, porphyry, and mosaics, all was gold—the glittering gold of glass mosaic. In the semi-dome of the apse was a great bust of Christ. The whole story of the Old and New Testaments was told in those mosaics in a strikingly simple yet telling manner. Over the crossing, and above golden arches, sprang a low semicircular dome. Mr. Bedford then compared this style of polychromatic decoration with our Northern cathedrals, wherein the windows formed the chief centre of colour, and with the fresco-covered churches of Italy. As to the methods of the mosaic workers of the 12th century, Mr. Bedford said the whites and flesh tints were of calcareous stone, found in the islands, of different shades. All the other colours were of coloured glass; while the gold ground was formed of gold leaf between two sheets of glass fused together, and then cut up into cubes about three-eighths of an inch in size. Concluding, the lecturer said the buildings of Southern Italy and Sicily of this period, although not so great or ambitious as some of our Northern efforts, were of an interesting transitional character, and formed a link between the Eastern and Western worlds.

CONTENTS.

Architectural Teaching 197
An Oppressive Building Law 197
Warming and Ventilating Public Buildings with or without Motive Power 198
Building Stones: their Structure and Origin 200
Architecture of Southern Italy... 202
The Building News Directory xv
Building Intelligence xvi
Architectural and Archæological Societies xvi
Competitions xvi
Our Illustrations 203
Wayside Notes 222
The Surveyors' Institution 222
Patented Plans for the Improvement of Schools... ... 223
The Architectural Association 223
Hospitals and Asylums 224
Books Received 225
Correspondence 225
Intercommunication 226
Legal 226
Legal Intelligence 227
Our Office Table 227
Meetings for the Ensuing Week 228
Trade News 228
Tenders 228

ILLUSTRATIONS.

"THE CARPENTER'S SHOP AT NAZARETH."—PLYMOUTH CO-OPERATIVE AND INDUSTRIAL SOCIETY'S NEW PREMISES. — PERSHORE ABBEY. — HOUSE AT FOREST-ROW, EAST GRINSTEAD.—RYDAL MOUNT SCHOOL, COLWYN BAY.

Our Illustrations.

"THE CARPENTER'S SHOP AT NAZARETH."

The above has been painted by Mr. William Lance for the decoration of St. Mary's School, Wantage, and is a scene in the ordinary household life of the Holy Family. The Child Jesus has reached an age when He can begin to make Himself useful in a humble way to the carpenter of the lineage of David, who stands to Him in the position of a father. He is engaged in sharpening the carpenter's tools that Joseph uses in his trade. As He stands at the grindstone in the open court that forms an important feature of most Syrian houses, His mother, passing to and fro about her household duties, has paused to contemplate the Child, whose birth and character draw forth her reverence as well as affection, though as yet she does not fully realise who and what He is. Jesus ceases His occupation for a moment to place His hand in hers, and to look up into her face with the truthful affection of a child. St. Joseph also, without remitting his vigorous planing at the bench behind, glances at the mother and Son with a dim conception of the mystery of their relationship. The utensils of his trade are kept in an arched recess in a wall of very solid masonry of the hard limestone in which the mountains of Palestine abound, its original white being toned down to a pale yellow by exposure, which, however, has left still visible the salmon-coloured veins which vary its surface. A stone staircase leads from the court to an upper chamber, having a door opening upon the roof, the parapet round which is decorated with the arrangement in triangles of small red pipes, perforating it from side to side, which is everywhere used to give lightness and finish to the tops of walls in Palestine. Against the wall at the back there rest two newly-fashioned implements—a crook and a fishing net, reminding us that He who received "gifts for men" was to be Himself the "Good Shepherd," or Pastor, and the "Fisher of Men" the Evangelist; while He is here engaged in learning the trade of the "Builder," the Apostle. There hovers near Him the Dove, the symbol of prophetic inspiration. The subject has been chosen for the decoration of a schoolroom, as setting forth the beauty and dignity of Labour and Obedience, in the example of the perfect Childhood.

PLYMOUTH CO-OPERATIVE SOCIETY CENTRAL STORES.

These premises, now in course of erection, situate at the corner of Frankfort and Courtenay streets, Plymouth, have a frontage of 126ft. to the former and 146ft. to the latter. They will be entirely occupied by the society for the purposes of their business, and comprise on the ground-floor nine separate shops for various branches of the society's business. On the first-floor will be a general office, 50ft. by 34ft., with manager's office and accessories, and several large show-rooms for furniture, drapery, &c. On the second-floor is a hall about 80ft. by 41ft. for general meetings of the members (who number in the whole about fifteen thousand). It has a large end gallery, also kitchen and serving-room adjoining for dinners and similar entertainments. There will be also on this floor committee-rooms, reading-room, library, and other recreation-rooms and work-rooms. The remaining stories will be principally occupied as work-rooms, store-rooms, and caretaker's apartments. The principal entrance to the hall will be from Courtenay-street by a Portland stone staircase 6ft. wide, and there will be an exit staircase of almost equal dimensions at the other end leading by a corridor into Frankfort-street. The stories are lofty, the ground-floor being 17ft. high, the first-floor 14ft., and the remainder of proportionate height. The hall will be about 35ft. high, and the ceiling will be in three curves, those at the sides springing from the same level as the arches of the windows. The fronts are faced with deep red facing bricks, with Portland stone dressings. The whole of the plinth and pilasters of ground-floor up to a height of 7ft. above the footpath are of polished red Peterhead granite, as are also the jambs of two of the principal doorways; the third doorway (the main entrance to the hall) is entirely of polished red granite. The clock tower rises to a height of 150ft., and will contain a clock with four illuminated dials with Westminster chimes. The general contractor for the work is Mr. A. R. Debnam, of Plymouth. The architect is Mr. Henry J. Snell, of the same town.

PERSHORE ABBEY.

Pershore Abbey was founded either in the year 604, 681, or 689, A.D., preference being given to the last date. It has been several times since then repaired or rebuilt, and the present portions—the choir, south transept, lantern tower, and some chantry chapels—exhibit examples of 11th, 13th, and Early 14th-century work. The 11th-century work is in the south transept, the 13th-century that of the choir, a very beautiful specimen, consisting of four straight angles, and one returning towards the eastern arch at an angle; the piers are delicately shafted and the arches richly moulded. The illustration is of the Lantern Tower, about 40ft. square externally and 30ft. internally, is of Early 14th-century work, attributed by the late Sir Gilbert Scott to the architect of Salisbury Cathedral tower, to which it bears much resemblance, though much plainer in detail. His reasons for this statement we will consider directly. It stands on four lofty Norman arches, springing from massive piers, faced on each side with coupled attached three-quarter shafts having rudely-carved caps, and which probably bore the tower, destroyed by the fire in 1288, of which traces are yet distinctly visible; and, as about half a century after the tower was still spoken of as ruinous, 1330 will not be far wrong for the time about which the present superstructure was commenced. It rises to a height of 60ft. above the arches, and makes the total from the ground about 116ft., and to the top of the modern pinnacles 144ft. Externally, the upper or belfry story, divided from the lower by an embattlemented band (a rare feature in this period), exhibits four canopied arcades of four arches each, slightly recessed behind the angle-stair turrets, and divided by square, pinnacled shafts, which occur in couples in the middle of each face. The central arches are pierced for light; the others are blank; all have mullions and traceried heads. The lantern story has on each side two traceried windows of two lights, the lower portions of which are somewhat awkwardly shut off by the line of the choir, transepts, and nave roofs which rise sharply on either face. The turret of the stair, now crowned with modern pinnacles, added by Sir Gilbert Scott, rose originally only just above the parapet. There exists to the north-east angle of the tower a semi-Classic buttress, which was erected when, not having the support of the north transept, the tower was considered somewhat unsafe. Internally, a lantern of much beauty is displayed, so much so that of it Sir Gilbert said he "hardly knew of a lantern story so beautiful as that at Pershore; it stands," so far as he knew, "quite alone in its design." It is richly panelled and traceried, and is pierced by two passages, one above the other, from the upper of which access is made to a square ringing stage, so arranged as not in any way to interfere with the view of the lantern from the floor of the church. The belfry over contains eight bells—one of the finest peals in England, though surpassed by some of a larger number—cast in 1729, except one, the treble, which dates early in the present century. The tenor is of about $1\frac{1}{2}$ tons weight, and gives the note of D flat. The timber roof over is an old one, but its date is unknown. There is no provision for a spire, and though it has been suggested as the original intention, it does not seem very probable, except that perhaps a wooden one might have been used.

Francis B. Andrews, A.R.I.B.A.

HOUSE AT FOREST-ROW, EAST GRINSTEAD.

This house is now in course of erection upon a beautiful site overlooking Ashdown Forest. The walls up to first floor are built hollow faced with the local sandstone, the upper portion is in half-timbered work, filled in with brick cemented on face, and the roof is covered with brown Broseley tiles. Mr. Sidney A. Ell, A.R.I.B.A., of East Grinstead, is the architect, and the work is being carried out by Mr. Job Luxford, of Forest-row.

RYDAL MOUNT SCHOOL, COLWYN BAY, NORTH WALES.

The rapid and increasing success which has attended the above school under the *régime* of its popular head master, Mr. T. G. Osborn, M.A., J.P., together with the lapsing of the lease of one of the schoolhouses, has necessitated the additions which we illustrate to-day. The recently erected buildings comprise a new schoolroom, 46ft. by 24ft. (exclusive of bay), a dining hall. 44ft. by 22ft. (with service from kitchens), a master's room, several art and other classrooms, boys' changing room, lavatories, and the various accessories necessary to a large private school, including provision for a laboratory. In the upper floors extensive bedroom accommodation is provided for both boys and masters, the rooms for the latter (which are arranged as sitting and bedroom combined) being planned so as to command the boys' bedrooms on either side. A sanitary block, &c., is provided near, and yet separate from, main building, and special attention has been paid to the ventilation and drainage of the school buildings generally. The style of the new portion has necessarily been influenced to a great extent by the existing buildings, but a somewhat more scholastic character has been introduced in the new work, which has been executed from the designs, and under the superintendence of, the architect, Mr. T. E. Lidiard James, of Lonsdale Chambers, 27, Chancery-lane, London. In connection with the school there exists another house to the north of the main building, near which are situated a well-appointed school workshop, and also, at some distance from the school, the sanatorium. The new buildings were formally opened last June by the Rev. Dr. Moulton, principal of the Leys School, Cambridge, and president of the Wesleyan Conference. The external facing of the work is of Yorkshire stone, from Shepley, near Huddersfield, matching the older part, with Cefn-stone dressings. The builder was Mr. J. Berth Jones, of Llanrwst, and the clerk of works Mr. George Malpass, of Sheffield.

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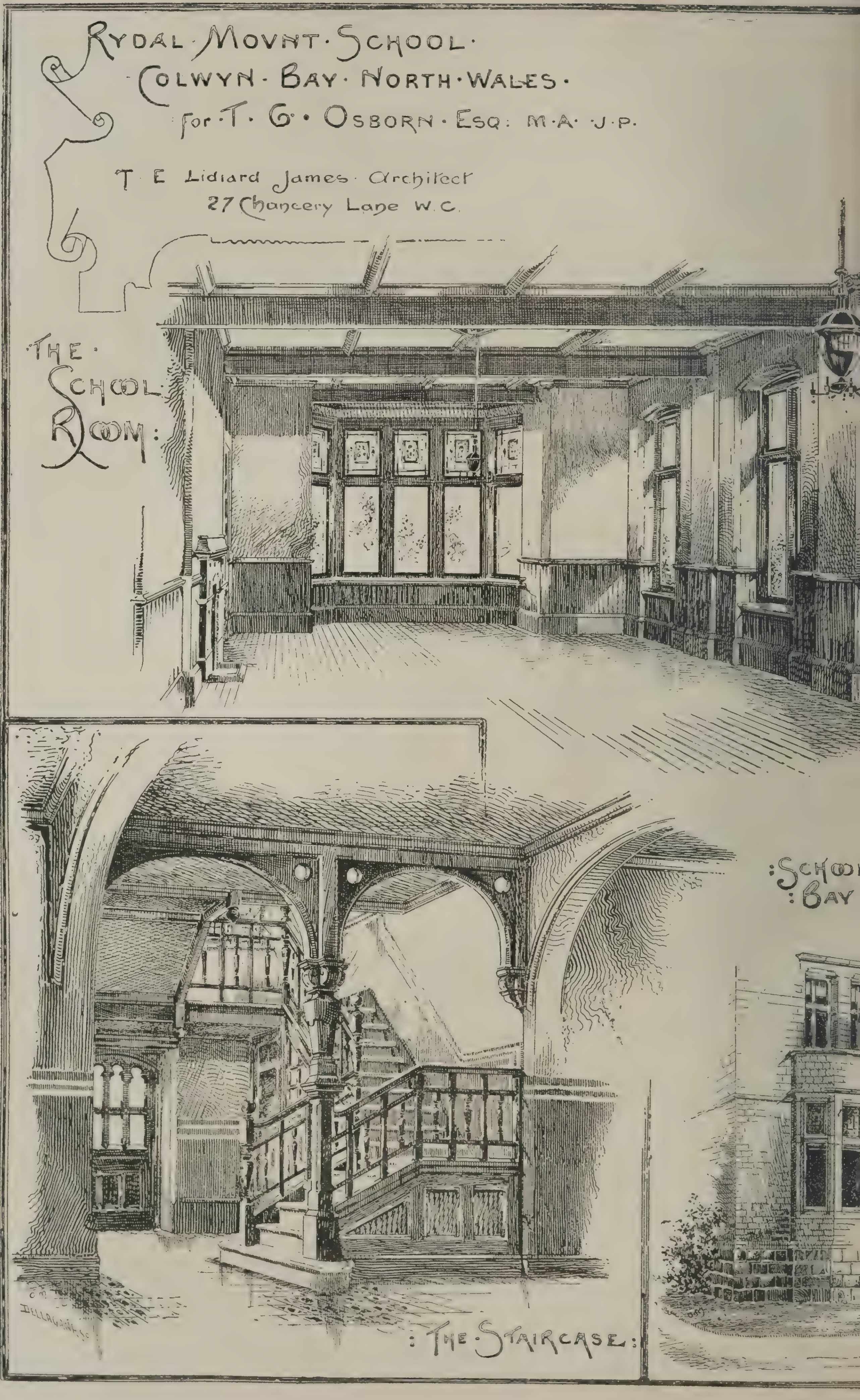
A fresh disaster occurred on Monday to the Manchester Ship Canal works. The tide burst in Bridgewater Lock, which is intended to work the port of Runcorn, and a breach of 200ft. wide was made. The brickwork, 5ft. thick, was thrown down, much plant is submerged, and three men were drowned. The lock was approaching completion, and the damage is estimated at about £5,000.

St. Matthew's Church, Horsley Fields, Wolverhampton, was reopened last week after undergoing extensive alterations and renovation. The improvements include the insertion of a large four-light stone-mullioned window at the west end of the nave. The old organ has been removed, and pews are erected in its place, while a new organ is built in a chamber formerly used as a vestry. The chancel floor is raised 1ft., extended 7ft. into the nave, and laid with encaustic tiles, approached by Yorkshire-stone steps. A new pulpit and a reading-desk are placed at the end of the chancel floor. The church is repewed throughout with pitchpine seats, while the roof has been revarnished and the walls recoloured. The new organ was built by Messrs. H. Pickett and Son, and the structural alterations were done by Mr. E. Marchant, Ettingshall, from the plans of Messrs. C. Manton and Son.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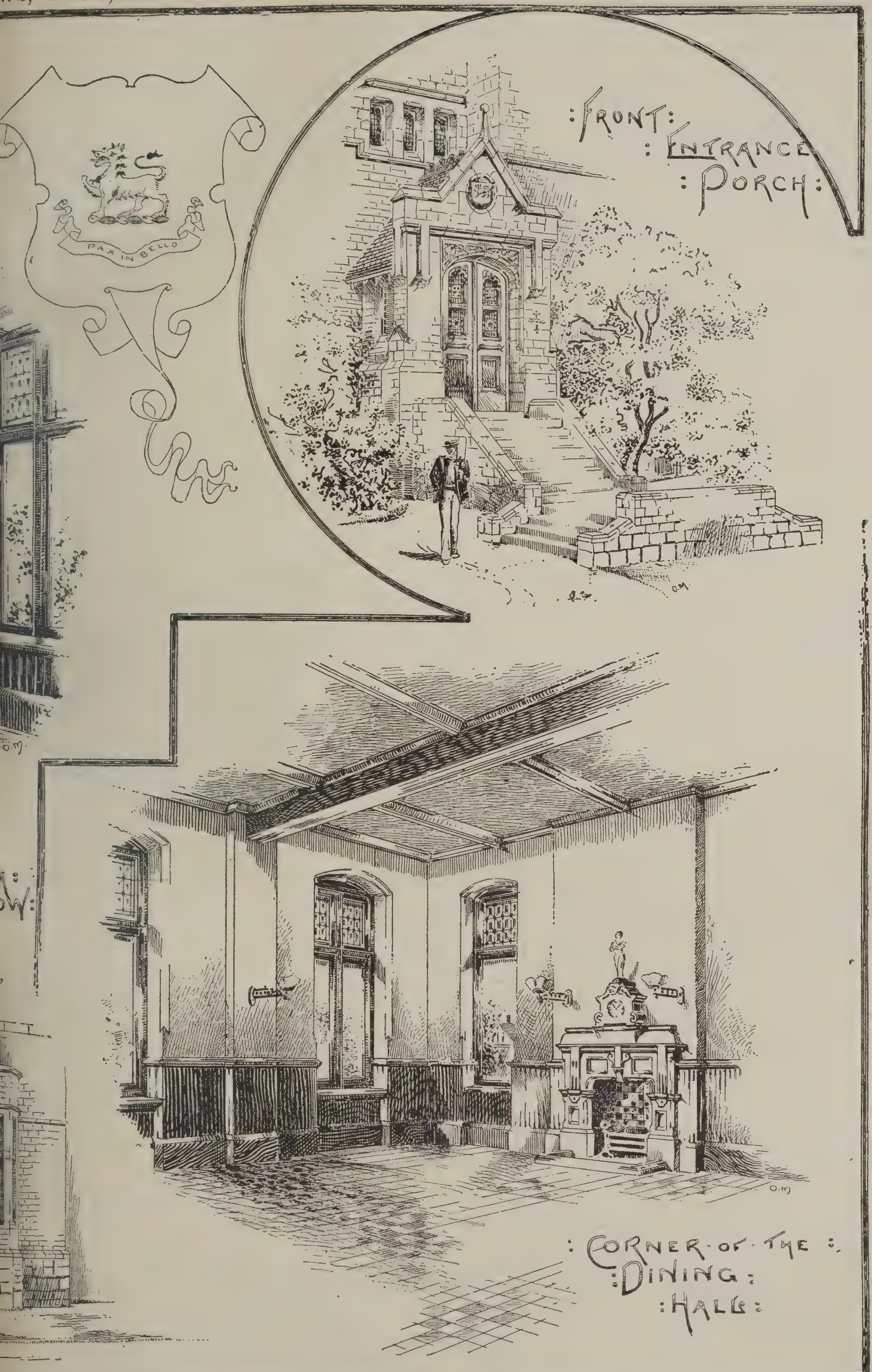

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WAYSIDE NOTES.

It is a remarkable thing, considering the progress that we have made, or that we supposed we had made, in the science of ventilation, that a medical man should have recently exclaimed to a gentleman who was sounding him on the subject of cold-catching after church-going, "Oh! yes; the church, the chapel, and the teapot are our best friends." One usually imagines that nowadays churches are heated and ventilated to perfection, and chapels likewise, and that, therefore, no more risk should be run in leaving such buildings than in quitting the domestic roof; but a letter from "Fresh Air" in a recent issue of the *Standard*, reminds us that all may not experience the same sense of satisfaction in the things that be. The writer stigmatises our churches as "little better than death-traps." If so, then what are the theatres? As a rule, a church is vastly better heated and ventilated than a theatre, and a public hall or concert-room is generally worse than either. But I think our friend has a good deal of justification for his complaint, and for condemning the ventilation of many churches. It is sufficient to call to mind how many and various are the systems of warming and purifying the atmosphere of public buildings—churches more particularly—to understand that they cannot all be right, unless, indeed, the laws of nature can be set at defiance. If, therefore, *some* plans for heating and ventilating are in harmony with natural forces, it stands to reason that those on a different system must be a delusion. There being so many considerations to be made in dealing with broken interiors like churches, irregular in plan and varied in sectional heights, their ventilation is naturally difficult compared with that of a box-like room. Yet how many treatises have been published on heating and ventilation! We shall soon have to obtain the sanction of Parliament to a regulation whereby everyone entering the architectural, engineering, and allied professions and callings, shall be submitted to a rigorous examination, and if he shows signs of developing into a writer of matter relating to heating and ventilation, shall be bound over to "keep the peace," or be otherwise vigorously dealt with.

A new prophet has arisen who knows not "style." At last the question that has puzzled the grey-heads of generations has been solved. What is "style" in architecture? "There is no such thing" says Mr. E. F. C. Clarke in the contemporary number of *A. A. Notes.* "In olden times there was *growth*, and in our time there is 'fashion,' as in hats and bonnets. It is now 'Classic' versus 'Gothic,' 'Early' versus 'Late,' 'school' versus 'school.'" Mr. Clarke refers to "the astounding pile of monastic eccentricities known as the 'Royal Courts of Justice'" to "wrong-headed Burges," and again to "the sad heap of stray limbs of a dead past gathered together in the Strand." But further on in the paper I am right glad to find a champion of a "stubborn and absolute return to *first principles*," and a plea for "mass, simplicity, purpose, and, above all, *reverence*, that highest of qualities so fast disappearing from all human thought and all human life." This is good, and we may be tempted to overlook much of the patronising of Burges and Street in one who sees the crying necessity of the architectural age for more light on the first principles of design.

A note in *A.A. Notes* points out that the attendance at the ordinary meetings of the Association is not what it should be. From some indefinable reason the average attendance during recent years has diminished. It is pointed out that whereas in the olden time it was often difficult to find standing room, now there are generally seats to spare. Certainly I never remember so meagre an attendance as when Mr. Goldsmith, the genial secretary, read Mr. Westlake's paper, with the sole exception of the meeting a fortnight before, when Professor Garnett came all the way from Newcastle to give, in concise form, the results of his ripe experience in the arrrangement of technical schools, to what was literally a beggarly array of empty benches. As the character of the papers have certainly not deteriorated, it is difficult to assign any plausible reason to this decrease in attendance of members. It is suggested that the increase in the amount of student's work may have something to do with the falling-off of attendance at the ordinary meetings, the students taking Friday as a "night off," and trusting to their "B. N." for reports of the papers read. If this is really the case, it is a pity, because however useful the report of a paper may be to those who are absolutely prevented from attending the meeting, it is greatly to the advantage of a student to attend the actual reading, so that he may make the most of the opportunity of seeing drawings, &c., exhibited in connection with the lecture. As I write I read on the next note, and find that the writer argues in precisely the same way, and further suggests "that the opportunity of hearing eminent specialists upon questions hardly dealt with in the curriculum is not to be lightly disregarded," and that the occasion is also a very valuable one for cultivating the art of public speaking, which will be valued when in future years the young architect has to stand up before building committees.

Committees are dreadful facts to face. I was told some days ago of an incidental occurrence that shows the pettinesses of which they may be capable. Several members of a building committee were inspecting the progress of a public work, my friend, the architect, accompanying them. On a discussion occurring as to the best way of carrying out some minor detail, a suggestion was made; whereupon Mr. Buttertub *loq.*:—"Oh, we can't do that, *it will be carrying out Jones's idea!*"

None of us, in the general way, care to "carry out Jones's idea," but when the public interest is at stake private jealousies and contentions should be set aside. And as to committees, the evil of them does not rest at petty differences. Among others with whom the architect has to contend, there is the pig-headed member, and the matter-of-fact, over-economical gentleman, who wants to spoil the ship for the ha'porth of tar, the man who "knows something about building," the amateur architect who likes "the Gothic" manner, and is generally supposed by the other members of the committee to possess a knowledge of matters architectural of unfathomable depth; and not infrequently our old friend Mr. Buggins himself may be found in committee, airing his views on drains and stink-traps, and generally making himself objectionable. To meet and argue, reason, and confute with such a company require a good deal of "gab"; and if this is not a gift such as old George Stephenson coveted, it must be acquired by practice. The young architect will in after years consider that by constant attendance at meetings like those of the Association, and studied efforts at elocutionary excellence, he has very cheaply acquired an invaluable accomplishment. In these days of competitions, every one is liable to find himself face to face with a sceptical, exacting committee, and it behoves all to prepare for the contingency.

At the fifteenth annual dinner of the men portion of the choir of St. Paul's Cathedral, Canon Scott-Holland, who presided, explained the works now in progress and contemplated for the decoration of the Cathedral. Mr. Richmond has agreed to devote three years to the work of decorating the spandrels and smaller domes of the choir in mosaic, part of the scheme being now well advanced. Mr. Penrose is preparing to substitute statues for the imitations now above the whispering gallery, and for decorating the alcoves above the arches carrying the dome, the spandrels of which are now in course of completion in mosaic. Messrs. Bodley and Garner are preparing a scheme for the better treatment of the font, and placing a marble canopy on it; and Mr. Gilbert has undertaken to design two candelabra for the western entrance, in lieu of the unsightly gas-lamps. This all seems to me good; but so diverse are opinions concerning what ought to be done in the matter of the decoration of St. Paul's, that it cannot be expected to please all.

The parties seem of two distinct orders, each with their respective creeds. On the one hand, we have the purists, and the other party comprises such as believe that as the cathedral interior now stands it is cold and bald. They may be called the "ornamentists." The purist party is divisible into sections, according as the individual members are against innovations on religious and puritanical grounds, or for artistic reasons. To the religious party I give little consideration, they having shown their cast of mind in the reredos case; the architectural purists have usually my favour in regard to well-designed Gothic church interiors; but there is something about the interior of St. Paul's Cathedral that gives me sympathy with the ornamentists in the present question. So long as the idea of plastering over every square inch of the interior of the cathedral with colour or decoration, as a plasterer papers and limewhites the walls and ceiling of a house, is forsaken, the efforts at rendering the interior more inviting and interesting must meet with success. And I believe that so far as the Dean and Chapter have carried their work, they have been successful, while the works foreshadowed by Canon Scott-Holland, in the decoration of the choir, the provision of a font canopy, the substitution of real statues for false, and the erection of candelabra by Gilbert, will all help on towards the desired end.

Goth.

THE SURVEYORS' INSTITUTION.

Of the candidates who presented themselves at the preliminary examination of the Institution, held concurrently in London and Manchester on the 26th and 27th ult., the following satisfied the examiners:—

Gerald James Frederick Adams, Henry Charles Adams, Alan Arnold, Percy Charles Beasley, George Beken, jun., Herbert Owen Bell, Frederic Roger Betenson, Raphael Bonella, Alexander Bruce, Charles V. Cable, Sydney George Carnell, Alfred Stott Cartwright, James Arthur Chubb, John Whitehead Clayton, Robert Wm. Clutterbuck, Herbert Lee Cowell, William Shapland Cowper, Herbert Henry Crawford, Stanley Johnstone Cribb, Dixon Bowring Davies, Walter Jackson Davies, George Plant Deeley, Edward Aubrey Deer, Clement Robert Finch, Hugh Ernest Folkes, John Stanley Garner, Henry Alexander Glover, Chas. Henry Godfrey, William Harris, William Rook Hicks, William Hindes Hull, *William Jarmain, Douglas Harold Jeboult, William Thomas Lamprill, Walter Burditt Leane, Sydney Burton Lee, Francis Prideaux Lightfoot, Edward Covill Lyons, Frederick Chas. Thomas Mann, Alfred John Martin, Thomas Charles Nevett, Harry Alfred Newbronner, Stanly Hatch Page, William Henry Pain, Walter Parks, John William Paul, John Arthur Peppercorn, Francis John Phillips, Frederick Fleet Rootham, Charles Sidney Sandford, Alfred Sydney Edward Sedgwick, Henry Edward Bygrave Sewell, Arthur Percival Skeat, Alfred Charles Skingle, Alexander George Smith, Rupert Wyatt Smith, Arthur Carnegie Standen, Chas. Walter Stupart, William Selves Walker. Herbert John Watson, Herbert Bateson Whitby, Sidney Algernon Wilde.

* Passed at head of list.

CHIPS.

The top stone or finial of the main gable of the new Wesleyan Chapel, Penryn, Cornwall, was set on Monday. The granite work of the building has been executed by Messrs. Freeman and Sons. Mr. Arthur Carkeek, of Redruth, was the contractor; Mr. J. Wm. Trounson, F.R.I.B.A., F.S.I., being the architect.

The death is announced of Mr. John Edward Price, F.S.A., of Leytonstone, the secretary of the London and Middlesex Archæological Society. Mr. Price, who was in his 52nd year, was the leading and most reliable authority on Roman relics in London, and had done good service in connection with the acquisition and arrangement of the contents of the Museum at the City Guildhall.

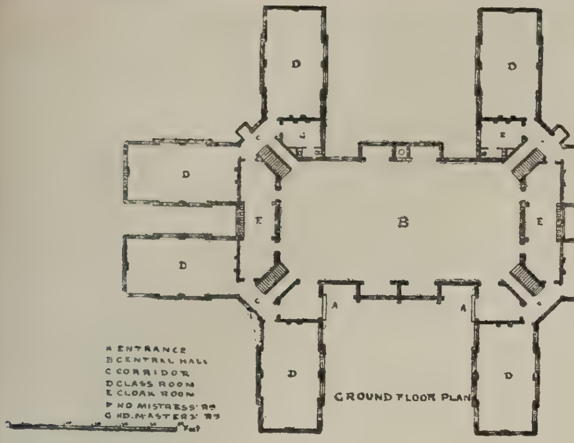
In the case of the application for an order of discharge from bankruptcy, made by Walter William Neal, of Newfoundpool, late of Leicester, builder, the discharge has been suspended for nine months, ending April 21st.

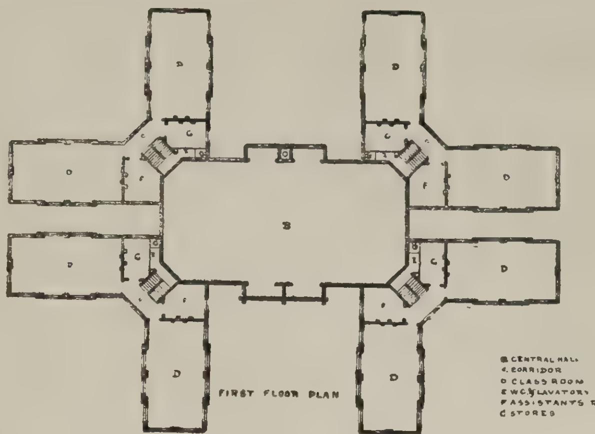
The promoters of the Waterloo and Royal Exchange Railway have decided not to proceed any further with this scheme during the ensuing session of Parliament.

The Glasgow police commissioners appointed on Monday Mr. Thomas Nisbet, C.E., as assistant master of works, at a commencing salary of £300 a year.

A village hall was opened at Llansaintffraid last week. The hall is seated for 300 persons, and has been rebuilt from designs by Mr. E. B. Smith, of Oswestry, the contractor being Mr. David Mason, of Llansaintffraid.

At Daphne excavations have been begun by the Athenian Archæological Society, with the object of bringing to light the *via sacra* of Eleusis and the remains of the sanctuaries of Apollo, of Athena, of Demeter and Kore, and of Aphrodite, which known to have existed in that neighbourhood.





PATENTED PLANS FOR THE IMPROVEMENT OF SCHOOLS.

MR. THOMAS HUGHES has produced this patent arrangement illustrated above, with a view of isolating the several class-rooms, of either a large or small school, so as to secure thorough ventilation and light, each class-room being made of easy access either from the central hall or the exterior of the building. The accompanying drawing shows class-room accommodation for 1,200 children, there being 16 class-rooms, D, each 40ft. by 20ft., leading from a central hall, B, 90ft. by 45ft. There are also head-master's and head-mistress's private rooms, E and G, size 14ft. by 10ft., with w.c. and lavatory accommodation to each. On the first floor there are four private rooms, 14ft. by 14ft., and four other rooms, G, 14ft. by 10ft., which rooms are intended for assistants' private rooms and store-rooms. There are also four private w.c.'s and avatories, one from each staircase landing. On the ground floor at each end of the central hall s placed a cloak-room E, size 45ft. by 14ft., divided into two compartments by a wooden screen. There are also six wash-hand basins to each cloak-room, three on each side of the partition. The staircases, C, four in number, are 4ft. wide n the clear, and the staircase corridors are 4ft. and 8ft. respectively. The amount of land covered by the school buildings is about ,744sq.yds, the extreme length of the building being 68yds. 2ft., and the width 53yds. 2ft. This ystem can be adapted to suit various sites ccording to requirements, and the central hall an be built either octagonal or oblong. The atentee claims that the cost of building will ompare very favourably with the cost of schools s erected at the present time.

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THE ARCHITECTURAL ASSOCIATION.

THE fortnightly meeting of the Association was held on Friday evening, the President, Mr. F. T. Baggallay, in the chair. The following new members were elected: Messrs. C. H. hewlis, W. Hearn, G. B. Goslin, F. G. Hunt, and R. V. Hunt.

ASHIONS IN ARCHITECTURE AND KINDRED ARTS.

A paper on this subject, written by Mr. . H. J. Westlake, was read in the author's bsence through ill-health by Mr. Goldsmith, on. sec. Mr. Westlake proposed to epitomise me of the differences of style that fashion had, om time to time, adopted during the present ntury, and to follow this by putting certain opositions before the members as the causes of e rapidity of these changes in recent years, ncluding by attempting to show how all this ight be worked to a good purpose. We are all us, the author continued, continually told by ose who claim to be men of "light and leadg" what is *the* thing, especially in the way of yle. Notwithstanding this, we have seen somemes the same leader change, from a dogmatic herence in preaching the imitation of some cient style, because of some supposed or real bjective value that its characteristics enshrine, d, altering his opinion, use the same arguments favour of another, and finally, perhaps, boldly inquishing his line of argument, opinions and , in favour of this, advocate something entirely ferent. The cause of this is difficult to exin. Often it is because some architect or artist, having made a success and a reputation in another style to that formerly in vogue, has attracted many followers, thus forcing a change of fashion, and your man of "light and leading" is fashionable in his opinions, or nothing. We are forced to ask ourselves this question: Why during the last century the changes in architecture and the kindred arts have become rather those of fashion than of style, and why we now have no distinctive style proper to this great period—no style which embodies a real religious or national character, and why for a certain short period we design in any adaptation of either of the old styles and then discard it for another? Could any method of enshrining a beautiful idea in architecture or art be more inviting than that of the Adelphi Adams and the period of Reynolds, of Flaxman, of the Wedgwoods, and all the eminent men of that time? Can you on looking back see any reason why such a fashion ceased, and that shown in the Houses of Parliament for a time arose, and Pugin, Sir C. Barry, and kindred artists were in vogue? We all know Pugin's arguments in favour of the Gothic revival. One of the most celebrated art thinkers and writers that ever arose, whilst in some respects following the same line of thought as Mr. Pugin, said hard things about him and the "Houses." I allude to Mr. Ruskin, who has been a power in the influence that at one time changed the mode of thought and fashion in art. The action of the Royal Academy during the century has been rather that of a body with an unsettled purpose. In its early days composition, design, and the more intellectual branches of the art were represented. Amongst its roll of members we often find the names of eminent composer-artists, such as Flaxman, Maclise, and Dyce. The main object of the majority seems to have been simply to encourage mechanical and technical excellence, until quite recently, under the present President, who, with some few others, has encouraged the study of the architectonic arts. The Academy has not, however (notwithstanding the recent advances in the architectural school), as yet during the present century shown us even the elements of a school of national artist-composers, great as some of its individuals are in separate branches of art. About half a century ago there arose the School of Design in South Kensington, but I cannot think the influence of that expensive machine has been other than dangerous at times. It has given us cheap drawing schools; but is national design, as national design, developed at all in proportion to the influence of the great and expensive machinery? As nearly all modern developments and improvements are from minds that were outside its influence, I cannot consider it a large factor in the changes that have taken place. Many of us can recollect the influence that the Lille competition and the publication of Viollet le Duc's dictionary had for a period on our fashions. The Early French style adopted by Burges and Clutton—the successful competitors for Lille Cathedral—began to dominate, and adaptations of this style became so prevalent that nearly every architect practised it more or less. We all know of work in that style by Clutton, by Burges (who never entirely deserted it), by Street, and by a host of followers, with a result that was lamentable; for the host of followers seem to have delighted in the eccentricities, rather than the merits, of the style, and many of the arts were involved in its study and practice for a considerable period. Later on, the competition for the Law Courts perhaps did much to produce a change in this, and we saw many of the competitors working from English models, although the successful architect never completely escaped from his French "convictions." The youngest of us have seen through the change, from Decorated to Perpendicular, the devotion to the so-called Jacobean and Queen Anne, and our present rising fancy, if there is one dominant, for a mixed Renaissance of a very indefinite character. This brings me to the second part of my subject. Why have these changes taken place? Why, if one of the antique styles did for centuries, and one of the Mediæval styles for one hundred years, and was consequent and consonant to its predecessor, must we have now twenty or thirty different, and often incongruous, styles adopted in the same period? What is the cause, not the accidental—but the essential—cause of this? Is it that there is no dominant national or religious character to enshrine, no dominant thought requiring a dominant idiom, no great and leading poetical aspiration in us, no really important idea for us as a nation to represent? So that we have fallen from the regions of the ideal, and are become more professional men and few poets! For architecture and art in their perfection are but concrete renderings of the author's finer imaginings. The language, the idiom in which he spoke in ancient days, embodied an idea of which he was a part—it was almost a "chironomia"—and we even now, when gazing at times on these ancient works, seem to feel the author's emotions, and to be inspired by the same sublime ideas. We appreciate at evening the grand outlines of their buildings as they appear like dreams, their masses showing dimly against the setting sun, and in the daylight we dwell on the sweet intentions or bold determination of their details or mouldings. We read their language, but have little occasion to speak it as they spoke it, and too great a love of various knowledge to limit ourselves as they were limited—to the perfect expression of a few ideas: we forget that in this limitation of action there is an increase of power. My argument may thus be condensed—the higher architecture is an art, and like the other arts is a language for the expression of thought; in this it distinguishes itself entirely from the science of building; perhaps to many my definition would be more acceptable if I were to say that it is a language combining science and art. In ancient times it expressed the ideas of the period in the idiom of the period. In these times what is its position, what expression of living national or local idea is there in the Houses of Parliament, the Law Courts, the Meat Market, in the various new Board schools, or workhouses? You may answer, little; but tell me to look to the railways and their stations, the City warehouses, and those real expressions of living national architecture, the ships; but for my own part, in these last only do I find what I desiderate. If, then, there is neither dominant idea nor dominant idiom, what is the architect to do? and the most rational answer to this, in my own mind, is that he must either express his own ideas, embody his own fancies, or represent the ideas of some living energy to which his mind is affiliated. When I said that we were now more professional men than poets, it was not my intention to imply that there are no poets left—no architects whose works speak of their nobility of aspiration or intelligence. Far from it. There are some few. It would be invidious to choose examples amongst the living; but I may mention the names of two who have not long passed away, and with whom I was intimate; and they had minds so full of sympathy and intelligence that they would have been marked men, no matter in what method they expressed themselves. I allude to Burges and Sedding, and I take them as exponents of the two ideas I have mentioned—Burges of the first, and Sedding of the second. Burges imbued his sensitive and poetical mind in Mediæval lore; he was almost at home in its ideas when an accident led him to study Early French architecture, and he learnt to speak in an idiom of his own formed upon that basis. He cared not to speak much in any other way; if he did, he did it with that difficulty with which one speaks a foreign tongue, and you all know at sight Burges's works, and from them Burges's ideas; they are not more than an individual expression, but they expressed the man, his intelligence, his great information, his power of adapting that information, and his poetical disposition. Sedding affords us a complete contrast; intelligent, fairly learned, of a refined and poetical mind, he rather represented an idea than himself. He did not work long enough in any style to form for his own use a distinct idiom, although he managed by his ability and sympathy to express himself in many ways; his individuality was never so apparent in his work as was that of Burges. This, then, is the highest point in which the architectural arts can now aspire as national arts. What might be done by the nation, or even by the City of London, or the various large parishes, is one thing—what might be done had they unity and honesty of purpose is magnificent to think of; but what is done amounts to little more than a series of jobs in which those capable of intrigue have had far greater chances than men of reflective, conscientious, and poetical dispositions. Look at the majority of public buildings, the workhouses, and the Board schools, and tell me, do they represent in any way the best or the second-best architectural genius of their period? You, who can form a fair opinion, tell me, am I right or wrong? Returning, then, to my subject, I fear this change of fashion, then, is unavoidable; we shall not have a 19th-century style. The era will pass without any distinct architectural expression like the period of a nation, if such a society can be so-called, of mixed languages. But what are the advantages of this disadvantageous position, as we are soon to enter a new era—the 20th century? History never repeats itself, yet its life and ideas are the products of its predecessors. Most of you will agree with me now in the statement that this is the first century in the history of the world's civilisation unmarked by any dominant architectural style. If the history of a country is written in its monuments, what will the historians of future centuries say of this? Will they be right in saying that it was a century of "Fashion," of vacillating thought and of changing or unsettled purpose, in which everything was tried and nothing stuck to? One cannot tell, but this we know, that if as a nation, as a people, we have made no great and distinct monumental mark, as individuals we may still have character and purpose. Perhaps, then, as a necessity of the position in which we live, if we differ in our characters and purposes, the great knowledge of the various styles which have been diffused by the successive study of them will be of some use to us and to coming men, from which each mind can adopt that best suited to its bent. Wren and Inigo Jones did this as Burges and as Pugin did. Moreover, this knowledge of the character and the details of each style enables us by comparison to form a clear and intelligent knowledge of the capacities of each, as though we could speak many languages and choose that which best expresses our thoughts, even if we lacked a mother tongue. Of course, a mind allied to very firm convictions and of a strong character may, out of this knowledge, evolve a style which may embrace the thoughts of an age, and become that of a coming era, but, as yet, we are looking for this mind. At any rate, when such a one arises there is a vast store of knowledge in the art literature of this century, so collected and ordered that he will not require mental food. He will have this advantage over those who have preceded him, in any period, for never has there been so vast a storehouse, nor so much accumulated store, so readily obtainable, and to this cyclopædic accumulated store of art knowledge the Architectural Association has been no small contributor.

A brief discussion followed, in which Messrs. Owen Fleming, Paul Waterhouse, C. H. Brodie, Leonard Stokes, F. T. W. Goldsmith, and E. Woodthorpe took part, and a vote of thanks was accorded to the author and reader of the paper.

HOSPITALS AND ASYLUMS.*

IN our recent remarks on asylum construction, we alluded to the very scanty information extant on this class of buildings that would be of any service to an architect. Since they appeared, a work of a comprehensive character has been published, which supplies, to some extent, the requirements of the profession. Mr. Henry C. Burdett, the author, formerly secretary and superintendent of the Queen's Hospital, Birmingham, and for twenty-five years engaged in hospital and asylum administration, has presented the public with the results of his experience in the shape of two handsomely-printed volumes, which give a comprehensive history of the subject, besides plans of some of the principal asylums in this country. These have been classified and arranged according to type, and are drawn to one scale. If we do not agree with some of the recommendations and suggestions given, we are willing to admit the scientific and medical facts and principles have been well summarised, and the work will be of value to those who want a record of accepted facts and examples. We must content ourselves with giving our readers a mere synopsis of the first volume, a very bulky one of 681 pages, which, like the second volume, deals with asylums, their history, and administration. The first chapters on the former treatment of lunatics are instructive; and the historical narrative is divided into the ancient period, the period of demoniacal possession, from 600 to 1750, the period of brutal suppression and ill-treatment of lunatics, from the latter date till 1850. Mr. Burdett's account of the second and third periods reveals a very inhuman and cruel method of treatment of the insane. Even ancient writers like Soranus, who lived a few years before the reign of Trajan, speak of the methods to be used, and which rather tended to assuage and appease than to irritate or frighten the patients, such as being kept in dark places, restrained by bodily force, and even tortured by cruel devices. The other portions of the volume deal with the history of lunacy and asylum treatment in the colonies and abroad, and the present condition of asylums throughout the world.

The second volume is more practical, and deals with asylum construction. Referring to site, many useful hints are given. For an asylum of about 600 beds, a site of 50 or 60 acres is found sufficient. Subsoil drainage is absolutely necessary where the soil is not gravel. Speaking of position, the author recommends a rather sheltered situation—a point upon which medical opinions will probably differ, as many of our English asylums are built on high ground rather exposed. The chapter on instructions to architects is of value; the author thinks open competition is the most promising system, if proper conditions are made imperative. Committees should state their ideas clearly, and among the points to mention are the type of asylum required, whether it is to be in blocks or on the corridor system, or a mixture of these; the number of blocks; method of warming, light, and ventilation; the number of beds, and the entire space for each; number of single rooms; if private patients are to be provided for; materials, style. We agree that a committee of architects and medical superintendents of asylums is the best body to adjudicate on the plans.

The main principles of construction are stated, and the following are a few that will be accepted: That the building should be constructed on some modification of the block principle; it should not exceed two stories in height; the floor of each block should contain dormitory space sufficient for those patients who occupy its day-rooms; that the corridors should be of two stories and fireproof, including staircases; access to any ward without passing through any other; single-bedded rooms should be provided to accommodate at least one-fourth of the patients, and should contain at least 800c.ft. each, with at least 80sq.ft. of floor; in the infirm ward as many as possible of the single rooms should open from day-room; hence the value of the gallery form of ward for an infirmary; minimum day and night space should be 600 cubic ft. to each patient—*i.e.*, a floor-space of 60sq.ft.; where there are separate dining rooms and recreation hall the day-room space may be reduced to 500c.ft., except in the infirm ward; each ward should have its own dining room, which should be an addition to the day-room space. Several other points are enumerated. The author recommends a modification of the French casement for day-room and dormitory windows, the upper part being an oblong hopper opening inwards from the transom bar, the lower part divided by a large mullion, with swivel hung sashes in each division. These certainly look better, and are stronger than ordinary sash windows, and there are no sash-weights and lines. Plain architraves and shelves for flower-pots are desirable, and the stone sills of windows should not be more than 2ft. 9in. from floor. Single rooms should have battened shutters securely hinged, and the lining should be extra strong. Blinds should be provided to day and dormitory windows, and a good, durable kind is wanted. As regards doors, the six-panelled is thought to be the best for day-rooms and dormitories, the upper panels being filled with strong glass plate in outer doors. For single-room doors the top panels may be left open. Some of them may have shutters. Flush-out closets without casings are recommended.

The administrative department is first discussed, each of the departments being specially treated. Generally the asylum has a southern aspect, with the recreation courts in front, and the entrance to the north, so as not be overlooked from the wards; but this disposition prevents, as the author says, the main elevation from being seen. A plate is engraved of a model plan for 750 patients, showing the official portion: the superintendent's block comes first, with clerk's office and sitting-rooms, with committee and bedrooms over for assistant medical officers. A short corridor joins this block with the main building, where are two receiving rooms for males and females, one on either side of corridor. The north longitudinal corridor here cuts across the block, from which the surgery and pathological rooms open. These form the north end of the main central block between corridors on the male and female sides. Between these follow in order an open court, then a large general store from side to side, with access from each corridor, with meat safe. Open courts divide the store from the kitchen department, with its surrounding offices, servants' mess-rooms, and bedrooms over. Two more open courts separate the kitchen from the store and housekeeper's rooms, and, lastly, at the south end is the recreation hall, 70ft. by 50ft., with dressing-rooms and chapel above. In a similar manner descriptions and plans follow of the laundry departments, and some useful remarks are made of the requirements. The hospital buildings are fully dealt with, and model plans are given of the infirm blocks. The plan consists of a long gallery, with day-room projecting in the centre towards the south, with twelve single rooms arranged along the north side. A small dormitory projects at each end of the galleried-day-room on south side, and a large dormitory block runs northward on the same axis as the day-room, thus forming a cruciform arrangement. At each end of the ward gallery the window is bayed. The nurses' rooms are placed at the ends of the single-room ranges in each case. A laboratory and bath-room projects from the large dormitory. The infirm are placed on the ground floor and the convalescent above. The author prefers the plan of giving patients their meals in rooms attached to their wards, and this plan is no doubt best. He remarks, and it is worth notice, that the architect's classification of wards is not often adhered to by the medical staff, who adopt their own classification. The plans are drawn to a scale of 1in. to 60ft.

An asylum for 300 beds is illustrated resembling that of the borough of Derby, built with blocks in quadrangle form on the corridor-pavilion plan. In addition to the model plans, plans are given of the Hereford City and County Asylum on the corridor principle, with wide galleries and centre bays; the Elgin, Illinois, Hospital on the linear system; the Gloucestershire Second County

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* Hospitals and Asylums of the World, &c. By Henry C. Burdett. In two vols. London: J. and A. Churchill, New Burlington-street.

Asylum, by Messrs. Giles, Gough, and Trollope, on the broad arrow pavilion system, partly constructed; the Norwich Lunatic Asylum, by Mr. R. M. Phipson; and large plans of the Claybury Asylum, Woodford, Essex, by Mr. George J. Hine, illustrated by us. These several types of asylum are described by reference to existing examples, full lists of which are given in every country of the world. Four leading types are enumerated, though these often merge into one another—viz., the irregular or conglomerate, the corridor, the pavilion, and the corridor-pavilion. Asylum construction in France and in Germany is treated in separate chapters, and the author deals with warming, ventilation, and lighting; and for asylums he thinks the high-pressure system of heating the best. Drainage, detached infectious diseases hospitals, asylum furniture and decoration, and irrigation are also subjects dealt with. The appendix gives the report of the Committee of the London County Council on a hospital for the insane, the evidence given on which is of value.

BOOKS RECEIVED.

A Manual of Instruction in the Art of Brass Repoussé for Amateurs, by GAWTHORP, illustrated (London: Drowley and Co., Ludgate-hill), will be found a useful manual for amateurs in the art of *repoussé* work, the author, who is a practical artificer in brass and iron, endeavouring to explain the methods used by craftsmen in this ancient art. The mode of beginning, tracing, or outlining, grounding or matting, raising, finishing textures, background, and other operations are all practically explained. The tools required, and the appliances, the backing of plastic materials, a compound of pitch for giving shape to the metal, a spirit blow-lamp, bench, &c., are described.——The *Essex Review* (Chelmsford: Edmund Durrant and Co.; London: T. Fisher Unwin) is the first part of a quarterly journal for the county, which is intended to relate to matters of interest in the local life-history and literature of Essex; to collect facts, and conserve materials. This part has a readable article on Essex churches; St. Augustine's, Birdbrook, is described and illustrated by Mr. Fred Chancellor, J.P., F.R.I.B.A. An article on an appeal case in the House of Lords, as to the right of the Crown to the foreshore known as the Maplin Sands; a paper on Waltham Abbey, by I. Chalkley Gould; the Housing of the Agricultural Labourer in Essex, Notes and Queries, &c., form part of the present number, from which we should predict a large circulation among the county gentry. The Review is edited by Mr. Edward A. Fitch, F.S.A., assisted by W. H. Dalton, F.G.S., and several important contributions are promised.——*The London and Middlesex Notebook*, edited by N. P. W. PHILLIMORE, M.A., B.C.L., is devoted to local history and antiquities of the cities of London and Westminster, and the county. The contents of the fourth number are varied, and contain interesting notes on a perforated stone hammer of rare type from Hammersmith; Drift implements from Marylebone; the Prebendal Manor House, Chiswick; Flemish brasses; the Great Fire of 1666; Canonbury Tower, Islington, &c.——*Examples of Mosaic Pavings from Rubbings of Floors at Pompeii and Venice, &c.*, by ARTHUR T. BOLTON, A.R.I.B.A. (London: B. T. Batsford, High Holborn.)—This is a large volume of examples from some of the best remains. The author rightly emphasises the cube formation of mosaic; the plates are half full size reductions of tracings from rubbings, by which the joints and cubes are correctly shown with the irregularities. The brief introductory essay is interesting as an attempt to trace the history of the art and its origin; and no doubt entire rubbings of mosaics furnish us with the only correct mode of classifying the examples. Four classes are dealt with, and those are divided into two, thus:—

Opus Tesselatum } used in pavements.
,, Sectile }
Opus Figlinum } used in walls and vaults.
,, Vermiculatum }

These are separately described. The book is devoted mainly to the first of these classes—the Opus Tesselatum. Of course the best material for mosaic is marble, though glass and enamel are used in Venetian pavings; and these glass cubes were usually in strong brilliant colours, while the marble cubes were in low tones. Some useful remarks are made on the manufacture, forming beds, and laying. The author complains naturally of the over-close fitting of the cubes, and of the mechanical modes used in copying. Conventional treatment and design are essential, such as the elaborate Greek borders and patterns, or the Mediæval diapers; sudden curves are objectionable, and designs are seldom pleasing. The author acknowledges the encouragement he has received from Mr. Ewan Christian, R.I.B.A., for his consent to publish drawings made for him; also to Mr. Brindley for the suggestion to print the examples in toned ink which very closely resembles the low tones of the originals. Twelve plates are given. No. I. represents a variety of key plans to ½in. scale, which enables us to realise the variety of scale of the patterns, as in those of the Baths of Caracalla with those from Palermo. The latter are very finely worked. Full-size details are given of one of those in the next plate, representing a Roman mosaic from Pompeii, a border and centre. In III. we have a fine detail of a man swimming, a Roman example from the bathroom in the House of Mars and Venus, Pompeii. No. V. is the fret border from the same bathroom. The Wild Boar from the House of that name, plate VI., is a well-known and beautiful mosaic, the ground and pattern most skilfully combined. The Tablinum of the same house has a very excellent design, forming a guilloche in the border, and the interlaced basket or rectilinear pattern on plate VII. Other plates represent a pavement in the House of Sallust, also a rectilinear pattern based on an octagon separated by squares; a hexagon pattern from Pompeii; one in the House of Holconius, of four colours, a kind of Greek key pattern; a Venetian mosaic of glass cubes from St. Mark's, and a pavement from Church of St. Donato, Murano, a peacock in enamel cubes. These plates are artistically printed, and the examples will be valuable to all who design and work in mosaic.

CHIPS.

The new mosaic work and marble steps in front of the altar and altar rails of the parish church of Epsom were dedicated on Sunday. The five steps are Vert des Alpes marble, and were worked in Italy. The altar rails are in carved oak. The mosaic work has been carried out by Mr. Rust, of Southampton-road, London, and the remainder of the work by the contractors for the restoration, Messrs. Longley. The whole of the work has been designed by Sir Arthur Blomfield. The mosaic and steps form the last portion of the church restoration, and have cost £175.

A picture by Scott Lauder, R.S.A., has just been presented to the permanent collection in the Victoria Art Galleries, Dundee, by Mr. A. J. Buist, merchant and millspinner.

The London County Council have appointed Dr. W. H. Hamer as Assistant Medical Officer of Health, at the commencing salary of £500 a year, rising to £600.

As a further step towards utilising the peal of Belgian bells, which have already cost over £3,000, the town council of Aberdeen decided on Monday to purchase a carillon machine of Mr. Edward Mirhiels, of Malines, at a cost of £550.

The Blackpool Corporation decided on Friday to go again before the ratepayers with an amended Improvement Bill. The promenade widening clauses are to be dropped out, but the scheme for the restoration of the lower walk, at a cost of £50,000, will be included. An amendment that the Bill be entirely dropped until the next session of Parliament was defeated.

The town council of Tynemouth have entered into negotiations with the Duke of Northumberland to sell them a site of half an acre of land in Albion-street, a central position, on which to build new premises for the free library, now inadequately housed, together with a museum, art gallery, and lecture-hall. The Duke has agreed to sell, and preliminary plans have been prepared by Mr. J. F. Smillie, the borough surveyor, for the new buildings, which are estimated to cost from £12,000 to £15,000.

Mr. Alexander Melville, portrait-painter to the Queen, died at his residence, 6, Fitzroy-square, on the 26th ult.

The death is announced, at the age of 54 years, of Mr. Charles Norman, builder and contractor, of London-road, East Grinstead. He leaves a widow, three sons, and several daughters.

The Lady Chapel in St. Peter's Church, Dormer-place, Leamington, has lately been decorated with additional paintings, illustrative of the life of the Blessed Virgin. It has been done by Mr. Jos. Pippitt, of the firm of Hardman and Co.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

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ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two the minimum charge being 5s. for four lines.

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SITUATIONS.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is ONE SHILLING for TWENTY-FOUR WORDS, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., L., LI., LIII., LIV., LVIII., LIX., and LX. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

JAS. LOUGHLAN, Belfast. (We should think you would get the mouldings at W. H. Lascelles and Co., 121, Bunhill-row, E.C. Any good builders' ironmonger would get you the socket cast.)

RECEIVED.—F. T. H.—E. N. and Co.—Jas. Hemming.—G. R. T. Co.—A. N.—J. G. (Lancaster).

"BUILDING NEWS" DESIGNING CLUB.

PARISH HALL DRAWINGS RECEIVED.—"Unitate Fortior," "Filiolus," "Kiki," "Reo," "Q. E. F," "Horseshoe," "In Haste," "Joiner," "Phœnix," "Forward," "Compass-Box," "Rick," "Yorkshire Tradition," "Glencoe," "Rosinante," "Q. E. D.," "Mica," "Jocelin," "Mars," "Square, Triangle, and Circle," "Orient," "Hardwick," "Ilex," "Norman," "Black Prince," "Sweet Auburn," "Smilash the Goth," "Gargoyle," "Jap," "North Pole," "Westward Ho," "Tyro," "Wit," "Firefly," "Sunset," "Excelsior," "Flint," "Sniktaw," "Baluster," "Red Lion," "Love's Labour."

Correspondence.

THE ACTION OF HEAT FROM OPEN FIREGRATES, STOVES, AND HOT-WATER PIPES.

To the Editor of the BUILDING NEWS.

SIR,—Having read with much interest the articles on the above subject in your recent issues, I should like to suggest that, in addition to the projecting fireclay backing for grates, which, it is submitted, would throw all the heat rays in an outward direction, as shown in sketch 1, it certainly would be an additional advantage to prevent the loss of heat by "radiation" or "transmission" backwards through the party or outer wall, by placing a non-conducting incombustible material, such as silicate cotton, at the back of the fireclay slab. There is no doubt that a very large percentage of heat is naturally lost through absorption at the backs of fireplaces, and it stands to reason that if the heat which is thus lost could be made proper use of by being concentrated and radiated forward—particularly in a downward direction as suggested by Mr. Dye—not only might fuel be greatly economised, but comparatively *complete* *combustion* would be the result, and little or no smoke would pass up the chimney. Apart from economy in *heat-yielding*, the complete combustion of carbon (so far as an open fireplace permits) would go a large way towards diminishing our London fogs. Of course carbon can be totally consumed in a crucible, but in treating with an ordinary open fireplace, I simply wish to show that by concentrating the heat all round where the combustion of fuel is going on a great deal might be done towards a more complete consumption of the particles, which otherwise will be forced up the chimney by the ordinary induced draught.

Sketch 2 shows what would probably be the loss of heat through absorption and radiation in the wrong direction at the back of the fireclay slab, and sketch 3 shows how the heat with which the fireclay may be surcharged might be forced to radiate in an outward direction.

The ordinary fireplaces with which I have experimented in the manner indicated—viz., with a backing of silicate cotton or "slag wool"—have yielded, through radiation, a much larger percentage of heat than if backed with the ordinary "brick rubble and mortar," and I shall be happy to furnish details of the experiments, should they be of sufficient interest to your readers.—I am, &c.,

James Christie.

41, Priory Park-road, Kilburn, N.W., Jan. 26.

THE SOCIETY OF ARCHITECTS.

Sir,—Referring to "Goth's" paragraph in your issue of the 22nd ult., as to an expected change in the title of the Society of Architects, my attention having been called to the remark in question, I should like to say that I fear "Goth's" authority is defective. I do not know of any such change as he hints at,—I am, &c.,

W. H. Seth-Smith.

46, Lincoln's Inn-fields, Feb. 8.

* * *

CHIPS.

The third of the course of free lectures given daily this session at Carpenters' Hall, London-wall, E.C., was delivered on Wednesday evening by Professor Henry Robinson, M.Inst.C.E., who gave an address on "The Drainage of Buildings and Construction of Sewers," illustrated by diagrams.

The annual meeting of the Leaseholds Enfranchisement Association was held on Thursday evening last at the Memorial Hall, Farringdon-street, E.C., Mr. H. L. W. Lawson, M.P., the president, in the chair.

The decoration of the chancel of the parish church of St. Austell has just been completed. The panels were designed by Mr. Edward Fellowes Prynne.

Mr. Wm. Scorer, architect, Lincoln, has been appointed by the Department of Science and Art, South Kensington, the local inspector of drawing for the South Lincolnshire district.

Mayor-General H. D. Crozier, R.E., an inspector under the Local Government Board, held an inquiry at York yesterday week into the application of the corporation for power to obtain loans as follows:—£9,572 for the purchase of premises for street improvement; £550 for purchase of land for an extension of the depot on Foss Island; £400 for the purchase of land for a rubbish tip; £2,200 for the purchase of land for market extension; and £11,055 for the purchase of the York Institute, the Yorkshire Fine Art Institution, and the York School of Art, for purposes of a Technical School, a Free Library, an Art Gallery and Museum.

A new mill has been erected at Burnley, from the designs and under the supervision of Mr. Samuel Keighley, engineer, &c., of 27, Nicholas-street, Burnley.

A statuary marble tablet, designed by Mr. A. F. Smith, and executed by Mr. J. Roddis, of Birmingham, was unveiled at the Bloomsbury Institute on Monday last, its object being to perpetuate the memory of the late Mr. D. Smith, F.R.S.A., the founder of the institution.

The restoration of Peterborough Cathedral, which has been in progress for the past ten years, is now rapidly approaching completion. The first set of stalls on the south side of the choir are completed, and service will be resumed beneath the lantern in about a week's time. The new marble mosaic pavement in the choir is nearly finished.

The free public library at Longton, Staffs, was opened on Thursday week. It occupies the premises of the defunct Mechanics' Institute, which has been refitted from plans prepared by the borough surveyor, Mr. Wardle. Mr. Peter Bennion was the contractor.

Intercommunication.

QUESTIONS.

[10709.]—**Depth of Hip-Rafter.**—Practical men say that the hip-rafter should be the depth of the purlin plus half the depth and the depth of the spar added together, for a right-angled building, and the roof three-quarter pitch, with the hip-rafter *backed*. This would make all the timbers flush on top and bottom edges of the purlins and hip-rafter. Is this practically correct?—Tyro.

[10710.]—**Baker's Ovens.**—I have a pair of baker's ovens to construct abreast. I shall be glad of any experienced correspondent's advice as to foundations, dimensions of walls, ovens, positions of tie-rods, and provision to carry a 50ft. shaft. It is a wood oven.—A Twenty Years' Reader.

[10711.]—**Wooden Houses.**—I shall be glad to know where I can obtain information as to cost, &c., of wooden houses, with the names of American or other firms who make a speciality of this sort of work.—G.

[10712.]—**Swimming Baths.**—1. What material is considered most suitable for the bottom and sides of swimming-baths? 2. To obtain a transparent sea-green to the water, what colour should the bottom and sides be? 3. Can the desired colour be obtained by the use of tinted glass in the skylight over bath? 4. I presume the effect which might possibly be produced by the use of tinted glass, could not under any circumstances be obtained when the building is lighted with gas? 5. Where can I see any examples?—Architect's Pupil.

[10713.]—**Quantities.**—Can any of your readers inform me what are the items that usually come under thicknesses in the Joiner's bill, and in what order they are billed?—Student.

REPLIES.

[10703.]—**Concrete for Artisans' Dwellings.**—I am very much obliged by your insertion of my inquiry as to laying flooring on concrete, and to those who gave the valuable suggestions in reply. The great importance at the present time of the question of housing the labouring classes in cities will, I trust, be a sufficient excuse for troubling you with a question or two more, which may elicit from some of your readers their experiences for the benefit of those who, like the writer, are endeavouring to solve the question of economical and yet substantial labourers' tenements in their own localities. It is proposed to replace joists on upper stories by slabs of coke-breeze concrete, the walls being levelled off for each story at under-side of floor concrete, which would be then laid on the walls through their full thickness, and the walls of next story carried up from top surfaces of the slabs. On these slabs the flooring would be nailed. 1. Should the breeze be used just as it is got from the gasworks, or is it necessary to remove any of the very fine part of it, or to add any other material to it, and in what proportion should it be mixed with Portland cement for this particular purpose? 2. What is the largest size of floor that is shown by *practical* experience to be safe without any support except on the walls as above described, and using slabs of 5in. or 6in. thick? 3. If breeze is used for the walls, which would vary from 5in. to 9in. thick, would it be necessary to add any other material, and what proportion of cement should be used for wall work?—Surveyor.

* * *

At the Bankruptcy Court, on Friday, William Smith, builder and contractor, of Trowbridge, came up for his public examination. He admitted his liabilities were £3,148, and the deficiency amounted to £1,920. He was ordered to file an amended deficiency account.

A new water supply is about to be provided for Norton, near Malton, Yorks, under a scheme prepared by Messrs. Fairbank, civil engineers, of Westminster and Driffield. The spring is at the foot of Horne Hill, and at a depth of 60ft. yields nearly 200,000 gallons a day. The reservoir will be constructed on Horne Hill.

During the carrying out of the works of restoration of the Church of St. Swithin's, Baumber, Lincolnshire, several discoveries have been made. At the two doorways of the tower have been found Norman arches and other fragments of a church of some magnitude. Interesting work of the 13th century has also been found in the arcades of the north and south aisles, the columns and arches of which, though hidden beneath thick coatings of plaster, prove to be of good stonework. The restoration is being carried out by Messrs. Walter and Hemman, of Horncastle, from plans by and under the direction of Mr. William Scorer, of Lincoln.

Canon Hicks is giving two courses of lectures on classical archæology at Owens College, Manchester. The subject of the afternoon course, which began on Thursday in last week, is "Græco-Roman Crafts and Trades." In the opening lecture Canon Hicks gave an outline of the development of the potter's art in Greece, tracing the influence of Eastern styles, and explaining, by the aid of photographs and illustrations, the gradual growth of the methods which enabled the Greeks to produce their best work. The second lecture, delivered yesterday (Thursday), dealt with the practice of the potter's art in Rome, and subsequent lectures will be occupied with the crafts of spinning and weaving, embroidery and needlework, metal-work, glass, and mosaic. The Wednesday evening course is upon Græco-Roman Mythology.

Legal.

THE BASIS OF COMPENSATION.

UNDER the various statutes passed for the purpose, numerous buildings are nowadays being demolished as unfit for human habitation. But then there arises the question, What compensation shall be paid to the owners of such property? It is generally difficult for local authorities and landlords to agree upon the value, and so these claims frequently go to arbitration. Their architects, surveyors, and house agents all have to give evidence on behalf of the parties, and the arbitrator has to decide on all the facts and figures brought before him by some rule or other; or, in other words, to assess the compensation payable according to a clearly defined principle. In the recent case of some house property in Liverpool, reported in our issue of last week, and more at length in the *Times*, January 23, a very important point affecting cases of this kind was decided. The dispute as to the sum to be paid to the owner had been sent to the arbitration of a Queen's counsel, who, taking it as admitted that the premises were unfit for human habitation, declined to value them as houses at all, and assessed the sum due to the owner for compensation as being only the value of the ground as a site, and of the premises themselves as merely building materials, thus arriving at a total of £300. From this view the claimant appealed to the Divisional Court, where it was held that the proper principle in such cases was to estimate the market value of the property as producing rent, and that upon this basis the assessment should be £667.

It was then the turn of the corporation to appeal, which they did, with the result that the Court of Appeal upheld the decision of the Divisional Court as to the point of principle, but said that this Court had no right to settle the figures, and so the case went back once more to the arbitrator. This time he heard further evidence, and it appears that he took the market value of the premises as houses that were producing rentals at the sum of £667, as to which both sides were practically agreed; and then deducting 30 per cent., because of the insanitary state of the neighbourhood, brought out the amount payable at £468, though he gave no reasons for this result. Once more the case was taken back to a Divisional Court; but this time the arbitrator's award was confirmed. It was laid down that as he had based his assessment of compensation upon the right principle, the amount should now be left to his discretion. The rule was, as already stated in the Court of Appeal, that the price for which such property would sell should first be ascertained; then, having got that sum fixed, the arbitrator could deduct what he thought proper, having regard to the condition of the premises, including their insanitary state. The Court now considered 30 per cent. a fair amount to take off for that reason, and so they practically agreed to the award for £468, refusing to send it back again. The use of this basis of principle may save much litigation in future cases of similar claims for compensation.

Fred. Wetherfield, Solicitor.

1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning, to insure answer same week.

M.S.A.—Penalty.—Charges.—If the contract is clear and stringent, the penalty is enforceable, and so it could be deducted or set off as a counterclaim. The assignee could not stand in a better position than the contractor. The architect's extra charges should, I think, be paid out of the penalty received by the owner.

A. D.—Land.—Drains.—If B. bought the land and cottages subject to this easement of drainage, he cannot cut off the sewer or compel adjoining owners to pay him rent. The matter should be arranged.

M.—Right of Light.—If the opening-out of the windows in no way interferes with any one, I do not see how it is to be prevented.

M. C.—House.—Drains.—If the landlord is bound under a lease or agreement to do repairs, notice should be given him of what is needed, and if he will not do them then the tenant can, and charge him with the cost. But under an ordinary yearly tenancy, as this seems to be, the landlord is not legally bound to do anything. You can employ any sanitary inspector you like, or an architect, at your own expense. There are only the local sanitary inspectors to be called in.

LEGAL INTELLIGENCE.

The Battersea Fire.—Mr. Braxton Hicks resumed yesterday (Thursday), at the Vestry Hall, Battersea, the inquest on the two draper's assistants who lost their lives in the fire, Dec. 19th, at Minnis's premises, 307 and 309, Lavender-hill. As on previous occasions, the coroner was assisted by Mr. F. J. Chambers, F.R.I.B.A., as assessor. Conflicting evidence was given as to the water-supply and pressure. Engineer Glover, of the Fire Brigade Station at Battersea, emphatically asserted that there was a good supply of water. The roof and party-walls of the premises fell without warning twenty minutes after the outbreak, and the front walls followed. Joseph Wrestler, chief engineer to the Southwark and Vauxhall Water Co., gave evidence as to the water supply and pressure at the time of the fire. His directors regarded the fire plugs as antiquated, and as recently as November 27 they wrote to the London County Council pointing out that in their opinion the plugs were inadequate. This had been only formally acknowledged. Mr. John T. Pilditch, surveyor to the Battersea vestry, deposed that the water supply was neither regular nor sufficient, but that it was improving. As to the shop burnt, the vestry never sanctioned the line of frontage adopted, but the then Metropolitan Board of Works declined to interfere, although correspondence passed on the subject, and as the vestry did not take action within six months, the matter dropped. Mr. Byworth, the vestry clerk, was called, and laid the blame on the late Board of Works; but the coroner suggested that the initiative lay with the vestry. Professor T. Roger Smith, F.R.I.B.A., district surveyor for West Wandsworth since 1874, said he had examined the remains of the buildings destroyed, and found that the upper part of the party-wall between the houses would have been of the right thickness if there had been no rooms in the roof. The Building Act was very vague on this point, and, indeed, no matter was more in dispute. Witness held that the full thickness of wall should be continued to the apex of the ceiling, but other district surveyors considered that the wall need only be of full thickness up to the tie-beam. He believed the late Mr. Edward I'Anson, the district surveyor when these shops were constructed, took the latter view, which was upheld in the case of "Hodgson v. Ford," heard in 1890. As a matter of fact, he considered the wall too weak. The reasons for the rapid spread of fire were the use of matchboarding in the shops, with a hollow space behind, acting as a flue; the use of stud partitions on the first floor, and the fact that these were carried on a naked iron girder simply toed into the party-walls. The risk of life was gravely increased by the removal of the second staircase, and by the encasing of the remaining one in stud-work. In reply to the Coroner, the witness said that under the present Acts the district surveyor had no control over the matchboarding of shops, the throwing of the two buildings into one, and the removal of a second staircase. When the two premises were thrown into one, the central wall ceased to be a party-wall, and openings could be made in it. The Coroner: Legally, it ceased to be a party-wall; but, as a matter of common sense its character had not been altered. Witness, in reply to questions, said the London police magistrates refused to recognise "danger" in case of fire, or other risks other than structural matters, and shops in which fewer than forty persons were employed did not come within the range of the Factories Act. Under subsection 15 of sect. 20 of the Building Act of 1855, no chimney-breast could be cut away without a certificate from the district surveyor; but, of course, the central wall had ceased to be a "party" wall. The chimney-breast in No. 39 had been cut away, but that wall had stood. To Mr. Barnard, representing Mr. Hardcastle: The only offence against the Building Act he could find was that there were no piers or posts under the bressummers. The examination of the witness was not concluded when the Court rose, the Coroner intimating that the inquest would be completed at the ensuing sitting on Thursday next.

Is Duroline a "Combustible Material"?—Payne v. Wright.—(Before the Master of the Rolls and Lord Justice Fry. Court of Appeal, Feb. 1.) This was an appeal from the Queen's Bench Division (Mr. Justice Mathew and Mr. Justice A. L. Smith) upon a special case stated by a metropolitan police magistrate. The defendant, the managing director of the New Wire Wove Roofing Company, was summoned under the Metropolitan Building Act, 1885, by Mr. Alexander Payne, district surveyor, for having covered a roof of a building in Victoria Park-road, Hackney, within the Metropolitan district externally, with a combustible material, contrary to the provisions of section 19, subsection 1, of the Act. A notice had been duly given by the district surveyor to the defendant to obey the requirements of the section, and the defendant, having made default, was summoned before the magistrate under section 46 of the Building Act, 1885, to show cause why an order should not be made directing him to comply with the requisition contained in the notice. By section 47 the defendant would become liable to a penalty not exceeding £20 a day if he made default in obeying the order of the magistrate. The question before the magistrate was whether "Duroline" was an incombustible material within the meaning of section 19. The magistrate held that the material as a whole was incombustible within the meaning of the section, but stated a case. The Divisional Court held that the magistrate was wrong, and remitted the case to the magistrate to make an order under the section. The defendant appealed. The preliminary point was taken that this was a "criminal cause or matter" within the meaning of section 47 of the Judicature Act, 1873, and that no appeal lay. The Court dismissed the appeal; both the Master of the Rolls and Lord Justice Fry held that the decision in "*Ex parte* Schofield" was conclusive of this case.

Relative Liability of the Employer and the Sub-Contractor.—Hunt v. Mowlem and Co.—In the Queen's Bench Division, on Feb. 1, before Justices Hawkins and Wills, the plaintiff, a bricklayer, claimed to recover from Messrs. Mowlem and Co., contractors, damages for personal injuries, both under the Common Law and the Employers' Liability Act. The defence was that the plaintiff was not in the employ of the defendants, but in the employ of a sub-contractor for labour for brickwork, named Bells. Further, there was no evidence of negligence on the part of the defendants or Bell's servants. On the other hand, it was said, on behalf of the plaintiff, that the only name painted up as that of the firm performing the work was that of Messrs. Mowlem, and plaintiff thought he was in their service, and did not know anything to the contrary until after the accident. The jury, at the trial before Mr. Commissioner Kerr, awarded the plaintiff £175 under the Employers' Liability Act, and gave an alternative verdict for £50 in regard to the common-law claim, and the defendants now moved that judgment should be entered for them or for a new trial. The Court refused to enter judgment for the defendants, but granted a new trial, the case to be heard in the Bloomsbury County Court.

Sky-Signs Doomed.—John Jenkins, 34, Camberwell-road, was summoned at the Lambeth Police Court on Monday by the London County Council for having retained a sky-sign without a license. Mr. Thomas Chilvers, on behalf of the Council, observed that, under the 5th section of the London Sky-Signs Act, it was provided that every person, within three months, should, if desiring to retain sky-signs, be bound to give notice to the district surveyor, and, within fourteen days afterwards, to apply for a license. The defendant had never complied with the Act, or taken notice of any orders given to remove the sign. Mr. Mullins, assistant to Mr. Banister Fletcher, district surveyor, proved that the defendant did not apply for a license to retain the sign. The defendant consented to remove the sign, and upon that Mr. Hopkins imposed a fine of 1s. and 23s. costs.——Messrs. Skinner and Co., bottle dealers, of 206, Kennington Park-road, were summoned by the County Council for retaining a sky-sign without having obtained a license. Mr. Chilvers informed His Worship the sign had been removed, and asked that a nominal penalty only should be imposed. Mr. Hopkins imposed a penalty of 1s. and 23s. costs.

Re George Luff.—A sitting was held on the 22nd ult. for public examination. The bankrupt was a builder, carrying on business at 13, Lime-street, and Bromley. His accounts showed total liabilities £2,927 16s. 8d., of which £621 4s. 4d. are unsecured, and assets £357 7s. 8d. A trustee of the estate, together with a committee of inspection, having been appointed upon the application of the official receiver, the examination was adjourned to Feb. 19th, the bankrupt to file a cash account.

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The new cathedral at Marseilles, which has been in progress for the past thirty years, will be opened this spring. It occupies the summit of a hill overlooking the docks, and is Byzantine in style, with domical roofs to the principal features, and has cost over £550,000. Great use has been made in construction both externally and internally by variously coloured stones and marbles. The extreme dimensions are 475ft. in length by 175ft. across transepts. The central dome is 242ft. high, and the twin western towers are each 178ft. in height. The architect for the completion is M. Revoil, of Nîmes, represented on the works by M. Errard, the resident architect.

It is stated that at the election of Associate Academicians last week, only two architects, Mr. T. Graham Jackson and Mr. Aston Webb, obtained votes. The joint-architect of the Birmingham Assize Courts and the restorer of St. Bartholomew's, West Smithfield, can afford to wait.

Our Office Table.

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The thirty-first exhibition of the Glasgow Fine Arts Institute, held on Monday, is one of the strongest held by that body in recent years. The council have reduced the number of works shown by each artist to two, and thus secured great variety in the exhibits. The leading place is given to Sir F. Leighton's "Bath of Psyche," bought by the Chantrey Trustees after the Academy Exhibition of 1890, and Orchardson, Burne Jones, and Colin Hunter are also represented. Mr. Walton, of Glasgow, sends a presentation portrait of Sir James King, ex-Lord Provost, intended for the Corporation Art Gallery, and good portraits are also shown by Herkomer, Ouless, James Guthrie, Laverie, J. J. Shannon, and Walter Sickert,—the last, of course, being Impressionist treatments. Denovan Adams's Highland cattle are well posed with reference to the landscape background. J. M'Tagart, A. Frew, and Wilson Steer contribute seascapes, and among the landscapes worthy attention are those by John Smart, A. K. Brown, Wingate, and J. M. Henderson.

We regret to announce the death, in his 72nd year, of Dr. G. G. Zerffi, one of our oldest contributors, which occurred from pneumonia, following on influenza, on the 28th ult. at Chiswick. Dr. Zerffi was for upwards of twenty-four years lecturer on the historical development of ornamental art at the Science and Art Department, South Kensington, and was expected to have resumed his lectures from week to week since his illness. "A Manual of the Historical Development of Art," which, with outline illustrations, appeared first in the Building News, and "Studies in the Science of General History," were among his most widely known books. He was a popular lecturer on historical subjects, and a member of the councils of the Royal Society of Literature and the Royal Historical Society. Dr. Zerffi was a Hungarian by birth, and took part in the Hungarian Revolution of 1848, serving as captain in the Second Corps of the Revolutionary army. He also edited the *Ongar* in Pesth. He became naturalised soon after taking up his residence in this country, some 40 years ago.

Mr. Philip Charles Hardwick, F.S.A., who died after a long illness on Wednesday week in his seventieth year, was one of the pupils of Edward Blore, but his own leanings were towards Classic architecture. At the age of twenty he assisted in the practice of his father, the late Philip Hardwick, R.A., F.R.S. Mr. P. C. Hardwick held many public appointments, including those of architect to the Bank of England, to St. Bartholomew's Hospital, to the Goldsmiths' Company, to the Merchant Taylors' Company, to Greenwich Hospital, and to the Charterhouse, and was surveyor to the Portman Estate. For many years he had rendered good service to the Artists' Benevolent Institution, of which he was hon. treasurer. Among his principal works are the central hall of Euston Station, added to his father's building; the Great Western Hotel at Paddington Station; the Ship Hotel, Greenwich; Adare House; Madresfield-court, Earl Coventry's seat; Addington Manor; the New Charterhouse School buildings at Godalming; Drummond's Bank, Charing Cross, and many other banks and blocks of City offices. He was one of the competitors selected to send in designs for the Albert Memorial, and he was also invited to compete for the Law Courts, but declined. In 1884, when the designs for the rebuilding of the War Office were under consideration, he, together with Mr. Ewan Christian, was appointed to the committee of selection as a professional adviser. Mr. Hardwick was one of the senior members of the R.I.B.A., having joined as a Fellow and life member in 1850. He married in 1872 Helen, eldest daughter of Mr. Robert Eaton, of Bryn-y-Mor, Swansea, and Claverton Manor, Bath.

The death is announced from Dorlin, Corstorphine, of Mr. John Chesser, architect, late superintendent of works to George Heriot's Trust, at Edinburgh. Born at Dalmeny, the deceased, on acquiring a knowledge of the joiner trade, crossed the Border, and while yet a young man held the post of master of works during the erection of some public buildings in Lincolnshire. On the death of his father he returned to Dalmeny, and succeeded him as superintendent of works on the estate of the late Earl of Rosbery. In 1858 Mr. Chesser was appointed superintendent of works to the Governors of Heriot's Hospital, in room of the late Mr. Alexander Black, and he acted in that capacity until about three years ago, when, on account of failing health, he resigned, and was granted a retiring allowance. During Mr. Chesser's term of office a large amount of Heriot Hospital ground had been feued, under the direction of Mr. Chesser, the late superintendent of works, who also prepared the ground and elevation plans. He also drew the plans for a number of the more recent Heriot Schools, the reorganisation of the Hospital School, and the reconstruction and extension of the Heriot-Watt College. The deceased, who is survived by a widow and grown-up family, was in his 73rd year.

THE contracts which were entered into with various firms by the last London School Board for carrying out repairs to the schools of the board, as arranged in thirteen groups, and which, it will be remembered, gave rise at the time to much comment and discussion among the London builders, were terminable at Christmas, 1891. Notices were given by all the thirteen firms that they were unwilling to continue their contracts beyond that period on the terms then in force, thus apparently justifying the contention made by outside builders that the accepted tenders were taken at almost unremunerative rates. The measuring surveyor to the School Board, in a report to that body, suggested various alterations in the printed schedule to a view of reducing the inequalities in the prices, and the whole of the firms who had tendered, with one exception, were asked upon what terms they were likely to withdraw the notice to terminate the contract and to continue the work subject to a month's notice on either side. All the firms asked for an increase—one at the rate of 2½ per cent., another at 5, two at 10, two at 12½, four at 15, and two at 17½, and it is significant that the present board have, without inviting fresh tenders, accepted each amended offer. As to the group of schools hitherto in charge of the thirteenth firm, the contract has been relet after competition.

THE award in an arbitration case of considerable importance to local authorities throughout the country, was announced at a meeting of the Levenshulme Local Board on Monday night. The board, having decided to retain the control of their main roads, sent in a claim to the Lancashire County Council. The matter turned on the construction of a clause in the County Councils Act, which provides, in cases where the local authority retains the control of main roads, that the County Council shall contribute "towards" the cost of the maintenance of the same. By their award the Local Government Board have decided that, practically, the whole cost of the road maintenance in this case is to be paid by the County Council.

A MEETING of the South Hants and Isle of Wight District Council of the organisation for the National Registration of Plumbers, was held at the Municipal Offices, Southampton, on Thursday evening, the 28th ult., when the chair was taken by Mr. A. Doggrell. Mr. W. R. E. Coles, clerk to the Plumbers' Company, wrote forwarding a map of England, showing the districts of the registration movement. To fill two vacancies on the Council, Mr. W. E. Mitchell, architect, Southampton, and Mr. W. H. Williams, clerk of works at Southampton Docks, were elected. The hon. sec. stated that they had registered eighteen candidates during the eleven months the Council had been in existence. It was resolved to invite Dr. Harris (medical officer of health for Southampton), to give a lecture in the Hartley Hall, on "Sanitation."

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The local board of Gainsborough recently declined to purchase the market-place on the terms at which it is offered by Sir Hickman Bacon, the premier baronet. On Monday the board received counsel's opinion as to their rights in the mart-yard, as well as those of the public, and refused to sanction Sir H. Bacon's plans for new streets, &c., across this open space.

MEETINGS FOR THE ENSUING WEEK.

MONDAY.—Royal Institute of British Architects. "London Building Legislation," by E. T. Hall. 8 p.m.
Liverpool Architectural Society. "Babylonia and Assyria as a Home of Early Literature and Science," by the Rev. F. F. Grensted. 6.30 p.m.

TUESDAY.—Society of Architects. "Lightning, and Protection from its Damaging Effects," by Alfred Hands, F.R.Met.S. St. James's Hall, Piccadilly. 8 p.m.
Institution of Civil Engineers. 8 p.m.
Leeds and Yorkshire Architectural Society. Exhibition of Sketches. 8 p.m.
Glasgow Architectural Association. Annual Supper.

WEDNESDAY.—Society of Arts. "Burning Oils for Lighthouses and Lightships," by E. Price Edwards. 8 p.m.
Carpenters' Hall Free Lectures. "Water Supply, Drinking Water, and Pollution of Water," by Dr. W. H. Corfield. 8 p.m.

THURSDAY.—Society of Arts. "Recent Travels in Indo-China," by Lord Lamington. 4.30 p.m.
Edinburgh Architectural Association. "Architecture of Scottish Towns," by Æneas J. G. Mackay. 8 p.m.
Dundee Institute of Architecture. "Glasgow Cathedral," by John Honeyman, F.R.I.B.A. 8 p.m.

FRIDAY.—Royal Institution. "Rain, Snow, and Hail," by G. J. Symons. 9 p.m.

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THE EXAMINATIONS OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.—NOTICE IS HEREBY GIVEN that, after the close of the year 1893, all gentlemen who desire to qualify for Candidature as ASSOCIATE of the Royal Institute of British Architects (except in special cases submitted to and approved by the Council) will be required to enter for the PRELIMINARY Examination, and having passed it, work up through the INTERMEDIATE to the FINAL Examination, which in 1894 will take the place of the present "Examination in Architecture." The only examinations to which young Architects who are in practice, and who desire to become Associates without passing the Progressive Examinations, can enter, take place twice in the year 1892 and twice in the year 1893. Those, therefore, who may not be prepared to enter for the "EXAMINATION IN ARCHITECTURE," before the close of 1893, should take immediate steps to secure registration as Probationers, which they can do by passing the Preliminary Examination or obtaining the grant of exemption therefrom.

ASTON WEBB, Hon. Secretary.
WILLIAM H. WHITE, Secretary.

The Royal Institute of British Architects, 9, Conduit-street, Hanover-square, London, W., 25th January, 1892.

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CHIPS.

The citizens of Lincoln have decided by a considerable majority to adopt the provisions of the Free Libraries Acts.

The Emperor of Austria has conferred upon Herr Carl König, Professor of Architecture, and architect, in Vienna, the Order of the Iron Crown of the Third Class, in recognition of the services rendered by him in the erection of the Viennese Fruit and Flour Exchange.

The new Congregational church and schools erected at Blackbrook, St. Helen's, by Miss Ruth Evans, of Rainhill, in memory of her brother, the late Mr. Joseph Evans, of Haydock, are to be formally opened on Thursday in next week, the 11th inst. The estimated cost of the premises, which are Late Gothic in character, is between £25,000 and £30,000. Mr. T. W. Cubbon, of Birkenhead, is the architect.

The town council of Newport, Mon., have recieved sixty-six applications for the post of assistant building inspector, which is only worth 36s. per week. The candidates will be sifted by a sub-committee.

The Southampton school board proceeded at their last meeting to elect an architect in the stead of Mr. Howell, deceased. The terms offered were a fee of £52 a year, and 5 per cent. on all work carried out. Six candidates presented themselves, and Mr. J. H. Blizard was elected.

The workmen engaged on the alterations carried out at the Selby Union Workhouse at a cost of about £8,000, were on Saturday entertained to dinner in one of the new rooms of the workhouse, by the chairman and members of the board, to commemorate the completion of the principal part of the work. Among those present were Mr. L. H. Tacon, Rotherham, the architect, and Mr. Bradford, of the firm of Messrs. Chadwick and Sons, Mexborough, the contractors.

The Islington Vestry have directed the attention of the London County Council to the desirability of continuing the new road known as Rosebery-avenue (extending from Holborn Town Hall to St. John-street-road, Clerkenwell, and now nearly completed) along Owen's-row and Colebrook-row into Essex-road. This they recommend should be undertaken as a metropolitan improvement, which would serve greatly to relieve the congestion of vehicular traffic at the Angel. The continuation would follow the line of the New River, and little demolition of property would be required.

The Oxford City Council has declined to grant the open space in Broad-street opposite Trinity College (the finest position in the city), as a site for Cardinal Newman's statue, but has appointed a committee to confer with the donors as to a suitable site, and report back.

Trade News.

WAGES MOVEMENTS.

GREENOCK.—The operative painters of this town have received an advance from 7½d. to 8d. per hour on their wages. The masters have also conceded the ten-hours day which the men requested.

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At Taunton, on Friday, Huish Endowed School for boys was reopened. The Huish school was endowed in 1874 out of the surplus funds of a charitable bequest left by Richard Huish in 1615, so new and commodious premises have been erected at the rear of the old school in East-street at a cost of £5,000. The architect was Mr. J. H. Spencer, of Taunton; the builder, Mr. Derham, of Trull; and the clerk of the works, Mr. James, of Exeter.

The Wesleyan Day Schools, Beckwith-street, Birkenhead, which were injured by the excavations for the Mersey Tunnel, are to be thoroughly repaired, and to be enlarged and altered. The cost of alterations, which include the purchase of three cottages and the throwing of the site now occupied by them into the playground, is £1,500. Mr. Curwell, of Birkenhead, is the contractor.

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TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

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Downer, W.	£921	0	0
Norman, S.	862	0	0
Oram	757	0	0
Bryant, W.*	735	0	0

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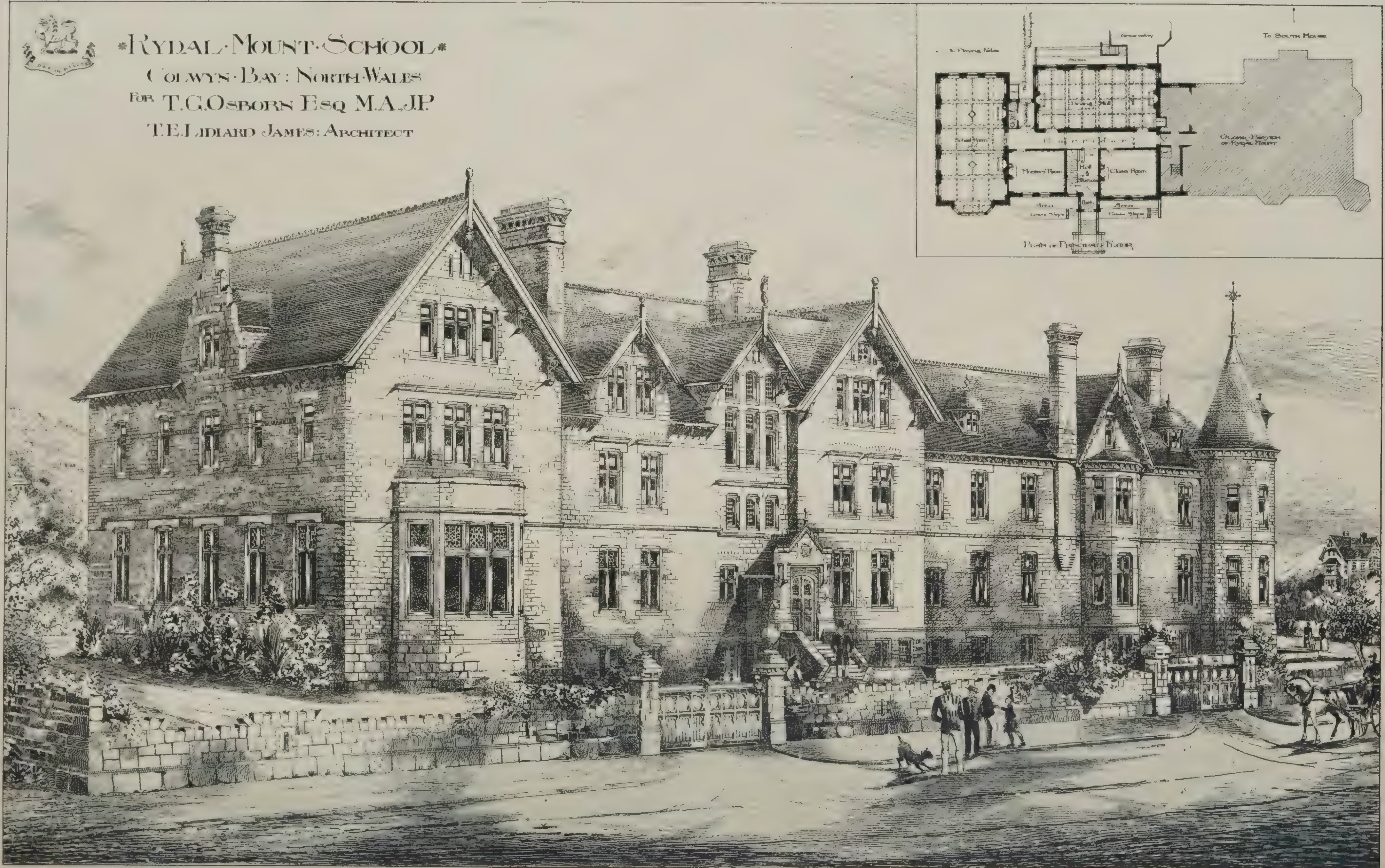

PLAN OF PRINCIPAL FLOOR

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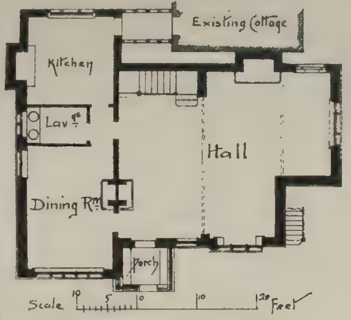
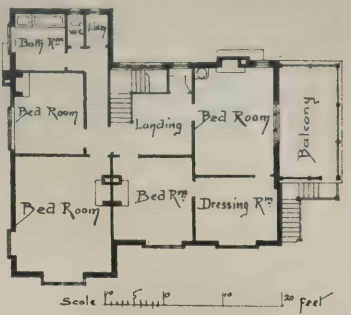
HOUSE · AT · FOREST · ROW · EAST GRINSTEAD ·

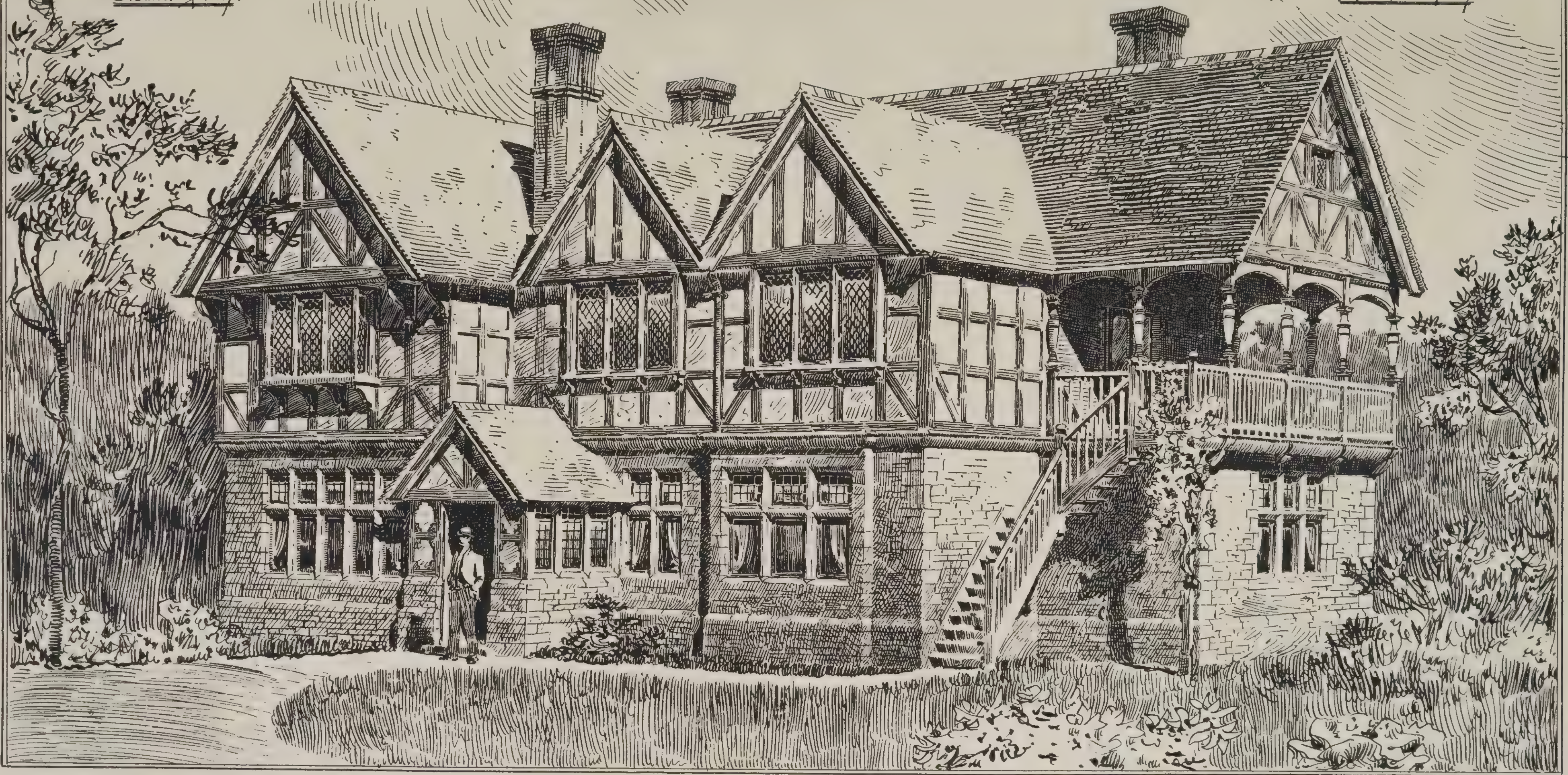
SIDNEY · A · ELL · A·R·I·B·A · ARCH^T



Ground Plan.



First Floor Plan.



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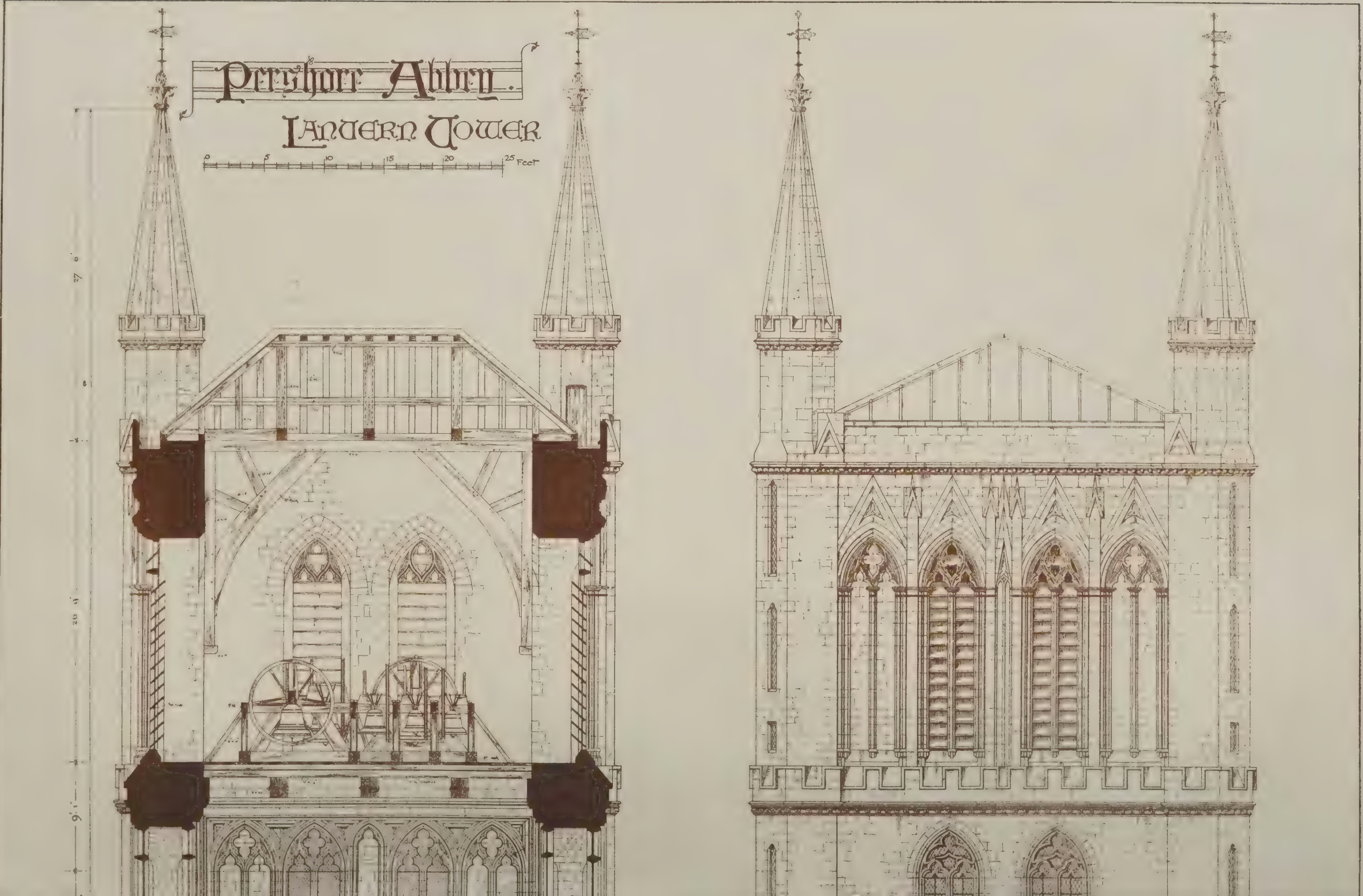
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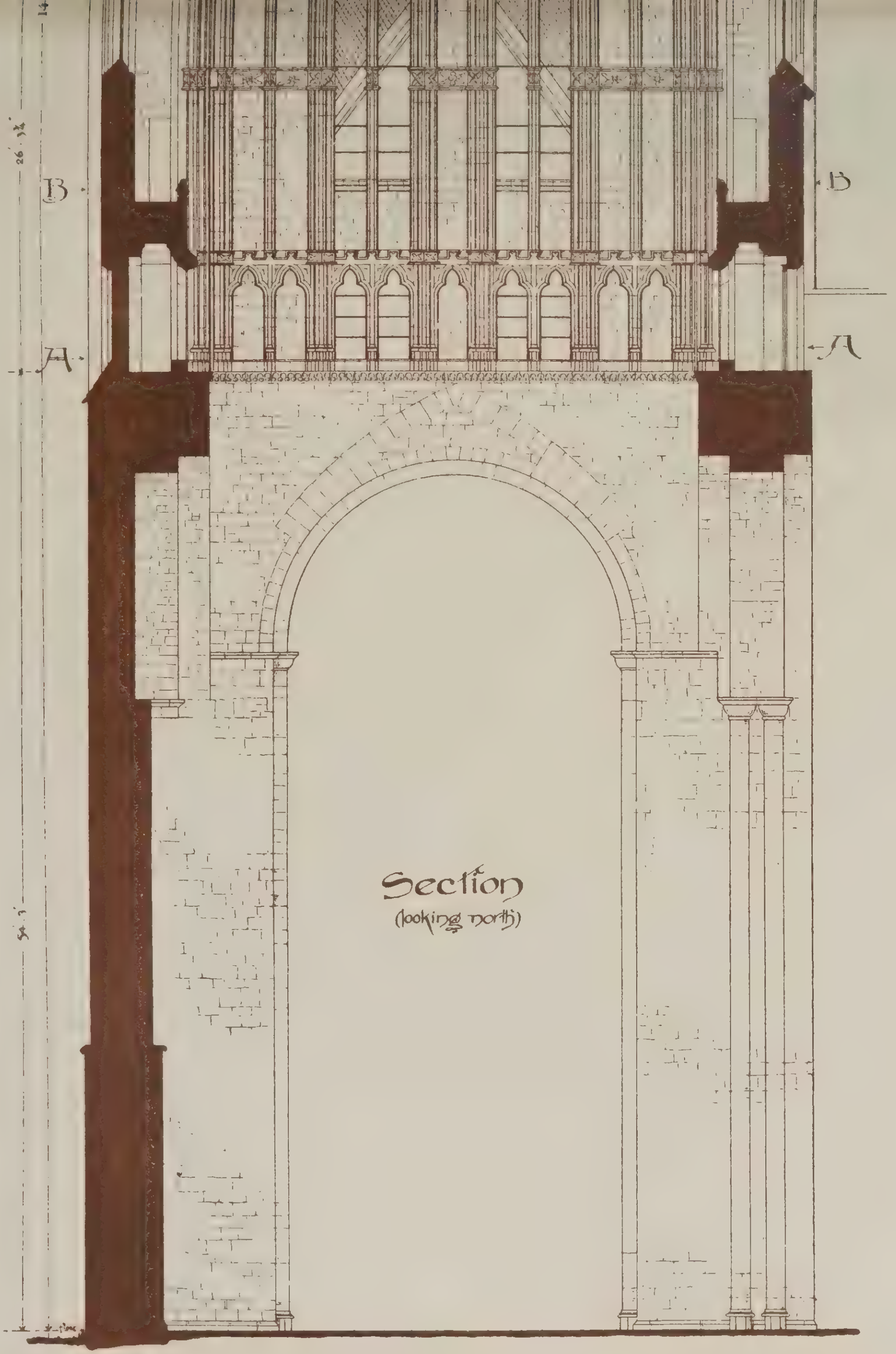
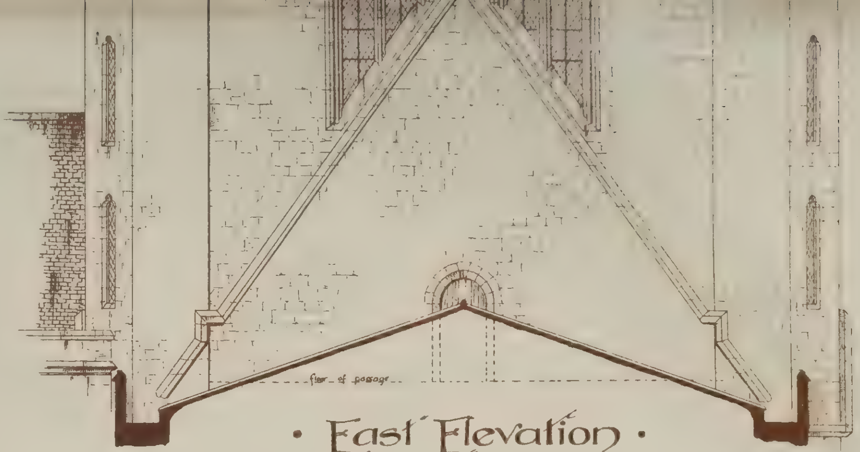
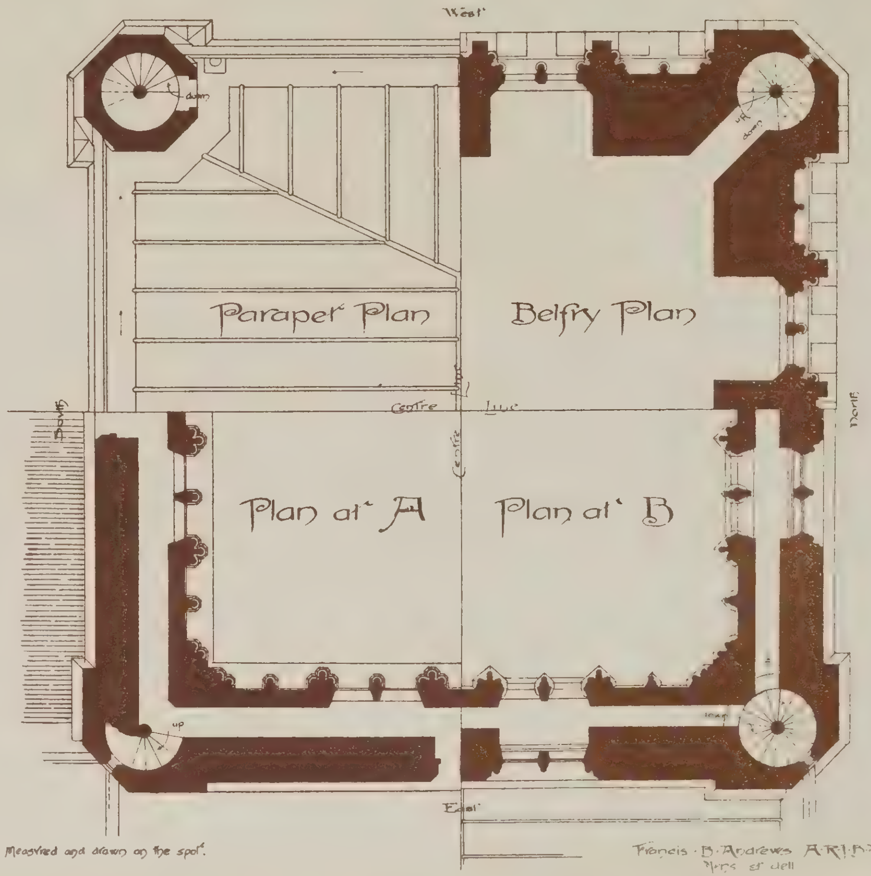


Section
(looking north)



· East Elevation ·



Parapet Plan

Belfry Plan

Plan at A

Plan at B

Note: Measured and drawn on the spot.

Francis · B · Andrews A·R·I·B·A
Mens et dell

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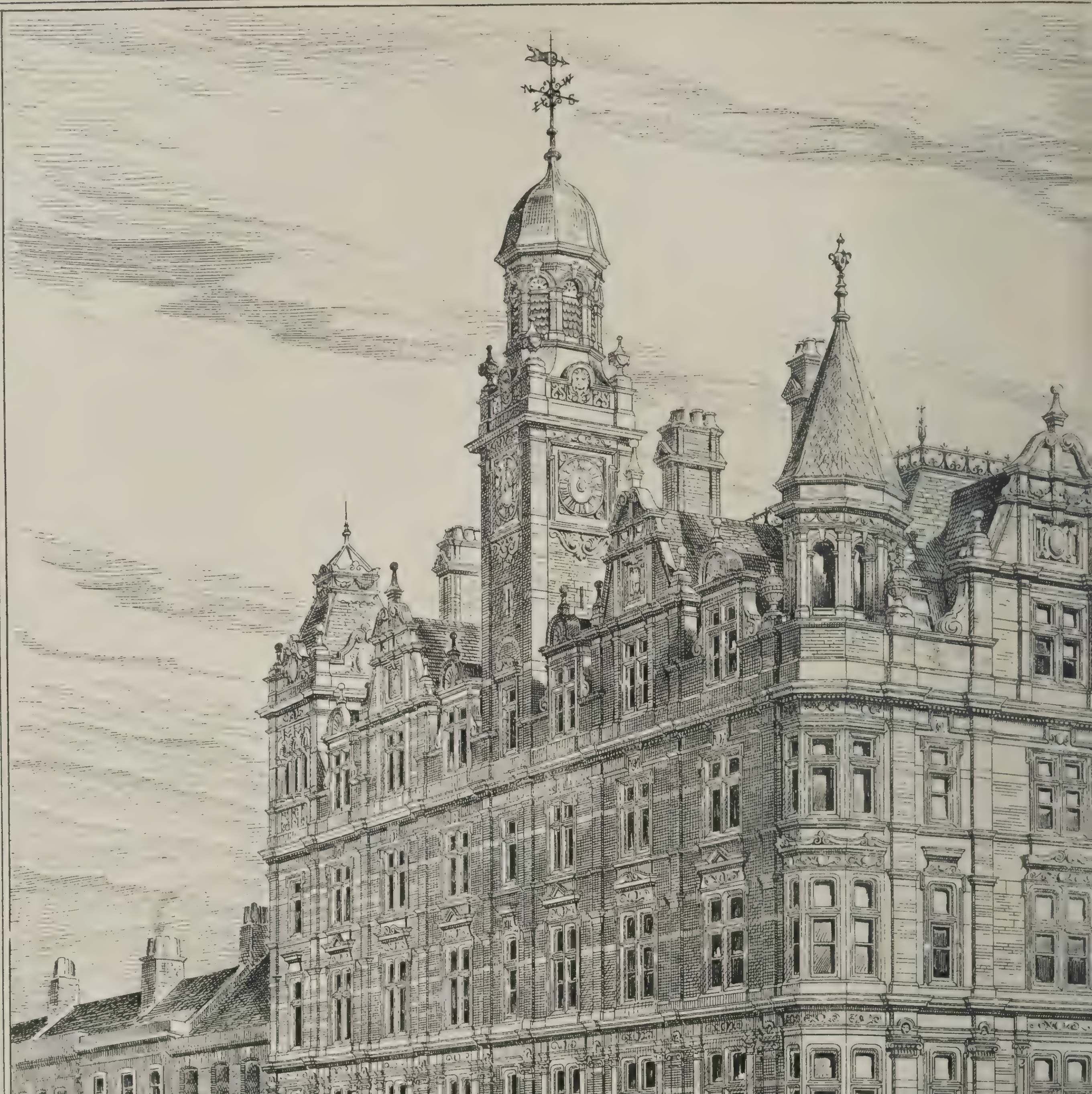
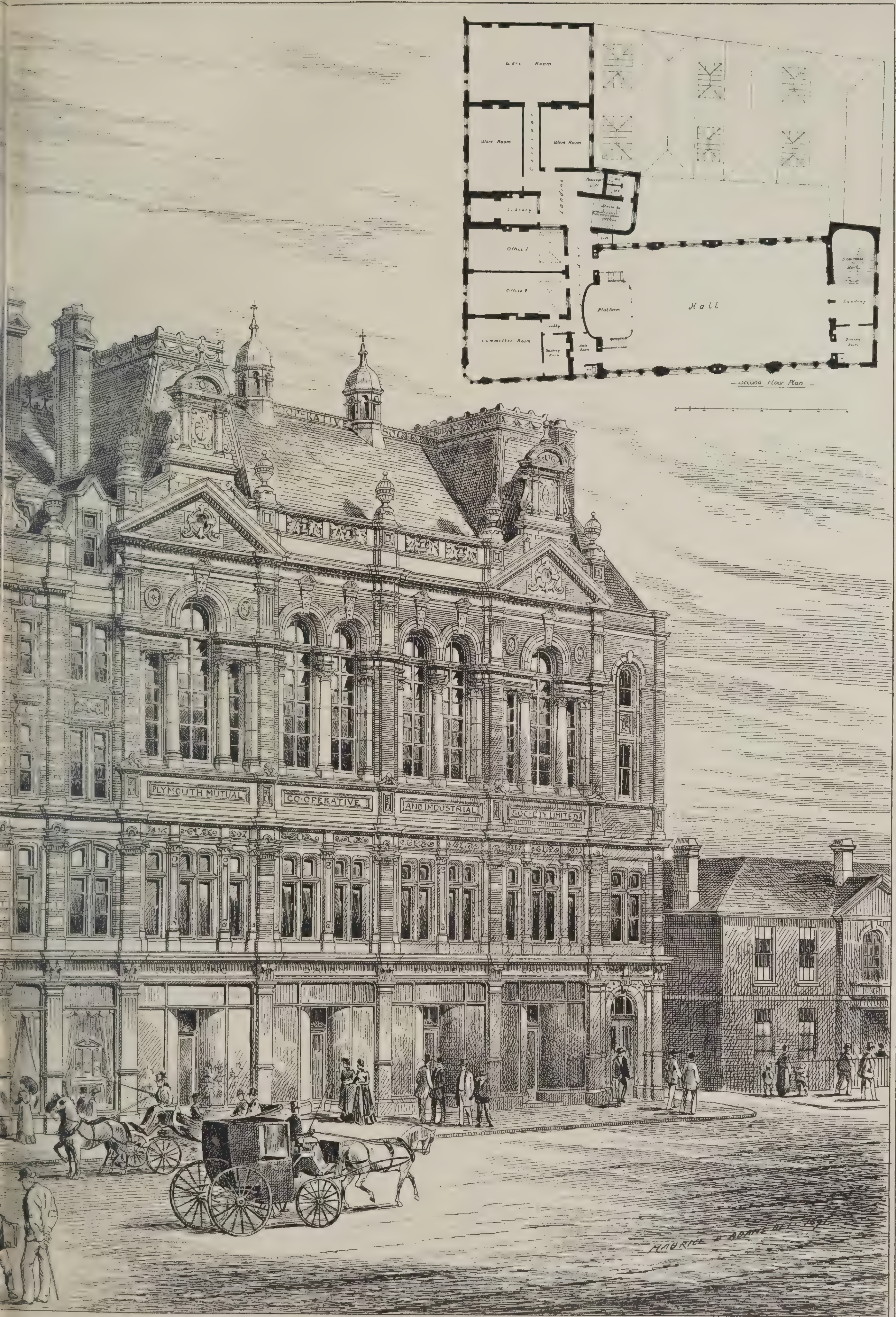
UNIVERSITY OF ILLINOIS



New Premises Frankfort Street PLYMOUTH for the Plymouth C



PERATIVE AND INDUSTRIAL SOCIETY LIMITED H·J·SNELL ARCHITECT PLYMOUTH

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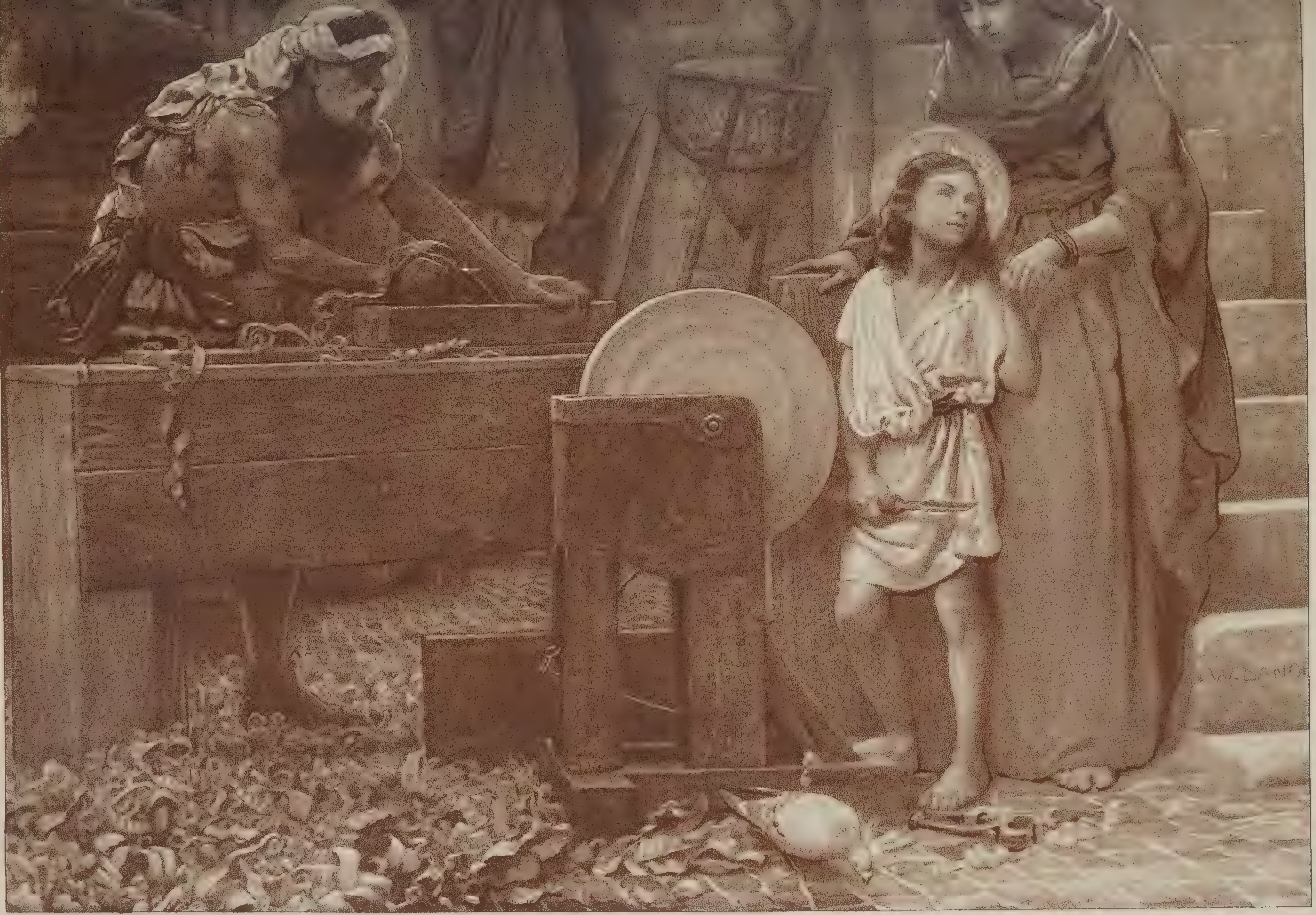

PHOTO-TINT

"THE · CARPENTER'S · SHOP · AT · NAZARETH" DECORATIVE · PAINTING · FOR · ST MARY'S SCHOOL WANTAGE · BY WILLIAM B LANCE

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CHANGES OF ARCHITECTURAL FASHION.

WHEN "the 17th-century revolt against beauty" began to die out, when art in common things was once more held permissible and even desirable amongst us, it is curious to remember the directions in which it was looked for, and the rules by which it was to be attained. "Think only of utility," said one teacher, "and beauty will come of itself." "Build on Christian and not on Pagan lines," said others, "and you cannot fail." "Only keep your eye ever fixed on the eternal laws of morality," said a third guide, the most eloquent and popular of all. The docile architect of forty years ago heard the voices, and thought them good. His work became a solemn thing. Utility, morality, and theology all seemed to watch for his halting. "Am I living up to my principles?" was his ceaseless question. He could hardly design a string-course without a season of self-examination, or sketch out a tracery window without an inquiry into the purity of his motives. If Englishmen take their amusements sadly, they then took their art still more sadly. The perpetual strain on its producers would have been too much for human nature, had it not been for one happy circumstance. There was plenty of good art remaining from Mediæval times; the modern architect could copy it, and so escape his responsibilities.

This answered fairly well where churches were in question. An abundance of models remained, dating from the 13th and the early part of the 14th century, and their details were imitated everywhere. Works of a later date were generally avoided. Anything built after A.D. 1350 was looked upon with grave suspicion. It belonged, as the popular teachers insisted, to a period of decline, and was nearly sure to be tainted with moral baseness. Unfortunately, almost all the oldest domestic buildings in the kingdom are of the so-called period of decline. The earlier structures, which alone it was held lawful to copy, were, broadly speaking, only churches and castles. Of these, the churches were considered the purer in style, and the aim of the Gothic revivalist was consequently to repeat their features in season and out of season.

It was held in Shakespeare's time that the words of the hundredth psalm and the tune of "Green Sleeves" did not well accord and go together. Revivalists and Salvationists in our day judge differently, and are not slow to act on their judgment. But though they have familiarised us with the sound of psalms sung to song-tunes, neither they nor anybody else seem to have reversed the process. No one, so far, appears to have set music-hall ditties to airs from the "Messiah," and sacred music is still kept free from secular uses. Good taste might have counselled an analogous reserve in regard to religious architecture. But during the period now in question no such reserve was exercised. On the contrary, it was loudly proclaimed that churches and street buildings should be alike in style and uniform in character. We were to have Pointed arches everywhere—in cathedrals and in cottages, in shops and warehouses, in taverns and theatres. And this almost bore the aspect of a distinct moral duty, when we were reminded that the Pointed arch resembled the profile of a leaf, and so took us back to nature; whereas the rectangular opening was like nothing known to us in heaven or in earth.

The reign of the *doctrinaires*, however, was coming to its close, as far as the art of building was concerned. They had sustained the blow which is fatal to their class—their doctrines, namely, had been put in practice. However plausible they had sounded, they were ludicrous when followed to their results in brick and stone. It became clear, even to the meekest disciple, that features which are admirable in a church may be execrable in an office or a bank. Architects began to remember that, even in the Middle Ages, domestic architecture as soon as it came to exist in any quantity developed a marked type of its own, very different from, though perfectly harmonising with, that of the contemporary churches. They remembered that the square-headed windows, which they had been taught to look upon as all but sinful, were amongst the most charming features in the old manor houses and farmsteads which make the country beautiful. If such things were not copied from nature, yet "Nature gladly gave them place," and they now seem almost a part of herself. It was so with other details, and the result is that the secular architecture of former times has, in the last ten years, been studied as it never was before. Pointed arches have greatly gone out of fashion, and those to whom Gothic begins and ends with Pointed arches may suppose that the influence of Gothic is over. This, however, is far from being true. The forms are less copied, but the free, inventive spirit of the post-Classic world is more at work than it has been for centuries. Yet in one thing there has been a great change. Artists no longer hope to produce art by simply following utility, or theology, or morality. All these things are excellent in their place. As Sancho Panza says, "St. Peter is very well at Rome." But they will not, by themselves, blossom into architecture, any more than a cauliflower will blossom into roses, or a cedar-tree into lilies. In the long run, people get the sort of things they seek for; and to get art, we must seek for art.

This is the lesson, or at least one great lesson, which it has taken nearly half a century to learn. There have been repeated changes of fashion, no doubt, but the changes have not been altogether without a motive. In a recent lecture at the Architectural Association it was asked why, when we had such an elegant and suitable style as that of Adams, we wanted to give it up for another, and then change that for a third, and so on without end. Human aspirations, however, are infinite, and the soul has an ideal which even Adelphi-terrace can scarcely satisfy. And if for the moment some architects have taken up again a style which is not very far removed from that of Adams, it is only fair to remember how much of their own they have added to it. Architecture has pursued a long and devious course since George the Third was King; but its followers have picked up a good many flowers on the way.

It would be a fine theory, perhaps, to get rid of fashions in art;—but is it possible? They mean a waste of life and thought and energy. A man, in these times, has no sooner learnt his style, and trained himself to use it with something like expertness, than the style goes out of fashion, and he has to begin again and learn another. This is not exactly how styles changed in the ages of art. Fashions altered, it is true, but they altered by degrees. The Romanesque builder began to put a pointed arch here and there in his work, as strength required it. This slowly led to other changes—so that some of those who produced Norman work in their youth may have come very near to Early Gothic in their old age. But in this subsequent transition, the progress was gradual and natural. To take a classic example, it was like the progress in Sir John Cutler's stockings, which were originally of worsted, but which were darned so long with silk that they became a pair of silk stockings. Now the modern style-changes show little of the progressive alteration, they are "too unadvised, too sudden," and as new styles come lightly, so they go lightly. None of them lasts long, and yet, under all the style-changes of recent times, there is a certain continuity of spirit which should save us from thinking style a deeper thing than it is.

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PRACTICAL DIFFICULTIES IN ARCHITECTURE.

WHEN new problems are being daily presented to the consideration of the profession, and when statutory enactments are growing more numerous and precise, we cannot be surprised if the artistic architect views with repugnance those seemingly intractable and unsympathetic requirements which press upon him. He cannot submit to them without revolt; he rebels against innovations of the engineer, warming, ventilating, and electrical applications. His first impulse is to hide and conceal what is so repugnant to his sense of art; his next to acknowledge them openly; his last to treat them artistically as necessary evils. It is curious, but we have each of these aspects to record in the case, at least, of iron, which has at last to be recognised, and treated with consideration. Iron roofs were at first hidden, next accepted with ill grace, and lastly made ornamental. So it was with timber roofs, with brickwork both external and internal, with plaster, paints, and other decorative materials. For some time the idea of showing a roof was scouted as a monstrosity, an interior lined with brick was a vulgarity not to be thought of, and anything in the shape of a ventilator on a roof was intolerable; but we have "lived down" all those prejudices, which were mostly insular, as we are now ashamed of having so long robbed our churches and our houses of all their symbolical and appropriate features and furniture. After being abborred, they have come to be tolerated, and then admired. Many of the "fads" which now exercise so overwhelming an influence over ladies and upholsterers in domestic decoration were not long ago pronounced intolerably vulgar.

We here draw our readers' attention to a few of the many problems with which the architect has been trying to grapple, though scarcely with success. Many of these are requirements of a structural kind, imposed by clients or by statutory provisions which are of recent introduction. The large open floor is one of the necessities of business premises. A reference to those of recent construction shows how seldom anything is attained architecturally, especially when irregularities of shape occur, and walls of an upper story have to be provided for by a system of girders and columns. It is a crux for the art architect. Take, for example, a large bank or show-room, where light has to be studied. Architectural treatment is out of the question, and the only thing that can be done is to subdivide the space by columns and ceiling-beams and make a feature of the walls and ceilings by appropriate decoration. The average builder leaves the problem in the hands of the decorator. The real architect divides his space, and tries to make features out of the necessities, such as a staircase or lift. The former leaves the position of his iron columns to the engineer, and puts a large sprawling capital just beneath the plain surface of ceiling, the effect of which is ridiculous; but the thoughtful designer arranges his supports beneath the girders, and properly places above them an entablature, which in its turn rests upon the capitals.

Irregularity of shape is a harder nut for the architect to crack. Take a large room with the walls running at different angles—a crooked or trapezoid-shaped room. What can be done to make it architectural? Expedients to disguise its crookedness may sometimes be used, but these are not always practicable in business premises. Of course, the arrangement and treatment of the ceiling where the irregular angles are most discerned demand much skill on the architect's part. Acute and obtuse angles are the least amenable to artistic expedients. A building with an acute angle externally offers equal difficulties, and few architects have overcome it better than Mr. Waterhouse has done at the Manchester Town Hall and the National Liberal Club.

The plate-glass craze has always been a bugbear to the architectural mind. Happily, the problem was shelved when the Modern Renaissance strove to introduce the mullioned and the small-paned window. The negative effect of plate glass, like space, is scarcely one of the elements that can be utilised for architectural effect. One other feature requiring considerable study is the circular corner, and the only satisfactory solution is that adopted by Soane at the Bank of England at one acute angle, where he has adopted a circular colonnade and recess—the only reasonable way of getting over the window difficulty.

A new set of problems has been introduced by recent proposals of the London County Council, as in those regulations against fire which have been drafted in respect of theatres, houses, and rooms of public resort, and which were formally adopted by that body on Tuesday. One of the most important requirements is that *one-half* at least of the total length of the boundaries of the site of any such premises, or, in case of a room, one-half at least of the total length of the boundaries of the site of the building, shall abut upon public thoroughfares, of which one at least shall be not less than 40ft. wide, and of the remainder none shall be less than 30ft. wide if a carriageway, or 20ft. wide if a footway. No such premises are to be erected upon a site within 20ft. of any windows or other openings. This regulation, if carried, will very largely restrict the number of buildings available for places of public resort. One-half of the total length of the boundaries of a building or room means that at least one side and one end of the site or building must abut on a thoroughfare. It must, in fact, be a corner site facing a thoroughfare, with a side street or way of at least 20ft. wide. Architecturally, the rule is an advantage, as it will insure that two sides of the building at least will be seen, but the restriction will handicap many promoters who desire to convert buildings into public assembly rooms. No doubt promoters or owners of buildings suitable for public resort will take the hint and obtain early permission. Then there is the rule that all such premises shall be provided with a sufficient number of dressing-rooms in a separate block, or divided by party-walls from the place of public resort; that these rooms are to have an independent exit into a thoroughfare; that they are to have only one story below the street level; that no theatre is to be constructed underneath or on the top of any part of any other building, nor to have more than three tiers or horizontal divisions, including the gallery, above the level of the pit. This condition will require some thought on the part of architects dealing with old premises. Every tier or floor is to have two separate exits not leading into the same thoroughfare; and if divided into two parts, each part is to have two such exits, affording ready egress from both sides of each tier. Not more than three tiers or floors are to communicate with one vestibule, and the width of the latter is to be one-third greater at least the united width of all the doorways and passages leading thereto. From these requirements it will be seen that the planning and construction of premises will call for more than ordinary skill. Among other details is the design of doorways, which are not to be less than 4ft. 6in. wide in the clear, with folding-doors made to open outwards. Each of the two folds will have to be hung on the outer part of the jamb, and some mechanical ingenuity will be required to design doors with jamb linings to admit of their being opened both inwardly and outwardly without impeding the traffic in both directions. Professor Herkomer the other day made some suggestions for improving the shape of the auditorium and the lighting of the stage of a theatre which deserve attention. The profession will certainly do well to take stock of all these suggested improvements to buildings and their fittings, and set themselves the task of finding out how they may be utilised without destroying the character of the buildings. By so doing they will be helping onwards the claims of their art, which, if it is to be real and living, must take cognisance of new materials and methods instead of leaving them to the cold and unsympathetic hands of the mechanical worker.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

The fortnightly meeting of the Institute was held on Monday evening, the President, Mr. J. MacVicar Anderson, in the chair. The President referred to the death of Mr. Philip Hardwick, remarking that he was an able architect and an honourable man, whose works were both important and numerous.

THE ROYAL GOLD MEDALLIST.

The President announced that the Council proposed to submit the name of M. Cesar Daly, of Paris, an honorary and corresponding member, to Her Majesty as the recipient of the Royal Gold Medal for 1892, for his works as a man of letters. He read a letter from M. Daly, in which, after expressing gratification at the honour proposed to be conferred upon him, he added: "You know already the strong ties which bind my youngest memories with England and Englishmen; but the favourable vote of your Council binds my old age by a new tie that no strain will ever weaken." The announcement and the acknowledgment by the suggested recipient were received with applause.

LONDON BUILDING LEGISLATION.

Mr. Edwin T. Hall read on this subject a paper which, in effect, was an exhaustive exposition of the views of the Practice Standing Committee of the Institute, who have considered the codification and amendment of the Metropolitan Building Acts during the past two years, and whose draft suggestions have been approved by the Council of the Institute. The committee had, Mr. Hall stated, endeavoured to insure safe and sanitary building with as few restrictions as possible on artistic design. Great attention had been given by the committee to definitions. Many subjects defined in their draft were not defined in the existing Acts, while new definitions had been given to many others; among the former were—"building," structure, wall-sign, warehouse, domestic building, living room, flat, business offices, story, topmost story, floor area, superficies, cubic contents, and fire resisting; and the latter included public building, site, base of the wall, foundation, builder, street (instead of roadway), and centre of street. Several of the existing exemptions to the Act were, he thought, manifestly opposed to the public interest, and therefore recommended to be removed or limited in scope, while new exemptions of very small buildings from the general rules of the Act were suggested. An important addition to the Act was the section dealing with the "alteration in purpose or character of a building," and a new section also provided for the restoration of buildings of architectural, archæological, or historical interest; while the section for "rebuilding old buildings" was varied. With reference to foundations and sites, several alterations were suggested. As to recesses and openings in external walls, it was proposed to modify the law by enacting that the recesses and openings in any story shall not exceed one-half of the superficies of the wall of such story in "which they are made;" this limit not to apply to that portion of an external wall between its base and 30ft. above the level of the public footway immediately in front of the centre of the façade, or where there is no such footway, then above the actual level of the ground before excavation. Turning to party-walls, a new principle had been adopted for fire prevention and stability. The theory of ownership in the existing Acts was not interfered with; but the new principle of construction was that there shall be in the centre of the new party-wall a continuous backbone of brickwork, the thickness of which neither owner shall diminish. On its own side only of this backbone could the flues of any building be placed. As to the formation and superficial limits of recesses in party-walls, the new section provided that the recesses should be arched or corbelled over in the height of the story in which they are made, and that their extent shall be measured by width, not area. As to the section governing united buildings, a direction to the County Council was suggested to consent to the uniting of buildings which were not wholly in the same occupation. In the case of floors of fire-resisting materials such uniting might, he thought, within limits be permitted with perfect propriety. Under the heading of Miscellaneous, an effort had been made to get rid of the public danger arising from advertisements on combustible hoardings "on the face or in front of the external wall of any finished building." The subjects of timber in external walls, bressummers, and the height of party-walls above roofs having been dealt with, the lecturer turned to the payment of the cost of party-walls and the question of stories in the roof. A new section for chimney shafts from furnaces incorporated the essentials of the existing rules which the County Council adopted in sanctioning such shafts, while in the rules as to other chimneys and flues many variations in detail had been made. Alterations had also been made as to the construction of habitable rooms, the minimum height, except in the roof, being increased from 7ft. to 8ft., and minimum areas of windows, dormers, lantern lights, &c., had been fixed. The Draft next embraced all the building regulations of the Public Health Act for underground rooms let as separate dwellings, and added regulations for other underground rooms not so let. Projections beyond the general line of building had also received careful attention. The sections had been drawn anew, so that cornices of shops might to a specified extent overhang the public way, but no other part of a shop-front might encroach on it. Permission for bay windows and similar projections over building owner's own land was given, thus legalising what was a pretty general practice; while adjoining owners were sought to be protected from overlooking and encroachment. The County Council had apparently considered overhanging constructions only in relation to the public way, for the limit for oriels and turrets not to be lower than a certain height above the level of the footway was unnecessary and undesirable where they were over the building owner's own land. Another sub-section was designed to insure the construction of party-walls in buildings subsequently converted into two or more buildings, and a further section to secure fire-resisting construction in a building erected or converted into two or more divisions, intended for or adapted to be used as flats, or as warehouses, or which is let or occupied in two such divisions. The new section assumed a building to be that which it was popularly understood to be—viz., a cube resting on the ground and covered by a roof. The suggested regulations for governing lift-shafts were next considered. Lifts, in the suggestions of the committee, were divided into three classes—(1) those which were inside a building with fire-resisting floors containing flats or business offices; (2) those outside the external wall; and (3) those inside warehouses which pass through fire-resisting floors, and where it is not the practice to inclose the lifts with walls. In all three classes it was proposed that all openings into shafts should have doors or covers of iron, or other fire-resisting material. As to the present maximum heights of buildings in the 1890 Act, that maximum was proposed to be reduced from 90ft. to 75ft., and the height of two stories in the roof (at present unrestricted) limited to 20ft. The provision for open spaces at the rear and sides of dwelling-houses was next dealt with, and Mr. Hall said the London County Council were now going to an extreme in proposing to require an open space at the rear, not only of domestic, but of all buildings, which space between the opposite backs of two buildings would be practically double the width required between the opposite fronts of buildings. He thought, upon further consideration, the County Council would agree that the necessities of the case were met by the suggestions in the Institute Draft. Mr. Hall, before closing, referred to a new section dealing with drains and sanitary apparatus, &c., which left all details to by-laws.

Mr. H. H. Collins, in moving a vote of thanks to Mr. Hall, urged that the present Act, which had been in operation for 36 years, deserved the credit it had gained. They did not want over-legislation, for neither architects, district surveyors, builders, nor clerks of works wished to go to school again. He hoped the committee would deal with the difficulty as to footings on each side of party-walls; but the most vexed question was that as to the law of light which materially hampered rebuilding in the City. Hr. Hall's criticisms on the proposed new regulation as to the open space to be left in the rear of buildings were only too weak, for it was a monstrous and iniquitous proposal, and to apply it to old sites meant simple confiscation. He trusted that Parliament would not pass such a clause. In 1884 the late Metropolitan Board of Works brought forward an amending Bill which interfered with so many interests that the board were compelled to withdraw it.

Mr. Alexander Payne, who seconded the motion, feared the new Bill would be so thorough in its changes that it would be years before it was understood, and many more before the lawyers had agreed on its construction and interpretation.

Mr. Arthur Baker, A.R.C.A., and Mr. Ralph Nevill also spoke, the latter pointing out that modern grates packed at the back with fireclay were sources of danger from fire, as they threw out great heat at the rear. He did not share the lecturer's opinion that bay windows and other projections on the building owner's own property should be allowed to be carried down to the ground. He trusted that the new measure would abolish the absurd stipulation that all concrete footings should be stepped.

Mr. E. Woodthorpe referred to the fatal fire at a New York hotel as a proof of the peril attaching to lift shafts in warehouses.

Mr. Arthur Cawston considered that all lifts should be conveyed in separate walls. The present Acts were defective in that while they prohibited half-timbered constructions within a certain distance of property, there was nothing to prevent buildings being erected close to the half-timber work.

Mr. Bernard Dicksee thought all details of house drainage should be intrusted to the district surveyor, instead of being, as at present, left to the officials of the vestry.

Mr. Statham and others having spoken,

Mr. Douglass Mathews held that every detail should be settled in the Act of Parliament, and as little as possible left to be framed in by-laws of the London County Council; still less should be left to the discretion of the district surveyor.

Mr. T. Blashill, superintending architect to the L.C.C., said criticisms were passed on the limitations of the void spaces in buildings, but through these openings, it should be remembered, flames leaped forth when fire broke out, and endangered neighbouring and opposite property. Mr. Hall had put a very extreme case as to the reservation of open space at the rear of buildings; but he held that some such provision for light and air was desirable, and where the restriction would work harshly, the County Council had dispensing power. Under the proposed measure, all sanitary and drainage details would be transferred from the vestry officials to the district surveyors.

Mr. John Slater claimed that many of the suggestions made in a paper he read two years ago had been incorporated in the Committee's suggestions. Mr. Collins, in his defence of the Building Act of 1855, seemed to have forgotten that it had already been often amended. He thought the schedule as to protection from fire needed further modification, especially as to fire-resisting materials.

Mr. T. M. Rickman, co-secretary with Mr. Hall, of the committee which prepared the suggestions, expressed the hope that the points involved would be thoroughly threshed out by the various parties interested—building owners, architects, surveyors, and builders—before the measure became law.

The President, in putting the vote of thanks to the meeting, remarked that if Mr. Collins's arguments were accepted, there would be no building or other legislation. He held that it was most desirable that the various and conflicting Acts regulating building in the metropolis should be consolidated and amended.

Mr. Hall briefly replied, admitting that in several particulars the suggested draft of the committee would be the better for verbal emendation. He had certainly taken an extreme case as to the provision of open spaces at the rear of buildings; but such cases would occur, and his suggestion was based on the illustration given in the County Council's draft measure.

THE SOCIETY OF ARCHITECTS.

An ordinary meeting of this Society was held at St. James's Hall, Piccadilly, on Tuesday evening. The President, Mr. W. H. Seth-Smith, F.R.I.B.A., occupied the chair.

PROTECTION FROM LIGHTNING.

A paper on this subject, illustrated by numerous experiments and lantern views, was read by Mr. Alfred Hands, F.R.Met.S. Having shown that lightning was but the electric spark of the battery on a larger scale, and explained the two electrical states recognised as negative and positive, the lecturer continued:—Although the increase in electrical knowledge has been great in modern times, very little advance has been made in the knowledge of thunderstorms until quite recently. A few years ago, however, the Royal Meteorological Society appointed a committee to investigate this subject, and two reports have already been published. It was thought at one time that thunderstorms were of an erratic nature; but Mr. Marriott, in the last of these reports, has shown that they consist of atmospheric whirls following similar laws to other cyclonic disturbances. He finds that thunderstorms, instead of travelling at a rapid rate over the country as one continuous storm, consist really of a series of storms following one another, and it is his opinion that the average life of each is not more than about 20 miles. This latter discovery alone is most important. At present we have no really reliable theory as to the origin of atmospheric electricity. Various theories have been advanced; but they all appear untenable, and therefore unsatisfactory. Whatever the cause, we know that the air is always in an electrified state, the potential rising as the distance from the earth is increased. It is probable that clouds act only as accumulators of charge, and that the enormous tension evinced in a thunderstorm is caused by clouds acting inductively on one another. One of the noticeable features of a thunderstorm is the heavy drops of rain which fall, instead of the ordinary fine drizzle. Lord Rayleigh has shown the cause of this by a striking experiment. A jet of water is thrown into the air, and is projected on to the screen by a lantern. The drops of water as they fall are fine; but immediately the jet is electrified by a stick of rubbed sealing-wax being brought near to it, the drops coalesce into large heavy ones, similar to those which accompany a thunderstorm. Another experiment, to which we are indebted to Mr. Shelford Bidwell, F.R.S., shows why thunderclouds are heavy and appear sometimes of a coppery hue. A jet of steam being projected on to a screen appears of feeble intensity and of a neutral grey tint; but immediately it is electrified, it becomes dense and dark, and assumes, especially near its edges, a peculiar orange-brown hue. In England we are not so liable to thunderstorms as are the inhabitants of some countries, but nevertheless the amount of damage caused by lightning in this country is very great, and is probably far more than most people who do not take any especial interest in the subject would realise. The invention of the lightning conductor was the immediate outcome of Franklin's discovery that lightning was electricity. He suggested that by laying metallic paths on buildings or ships the electric force could be conveyed harmlessly to earth, and that, consequently, damage to such structures could be prevented. The spread of the use of conductors was, however, very gradual, being largely retarded by religious opposition. Increase in scientific knowledge has overcome these prejudices, and now an enormous number of buildings have been provided with lightning conductors. General ideas as to how buildings should be protected from lightning are, however, very hazy, and consequently an enormous number of the conductors in existence are of very little use, and we often hear of cases where buildings, supposed to have been rendered proof against lightning, are damaged. Paradoxical though the remark may seem, the erection of lightning conductors, even of the most approved type, and the protection of a building from damage by lightning through the use of conductors, may be two very different things. Theoretically, the principle of the lightning conductor is so simple, and based on such well-known laws, that there can be no doubt about its utility; but practically the proper application of lightning conductors is a most difficult matter, and necessitates careful consideration and investigation in order to insure efficiency. If the building to be protected consisted of brick or stone, without a particle of metal in its construction, the matter would be easy, but nowadays, when gas and water pipes are carried about buildings in every direction, besides metal girders and other useful or ornamental metalwork being so largely employed in and on buildings, it becomes necessary to take into consideration the position and quantity of such conducting bodies, otherwise the absolute protection of the buildings is left a matter of chance, and damage may result. A lightning conductor, even if not quite perfect, will still serve to lessen the amount of injury that would result, but this is not sufficient. Protection can be, and should be, absolute, except that rainfall pipes and gutters which are brought into the conductor system may be slightly cracked where the joints do not give good electrical contact. Such nominal damage as this need not be taken into account at all, because it could be avoided, but is not worth the cost of preventing. My experience in testing shows that at least 70 per cent. of the lightning conductors in England are in such an unsatisfactory condition that they afford only partial protection, and damage might occur to the buildings on which they are fixed, while a large number are so absolutely bad that they would give no protection whatever. It is impossible to lay down any definite set of rules by which conductors can be rendered efficient, because buildings differ as much in their construction as do human beings in their appearance and constitutions; and, therefore, two buildings of somewhat similar design might, owing to complications of internal metalwork, require very different methods of protection. Therefore, in describing some of the principal points that require attention for efficiency—points in which conductors generally fail—I merely advance general principles, and each building must be treated separately according to the peculiarities of its position and construction. A lightning conductor may be said to consist of three parts—the main conductor, the elevation rod and point or crown of points, and the earth connection or portion underground. Undoubtedly, the best and most durable form for the main conductor is flat copper band, sometimes called copper tape or ribbon. Being manufactured in lengths up to nearly 500ft., joints, a source of weakness in a conductor, may be almost dispensed with; while, where absolutely necessary (as for branch conductors), they may be made both electrically and mechanically perfect by riveting and soldering. Its flexibility admits of its following closely the irregular surfaces of buildings, and it is also neater in appearance than any other form of conductor. The purpose of the elevation rod and point is important. Under ordinary circumstances, as an electrically-charged cloud passes across the sky, it causes, by induction, a charge of an opposite nature in the earth and buildings immediately beneath it. Before a discharge occurs, this induction takes place, and where the accumulation of induced electricity is greatest, or where the atmosphere is weakest (electrically), the lightning will most probably strike. The action of a point is to prevent an accumulation of electricity by dissipating the charge into the air as fast as it gathers, and so a building provided with a pointed conductor should never get into a condition which would allow of a discharge of lightning falling upon it. This action of points may be thus explained. If an insulated metal ball be charged electrically, the charge will be spread evenly over the entire surface, because its self-repulsive power is equal in every direction. If, however, a point is attached to the ball, this repulsive power is no longer equally distributed. The nearer the point the greater is the force repelling the charge in the direction of the apex, till at the extreme point the force is sufficiently great to overcome the resistance of the air, and the neighbouring particles of dust and air becoming charged and repulsed in all directions, the charge on the ball is dissipated. Professor Tait gives a striking instance of how pointed conductors tend to prevent discharge, as shown by the town of Pietermaritzburg, Natal. This district is very liable to thunderstorms, and a great deal of damage was formerly done in the town by lightning, but since conductors have been erected on the principal buildings, lightning has not struck within the town. Thunderstorms occur in the district, but they pass silently over the town, and only discharge their flashes when they have passed beyond range of the conductors. In practice we find that pointed conductors do sometimes receive a discharge of lightning, for the reason that the charge may accumulate too rapidly for the point to dispel it. When one point will not prevent discharge several may, and therefore a lightning conductor air-terminal should have one stout central point to receive the flash without meeting, if it should strike, and three or four smaller sharp points to facilitate the brush discharge. A church spire or large dome, covered with lead or copper, and provided with a lightning conductor terminating at the point, would be somewhat of the nature of a huge point, and would be less likely to be struck than lower differently constructed buildings. For instance, so long as the conductors on St. Paul's Cathedral are kept in perfect order, lightning would be more likely to fall on one of the smaller pinnacles than on the central dome. One of the most important portions of a lightning conductor is the earth connection. If this is defective the conductor may be absolutely useless, as the discharge might follow some better path, such as a gas or water pipe, and do considerable damage on its way. In ordinary moist soils a good earth connection may be made by attaching to the conductor a large copper plate and bedding it in coke at a sufficient depth to insure sufficient contact with moisture, or if an iron water or gas main is available, the conductor may be connected to it and an excellent earth will result, but the connection must be very carefully made, or, owing to galvanic action, a bad joint will speedily result. In cases where the soil is dry and there are no mains available, the conductor must be taken to a great depth, so as to reach moist earth, or the plate must be increased in size so as to get a larger area of contact with the earth. Electricity, in passing from a conductor to the earth, meets with a certain amount of resistance, and it is in order to reduce this resistance to a minimum that the plate is required. This is in fact a joint in the conductor which requires making good. Professor Tyndall very aptly described an earth plate as a wide door through which the electricity could escape into the earth. It is entirely a matter of surface of metal in contact with the earth, and nothing is gained by having a thick plate. One-sixteenth of an inch thickness is sufficient for ordinary cases. The area of the plate varies according to the nature of the soil. The area protected by a lightning conductor is comparatively small. A spire may be sufficiently high for a single conductor placed upon it to protect the whole building, but a structure with a number of chimney stacks of about equal height may require a conductor from several or from every stack. These need not, however, be independent conductors, but may be branches to one or more main conductors to earth. One of the reasons for so many points of protection being required is that lightning often divides into several branches before reaching the earth, forming forked lightning, each branch falling on some prominent part of a building. The last requisite for efficiency is the relation of the conductor to other metals inside or outside a building. This is the most important point of all, for whereas a conductor might have defective joints, a rather bad earth connection, or other faults, it might still answer if there were no other metals by which the lightning could find a path to earth. If, however, it is perfect in every other respect, but is carried within sparking distance of a gas-pipe or other metal, damage is certain to result. The cause of this is side flash, or lateral discharge from the conductor. If such a spark passes through brickwork to metal inside the building the hole made is generally very small, but the intensity is sufficient to melt and set fire to soft metal gas-pipes, or to do other damage. The distance that such a spark will pass depends upon the intensity of the lightning flash, the amount of the metal near the conductor, and whether it is insulated or connected to the earth. It is therefore extremely difficult to say what is the exact distance that such a spark may pass, but with a conductor of good capacity and conductivity, and having a good earth connection, the maximum length of a side flash to a gas or water pipe would be, at the most, one and a half yards, and therefore any metal at a greater distance than this should not cause side flash. With insulated metal, if not of large extent, side flash should not be nearly so long. Hitherto it has been too much the custom to regard a lightning-rod as a sort of conduit which conducted the electricity, just as rainwater gutters and spouting carry off rainfall from a building, and its physical effects have been somewhat overlooked. We must bear in mind that all the metals about a building are conductors of electricity, and are therefore subject to intense inductive action, so that their condition and effect in the event of the lightning conductor receiving a discharge of lightning must be duly considered. It is no argument against the use of lightning conductors that these physical effects occur. We only require to know their nature and effect in order to guard against them. It is merely a proof that lightning conductors, to be absolutely perfect, require to be scientifically applied. There are two methods by which these effects can be avoided. One is to connect all metals with the conductor. So far as the outside of the building is concerned, this rule holds good—that is to say, any metal near the conductor should be brought into metallic contact with it. As regards the interior of the building, however, this is not always advisable. Apart from the objection there would be to having walls pierced for this purpose, there would be the danger of the connected metal coming near to other metal which was not connected, and which would therefore be at a different potential. For instance, if hot-water pipes were so connected there might be some point where they came near a gas-pipe, and there a spark might occur and set light to the gas. A better system is to study the position of the various metals, particularly gas and water pipes, and to so place the conductor that the lightning discharge may be led quietly away to earth without affecting the metals inside the building. After the conductor is fixed these physical effects should be so far borne in mind that the space inside the building near the conductor should be remembered as a dangerous one in which to place metals, and, especially, any alteration to the gas or water system should be carried out with due regard to its effect on the conductor. A necessary way to insure the efficiency of a conductor, but one generally very much neglected, is to have it periodically examined and tested. It should be carefully tested by means of a galvanometer and set of resistance coils to see that the resistance in every part is sufficiently low. Joints may get bad, the continuity of the conductor may even be broken by ignorant workmen repairing the building, and the underground portion may decay. Such faults as these the galvanometer will reveal and allow of their being made good in time. The building should also be carefully inspected to see that no metals have been so placed as to cause lateral discharge. The lecturer, in conclusion, referred his audience to the well-known and excellent Report of the Lightning Rod Conference, published by Spon's, which had, he remarked, done much to improve the system of applying lightning conductors.

At the conclusion of the paper a vote of thanks was proposed by Major F. S. Leslie, R.E., and seconded by Mr. H. Roumieu Gough, Past-President, and was supported by Mr. Robert Walker, of Cork, ex-President; Messrs. Manning, A. F. Finch, and R Cruwys and the President. Mr. Hands replied at considerable length on the various points raised.

THE ACTION OF HEAT FROM OPEN FIREGRATES, STOVES, AND HOT-WATER PIPES.—IV.

By F. Dye.

From hot-water pipes we have the same action as from stoves, viz., radiation from their outer surface, and air warmed by contact with them; both these actions, however, are weaker, and this renders them more agreeable. Of course, a greater surface is required with hot-water pipes than with stoves to heat a room of a given size. With hot-water pipes we get a very agreeable heat, in fact, we get the result that is partially obtained with the "gill" stove explained in the last paper. We get a large volume of heat at a medium temperature, instead of a smaller volume at a higher temperature.

With hot-water pipes there is no occasion whatever to provide means for moistening the air, the heat is evolved too gently and naturally for that, and it is the general opinion that with this kind of heating appliance we receive more heat by radiation than by convection. There are exceptional instances where vaporising pans and troughs have to be provided, even in living apartments, and, as before mentioned such provision has always to be made in horticultural works; but for general residence work, or for warehouses, lecture-rooms, &c., no such provision, as a rule, is called for.

In saying that we receive heat from hot-water pipes by both radiation and convection, it is supposed that the pipes are exposed, and not in pits, chambers or even in channels; neither should they be encased in any way as the old form of pipe coil usually is. So much of the effective heat is lost or rendered ineffective by hiding the pipes in any of these ways, that the practice should be avoided wherever possible. The new pattern "radiators," which are practically ornamental forms of coils, have been introduced chiefly with the idea of obviating what has just been referred to, as their appearance is such that they may be stood in full view almost anywhere, if they are suitably coloured and decorated.

Almost any mode of hiding hot-water pipes must have a prejudicial effect upon results in two distinct ways. The first is that we may lose all or nearly all the radiant heat, the value of which has been already dwelt upon. Take the pipes in a church, which are usually carried in channels with an iron grating over. Even with these we get but little radiant heat through the grating, and what does come through is projected into space and does little or no good. The heating in such a case as this is done, we may say, wholly by convection, and so it is with th other methods adopted to hide the pipes. O course, in numbers of works the pipes must b hidden, there may be no way of obviating it In such cases, as every engineer knows, a greate allowance of pipe is made to heat a certain are than if the pipes were exposed. This is how th difficulty is overcome, but, of course, it does no seem right that any waste of heat and extra expense should occur.

The other and possibly greater objection t placing pipes in channels, pits, or such obscur places is the certainty of their being allowed t get dirty, that is, have a coating of dust, mor or less thick, upon them. Now, dust has a objectionable feature when it settles upon stove and such highly heated surfaces, by creating a odour, as was explained in the last paper. Thi objection, however, does not exist with ho water (low-pressure) pipes as the heat is insuf cient to scorch the particles in the way describe The trouble, therefore, that dust causes wit radiating surfaces heated by hot water is th the particles consist, we may say, wholly a solely, of poor heat-conducting materials, piec of wood, wool, fibrous and strawlike material grit (silica), and various other organic and ino ganic substances, that do not conduct heat at a readily. Consequently, a coating of dust ac just like a coating of any of the materials th are occasionally used to prevent dissipation radiation of heat. The surface of the pipe its is ready to discharge its heat, but the mater resting upon it is opposed to its passage.

There are two remedies for this state of thing one is to keep the pipes clean, which, howeve is not done at all willingly or frequently, as may entail removing large quantities of grating &c., every time. In many cases those who tend to the pipes in, say a church, are ignor of the harmful effect of the dust, and the pi are only dusted when the accumulation can be seen through the gratings and does not look well. With coils in cases this remedy is not usually possible, as the cases, the ornamental structure provided to inclose and hide the unsightly coil, cannot be removed except by a workman. It would be possible, however, to dislodge the dust with a pair of bellows.

The most common method adopted now to remedy the trouble caused by a lodgment of dust on pipes is to use coils in which the pipes are fixed vertically, that is, upright; dust cannot very well lodge on these at all thickly. This remedy is, however, very limited in application, for it is quite impossible to place the pipes in anything but a horizontal position in almost the majority of cases. The new form of coils known as "radiators" have all upright pipes, with this object in view.

With a hot-water apparatus carried out upon what is known as the high-pressure system the water, and consequently the metal of the pipes, attain a fairly high temperature, sometimes 450°. With the pipes of the ordinary low-pressure system we seldom get more than 200°. This difference in temperature is often referred to as an objection to the high-pressure system, owing to the greater heat-giving results somewhat approaching stove heat. This, however, is not strictly correct, for the temperature named, or even 500°, is not sufficient to scorch the materials composing the dust which settles upon the pipes, and the disagreeable odour is not perceivable. Neither does the high-pressure system bring about a dryness of the air sufficient to be objectionable for ordinary purposes.

Although the high-pressure system of hot-water works diffuses heat in the same two ways (radiation and convection) as both stoves and low-pressure water works, it is very seldom indeed that the radiant heat is projected into the apartment, as the pipes of this system are, we may say, invariably hidden or covered in some way, usually behind skirtings or else in cases. This style of apparatus answers well for hot-air works, that is, heating air in a chamber from when it is conveyed by pipes or conduits to the points desired. For this purpose it is a little more effective and rapid in results than a system of low-pressure pipes, yet it does not require the precautions or have any of the possible disagreeable effects of stove heating.

It is always necessary for hot-water pipes to be painted or coated with some material wherever they may be situated, and special need for this arises with the modern radiators referred to, as these being intended to stand in view, with possibly good surroundings, they frequently have to be decorated in an artistic manner with two or three tints or colours. Now, there is a notion somewhat prevalent that colour affects radiation; this, however, is practically incorrect as regards non-luminous rays of heat, and we never get luminous rays from hot-water pipes (nor from close stoves). Doubtless the idea is due in a great measure to the fact that as lamp-black is an excellent radiating material it might follow that colours ranging from black to light might also range in ratio in their powers of radiation. This would be a natural conclusion, especially as lampblack is classed as the most efficient radiating media we have.

The scale of radiating powers of different substances is as follows:—Lampblack, 100; white lead, 100; plumbago (blacklead), 75; cast iron, rough, 60; film of oil, 60; iron, polished, 25; copper, polished, 7.

It has to be impressed upon the reader that, by the radiating power of materials is meant the property of diffusing or projecting heat from their surface or skin, and it must be clearly understood that it is in no way related to the action that may take place in the substance of the material. To make this clear, let us suppose that we coated a hot-water pipe with a ¼in. thickness of lampblack; this would give poor results, as lampblack, although possessing excellent radiating qualities, is a bad conductor of heat, and consequently the heat from the pipe would be retarded by the thickness of the black, and very little would get through to the external surface to be radiated. To get effective results, we have to apply the lampblack as a thin coating, then we have the heat from the water readily transferred through the metal of the pipe by the excellent conductive properties of iron, and when it reaches the outside of the pipe the lampblack will do what is required in projecting the heat into the room. This is effected by the black being applied sparingly and merely acting as a skin to the pipe.

Lampblack, notwithstanding its good qualities in this direction, can only be used when the pipes are hidden or occupy non-important positions. When it is permissible, it is desirable to use it, and it should be applied as a water-color, that is, washed on. For radiating pipes, particularly radiators, occupying conspicuous places, it fortunately happens that oil colours and varnishes, if applied sparingly, give very nearly as good results as lampblack, and this permits us to decorate the radiating material as tastefully as we desire, without impairing efficiency.

With non-luminous rays of heat the colour of the radiating medium makes no difference in the amount of heat given off, but the materials composing the colours do. From the table given it will be seen that oils are efficient radiating material and all oxides and such colouring materials are as good, and we may very safely decorate coils, &c., with ordinary oil-colour paints, and the gums and shellac used in the manufacture of varnishes have no objectionable features in particular.

Polished metallic surfaces are very bad heat radiators. A copper kettle, for instance (see table just given), will permit of the water within it retaining heat much more efficiently if polished than if soiled and dull. A coating of soot on a copper kettle will make a considerable difference in heat retention, the soot being lampblack to all intents and purposes; it is a good heat dissipator.

As a polished surface is opposed to radiation, it follows that all bronzing and gilding or nickel-plating of radiators is likely to give bad or at least less efficient results, and such is really the case. There is no grave objection, however, to having bronze or gilt lines and reliefs on the projecting members of the castings, but if they can be avoided it is as well, especially as experience will prove that this kind of decoration is inclined to produce a gaudy effect, and is not usually considered to be in such good taste as an arrangement of colours only.

In conclusion, it may be mentioned that as hot-water pipes and coils contribute a fair proportion of their heat by convection, that is, by heating the air that comes in contact with them, it follows that the most suitable position for such things is the point where the inflowing air enters an apartment, this usually being the doorway. It is a common and a very desirable plan to heat rooms, when they are of good size, by both open fires and hot-water pipes. By this means there need not be an extravagantly large fire kept, but its cheerfulness and other good features are not absent. As mentioned in the previous papers, when an open firegrate is in use the draught of the chimney induces a somewhat keen inflow of air at some point in the room, and it is usually the doorway that furnishes it unless any special provision for inlet ventilation exists. This inrush of air, as everyone knows, renders the room unpleasantly draughty by the door, and also across the room from the doorway to the fireplace, necessitating the use of screens, which, however, only divert the current of air from the direct course it was pursuing. The advantage, therefore, gained in introducing hot-water pipes is that by placing them so that they intercept the air as it enters we impart heat to it, and the unpleasant results explained disappear, and further than this, the heating of the air causes it to take a somewhat less direct passage from door to chimney, and this is a desirable end attained.

It is rather peculiar to note what a number of houses exist with spacious and lofty rooms, yet which (rooms) only have one fireplace in them. In most cases the fireplace is totally unable to heat the room except just at the end where the fire is situated. In other cases the grate may be large enough, but then the heat in the immediate vicinity of the grate itself is intolerable. A grate situated at one end of a large room, yet large enough to heat the whole of the room, gives out an unbearable temperature at the part of the room where the grate is, and a fire of this kind would make an unbearable degree of draught at the doors, &c. With such rooms as these there ought to be two fireplaces, one at each end, or, better still, introduce a coil or radiator by the doorway where the draught enters, as just explained, and this will result in an equable temperature, for the doors are nearly always at the opposite extremities to the fireplaces.

As fireplaces and other causes go to induce an in-passage of air at various points in a house, it is worth a thought as to where this air enters in the first place. In almost every case where no special provision exists it will be found that the front and back outer doorways, which open into the entrance-hall and passages, are the points where the air first enters, and from these points it passes to the different rooms both down and up stairs, and furnishes the needed supply for all purposes. Owing to this, it becomes an excellent and always satisfactory plan to have coils or radiators in the entrance-hall where this fresh and cold air enters. By this means it can be given a more agreeable temperature, and wherever it passes afterwards it will tend to comfort and go a great way towards making all parts of the house warmer. This arrangement gives warmth to the staircases and landings, which are commonly very chilly; and as a hot-water boiler can be easily kept going all night, the unpleasant degree of cold felt in the early morning is quite obviated.

ELECTRIC LIGHTING IN THE CITY.

ELECTRIC lighting in the City is rapidly becoming an established fact; ere long we may hope to see the pale beams of the electric lamp shining in every part of the Lord Mayor's dominion. When this is accomplished, a wonderful stimulus will, no doubt, be given to the lighting of shops and warehouses in the same way. Already the Corporation of London have taken advantage of the opportunity of being able to obtain the electric current from the main near the Mansion House, so that Lord Mayor Evans has now the pleasure of seeing the electric light illuminate the Mansion House and other parts of his official residence. When a former attempt was made to light the Mansion House by electricity much annoyance was experienced from the vibrations caused by the generating engines which were situated in the basement. All this is now avoided by the new arrangement. Under the guidance of Mr. W. H. Preece, F.R.S., the Commissioners of Sewers have for some years been making themselves familiar with the possibility of electricity being used for lighting purposes in the streets.

Mr. Preece has considered the measurement and distribution of electricity, together with the cost of its production. On all these points experiments were successfully made, and afterwards explained in a report issued in 1884. Mr. Preece had the advantage of testing the powers of electric lighting by the experience gained in illuminating several miles of streets at Wimbledon, where, undoubtedly, the electric lamp exhibited a remarkable contrast to the oil lamps used for illuminating that town. Besides this, he lit up his own residence by the aid of the electric current, utilising the services of his gardener in attending to the machine generating the electricity, which was placed in a shed in the garden. Thus, by a happy combination of duties, this man was able to assist in producing light for the house, as well as fruit and vegetables for the table.

After some considerable thought and trouble, Mr. Preece succeeded in establishing a standard by which the electric light could be measured, looking out for an instrument by which he would be able to determine the arithmetical ratio between the light to be measured and this standard. Strange to say, he gained an excellent idea from the fairy lamps used at the Savoy Theatre in "Iolanthe." To use Mr. Preece's own words, "One of these lamps was placed inside a small box, the top of which had a screen of white paper, on which was a grease spot. I was able, by diminishing or increasing the current of electricity producing the light, to vary the illumination of one side of this grease spot. When it was desired to measure the illumination of any space, such as the surface of a street, the box had simply to be put at the place to be measured, and the current had to be regulated till the grease spot disappeared. The current of electricity then became the measure of the illumination, and a single table gave the result in terms of the new standard."

In considering the distribution of light it was ascertained that a very large quantity of the light from gas-lamps is wasted in the sky. This waste is very forcibly seen in the case of lamps placed on the parapets of bridges, where more of the light is given to the water and the sky than is given to the roadway. Mr. Preece considers it to be a barbarous practice to cover the light with an opaque or semi-transparent shade;

this is remarkably seen in the fact that an arc lamp giving a light of 1,000 candles per horse-power is sometimes toned down by absorption and obstruction to less than 250 candles. The lighting of parts of the City by electricity some few years since was only of an experimental nature, and did not then prove a success; the work in hand at the present moment will stand as a permanent addition to the advantages which the City already enjoys in the matter of street illumination.

For electric-lighting purposes the City is divided into three districts—the central, west, and east districts. The central and west districts—that is, from the Mansion House to Temple Bar—are being illuminated with electricity by the Brush Company; the Laing, Wharton, and Down Syndicate Illuminating Company the east district.

Two kinds of lamps will be used by both companies, in the main thoroughfares arc-lamps will be placed. These will be of 2,000 candle-power each; the height of the poles on which they are placed being from 18ft. to 20ft., and will be placed on both sides of the streets at a distance of 150ft. apart. Certain small streets, lanes, and alleys will be lit with incandescent lamps, so that no spot in the City will remain in darkness. The incandescent lamps will generally be of eight-candle power.

The Brush Company has engaged to provide 282 arc lamps and 600 incandescent lamps; but the station of the company will be fitted so completely with apparatus for generating the electric light, that it will be able to supply 800 arc lamps and 240,000 incandescent lamps.

The present installation of the Laing, Wharton, and Down Syndicate has a working capacity of 50 arc lamps and 4,000 incandescent lamps; but when the central station is fully equipped this will be increased to 600 arc lamps and 116,800 incandescent lamps.

The Laing, Wharton, and Down Syndicate are working on the Thomas-Houston system, about four miles of cables being at the present moment drawn into the conduits prepared for them.

The Brush Company's central station is at Bankside, the Laing, Wharton, and Down Syndicate at the Old Wool Quay by the Custom House; and in both these stations the batteries, engines, &c., are of the most elaborate character, so as to prevent the accidents which so often made former attempts in electric lighting a failure.

Gas companies have long viewed with alarm the growing favour of the electric light with the public at large. In the City many attempts have been made to put off the evil day by a voluntary improvement of street lamps. In 1889 the Gas Light and Coke Company erected at their own cost as many as 112 lamps in the City, most of which gave out an illuminating power of 75 candles. The Defries Safety Lamp and Oil Company also made experiments with lamps burning ordinary petroleum oil; in Holborn-viaduct 18 lamps gave an illuminating power of 20 candles, while 12 lamps in Holborn-circus had a brilliancy of 100 candles. It should be remembered when estimating these experiments that the ordinary lamps in the City have batswing burners, consuming 5c.ft. of gas per hour, and have an illuminating power of 14 candles.

None of these experiments have been able to dissuade the Commissioners of Sewers from their belief that electricity is superior to all other agents. Indeed, one has only to stand at the junction of Cannon-street with Queen Victoria-street to see at once the great advantages of the new system. In Cannon-street we have a dirty yellow flame, which in comparison with the electric light looks dull and dismal. The lamps in Queen Victoria-street send out a clean, brilliant light of uniform distribution. Among the many advantages of electric lighting, one of the most important is that in the case of sudden fog it can be turned on without delay. That this is not an imaginary blessing, we may learn from the fact that in the City in 1890 the gas was lighted no less than fourteen times; nor should we fail to remember when we are looking upon a defective electric lamp that in one year there were no less than 685 defective gas-lights in the City.

The advantages of electricity for lighting purposes are experienced chiefly by those who use it for domestic purposes. Besides the natural character of the light, we have the absence of heat and all destructive gases; the pictures on our walls and the decorative adjuncts of our homes are not destroyed, the air is not vitiated, and longer life will therefore be one of the many advantages which the electric light will bring to us.

In the arc lamp the electric current passes between two carbons; the light is, therefore, produced by the disintegration and combustion of matter. In the incandescent lamp we have a thin carbon filament inclosed in a hermetically-sealed vacuminous tube, so as to prevent oxidation; this is made luminous by the passage of a strong current along it.

To trace the history of electricity would be too formidable a task in this short article, for from the time when the ancients found the attractive power of amber, and so gave to this wonderful force the name of electricity, to the time when Benjamin Franklin astonished his friends with the wonders of the Leyden jar, or brought down electricity from the clouds—between these two periods wonderful slides were made in our knowledge of electricity. It is, however, only of recent date that any attempts have been made to utilise the electric current for the illumination of our streets and our homes.

It was Sir Humphry Davy who, in 1802, produced an electric light with carbon points. In 1810, at the Royal Institution, a brilliant light was seen when a disruption of a continuity of the electric current from 2,000 cells. This was called the "Voltaic arc."

In 1858 the inhabitants of London were startled by seeing the works of Westminster Bridge illuminated by Watson's electric light. The advantages of the light were soon seen when it was applied to lighthouses, and a trial took place in 1857 at Dungeness, and two years after Professor Holmes' magneto-electric light was used in the South Foreland Lighthouse, Dover. The commissioners appointed by the Trinity House to consider the uses of electricity in lighthouses reported "that electric light is the most powerful under all conditions of weather, and that it possesses the greatest penetration in fogs."

In 1878 Westminster Palace and the Gaiety Theatre were lighted by electricity; but the greatest stimulus was given to electric lighting by the invention of the Jablochkoff candles. From 1878 to 1881 the Avenue de l'Opéra, Paris, was illuminated in this way. The light given out was 24 times that of gas, 64 Jablochkoff candles replacing 300 gas burners, and thus rivalling

> "Those gold candles fixed in heaven's air."

Since that time many inventors have been at work—the names of Edison, Weiderman, Brush, Siemens, Swan, and others crowd upon the memory, all these trying to arrive at the same goal by different roads.

The usefulness of the electric light will not be exhausted when our streets are illuminated by its rays; the risk of accidents in our collieries will be greatly lessened when the mines are lit up by electricity. The photographer uses it to take photographs, and the medical man does not refuse its help, for by its rays he is enabled to work marvellous cures.

The electric light has been used for lighting up the cavities of the throat, and even a delicate operation in the stomach has been performed by its assistance. In 1867 Dr. Bruck, a dentist at Breslau, produced an apparatus for lighting up the buccal cavities; this he called the stomatoscope: while Sir Henry Thompson also explored the bladder by the aid of the electric light. One of the great advantages of the electric light will no doubt be the prevention of crime; dark deeds will hardly be performed under its rays, and in this way it will prove one of the most civilising agents of modern times.

ROYAL SCOTTISH ACADEMY.

THE sixty-sixth Exhibition of the Royal Scottish Academy will not take its place as in any way remarkable, containing no pictures of surpassing interest, and perhaps a larger percentage than usual of those hardly worthy of a place in the galleries. These, however, always serve a useful purpose in filling up odd spaces, and may have interest for many as efforts made to reach a higher standard. The total of works of art exhibited is this year 831, arranged as formerly—with water-colours in the north or entry room, oils in the octagons and great room, and the architecture and sculpture in the north room; the architecture being somewhat less than usual, a good many-oil paintings have found a place also in the north room. The most interesting features of the galleries is a collection of the works of the late president, Sir George F. Douglas. Most of them are small subjects, and yet the 36 oil-paintings occupy considerable space in the great room, where they are put in a good position and together. The water-colours, to the number of about 20, are not large pictures. The samples of his style are mostly figured subjects, and their interest centres often quite as much in the accessories which furnish and fill up the scene, as in the attitude or expression of individual character. In all his studies the artist has aimed at, and succeeded in, delineating every detail, the most minute, with great fidelity, and never fails to give a vivid impression of the story his picture is designed to tell. In every case he does so with finely studied harmonious colour of subdued tone, which suits his favourite subjects. These are of some variety—pathetic, humorous, but mostly of a kind which attests the artist's love for and extensive acquaintance with antiquarian researches. 183, "The Summons to the Secret Tribunal," an incident in the life of the anatomist Vaselius, is as good as many another of the artist's work of this description. The doctor is represented as startled by the entry of the officers of the Inquisition, and has drawn his sword to resent the intrusion. On his table are heaped up a great variety of odd and curious specimens, with which the imagination of the artist has supplied it. 188 "The Alchemist," 204 "The Rosicrucians," and 205 "The Arrest of Pietro d'Apone," are all perfect studies full of suggestion to those learned in antiquarian lore. 169, "Hudibras and Ralph Visiting the Astrologer," and 199, "Hudibras and the Lawyer," are humorous subjects, as also 191, "Dean Swift and the Errand Boy," which is a masterpiece of art. The Irish gossoon is seated laughingly in the doctor's chair, and from that position suggests half-a-crown as his reward for bringing the hare. The dean, a little figure in black, with large head and vinegar expression of face, is teaching the urchin manners, holding the hare in his hand when presenting it with a bow. There is excellent figure-painting also in some pathetic subjects. His landscapes are few—views of Stonehaven, long and narrow in their dimensions—sort of telescopic views—allowing minute graphic delineation. He seems to have kept clear of anything like sylvan or rural subjects; but the perfection of his works will doubtless place him high on the roll of distinguished Scottish artists, despite the somewhat narrow range of his artistic efforts. The new President, Sir George Reid, has several pictures, all, however, in the line of portraiture. A likeness of the late president is a small picture, but a most life-like portrait; 147, portrait of R. C. Maclagan, M.D., and 186, are large full-sized presentation works; 266, "Portrait of Professor Tait," painted for presentation to the Royal Society; 282, portrait of Sir W. M'Onie, Lord Provost of Glasgow, are all treated with the artist's usual skill. The galleries have only one feature by Sir. J. E. Millais, "The Lively Miss Muffett," familiar to the public. Alma Tadema has two subjects (103) "An Audience with Agrippa," and (341) "Portrait of Paderewski," both of which present much of interest, and much of his usual felicity of touch.

The general portraiture of the exhibition is not so large in bulk as usual, and some are but indifferent specimens. 514, "Portrait of John Elder, S.S.C.," by J. A. Ford, is an excellent work in attitude and colour by a younger artist. Beattie Brown, R.S.A., sends a large number of landscapes, all evidencing his taste in the selection of his subject, and marked with his usual softness of touch and natural, if somewhat sober, tone of his colours. 16, "A Highland Glen," with mist on the distant hills, and an evening sky, are admirably rendered; 246, "Ellandonan Castle," is notable for the luminous rendering of its sky, light, and shade. 301 and 385 are sketches on the Blackwater, Ross-shire. Mr. J. Smart, R.S.A., sends all his full complement of seven pictures. 96, one of his largest, "Ploughing the Summer Fallow, Menteith," is a very careful study of the subject; the ploughman and his horses are true to nature, and the landscape shows the breadth of level expanse the artist delights in; he has been more successful with his sky and figures than with the furrows of the field, and the picture is, like many another, too large for a subject with so little in it. 454, "Waiting for a Shot," is one of his best; the figures and the forest trees are admirably rendered. Waller Paton, R.S.A., has fewer this year. 291, "Kirkwall Fair," 1873, appears to be a picture in oil closely resembling a water-colour in a former exhibition. It is an attractive subject as handled by the artist, who has placed the cathedral as a background, perhaps with some little exaggeration of its height, in dim outlines against the evening sky, the fair lighted up with lanterns, and revealing a motley collection of shows and caravans, and a crowd of holiday-keepers, with faces all aglow and in enjoyment of the scene. His other landscapes present good samples of his characteristic manner. Alex. Frazer, R.S.A., has five subjects. His landscapes, with the deep greens and somewhat hard and patchy method of laying on his colour, are familiar to the public. M. McTaggart, R.S.A., has three works, figure subjects—278, "The Fisher"; 290, "Spring"; and 431, "The Golfer." All these figures are presented with the charcteristic vigour of the artist, but his skies are unfinished or opaque, with too much solid white. Mr. W. D. Mackay has five landscapes of rustic subjects, nicely handled. Mr. Austin Brown, R.S.A., has also several excellent works of scenes in country life. The exhibition contains also a large number of excellent landscapes by younger artists or amateurs.

Of pictures representing historic and other incidents, there are several, of much interest and excellence in delineation. 387, "Cromwell looking at a Portrait of Charles I.," by G. O. Reed, R.S.A., is well conceived, and painted with good effect. There is feeling in the Protector's face; but the figure of his daughter beside him is not so carefully rendered. 405, "Attack of the McDonalds at Killiecrankie," by Harrington Mann, is a large work, and powerfully rendered. Two Highlanders, with claymore and target, are rushing over the rocky path to meet the foes, while a crowd of other forms in the background are advancing, armed with various weapons. The scenery is wild and desolate. 86, "The Cleansing of the Leper," by W. Hole, R.S.A., is a landscape with figures. The principal figure is relieved against a lofty, wooded bank, and the leper is kneeling in the foreground. 209, "The Canterbury Pilgrims," represents the cavalcade leaving the city, the tower of the cathedral appearing in the background. Each figure is drawn with much individuality of character, and with characteristic costume. G. O. Reid, A.S.A., has a number of very interesting subjects of homely life, of which 218, "The New Laird," is the best and most elaborate in its details. The new laird is calling on his tenantry, and may be getting hints towards reduction of the rent. 339, "Crofter Home, Cullaigh, Arygleshire," by Kate S. Brodie, is an excellent work which was worthy of a better place. 363, the "Convalescent," by James Archer, R.S.A., is rather formal in its composition, one female standing at the foot and the other at the head of the sofa on which the invalid is reclining, and looking up with something of hopefulness in her expression. 410, "Cornet Graham and the Curate in Neill Gow's Change-house," by Charles M. Hardie, is one of three sent by the artist, and expresses forcibly a rather rollicking specimen of the cloth and the soldier-like bearing of the other, both taking their refreshments in the way of liquor. The other two are portraits. In the collection there are also a number of excellent animal subjects, by R. Alexander, R.S.A., J. Donovon Adams, and others. Hugh Cameron, R.S.A., has three of his delightful pictures of children, with shining, merry faces, on the sea-shore at play. The exhibition contains a picture by J. Lavery, which is much admired for its admirable drawing and modelling of the figure. The subject is "Ariadne," semi-nude, with thin drapery hanging down in graceful folds to her feet. She is represented with her back to the spectator, looking out over the sea after the faithless lover has left. 84, "An Irish Girl," is another work of the same artist, with finely expressed features, but much monotony of colour. There are also what may be designated not a few very peculiar specimens of artistic work. 144, "Landscape," by E. A. Walton, represents a huge poplar of very ungraceful shape, and little more but indescribable landscape in the abstract, and a very cloudy, misty sky. 309, Galloway landscape by George Hemy, and 310, "Pastoral," by James Grittin, are both specimens of this blotchy style of work. The school is said to be developed in the west, and has been called the Impressionist school, but nobody seems to understand the purpose of the style, which, with one feature of the subject perhaps carefully portrayed, leaves all the rest indefinite.

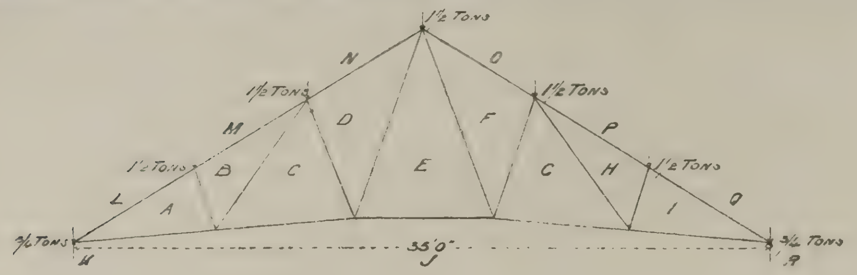
The water-colours are, many of them, very excellent, and those by the late president, though small in scale, are specially interesting. 703, "Stonehaven," is very similar in character to the same subject in oil, and others are quiet country scenes or sea-scapes.

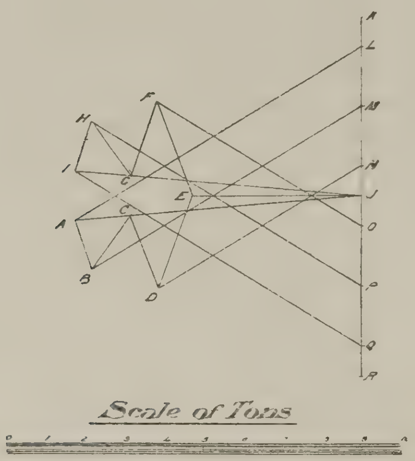
There are several very fine specimens of etching, and a few miniatures.

The sculpture comprises about 40 pieces, ranged in the usual regimental order. A larger and smaller statuette of Burns, both give the usual and well-known figure and impression—the larger by G. Lawson, H.R.S.A., and the other by James H. Kerr. J. Stevenson Rhind sends a speaking likeness of the Rt. Rev. J. McGregor, D.D., and his "Maid of Athens" (582), is a very finely modelled work. 568, D. W. Stevenson's bust of the late Mr. Wm. Nelson is a very good likeness, as also Geo. Webster's bust of the late Mr. John Livingstone

BOOKS RECEIVED.

Architects' and Builders' Pocket-Book. By Frank Eugene Kidder, C.E., &c., illustrated. Ninth edition, greatly enlarged. (New York: John Wiley and Sons. London: Gay and Bird, King William-street, Strand.)—This comprehensive handbook, so well known and valued in America, has been so revised and enlarged, that it presents almost a new book, many of the chapters having been rewritten. For clearness of type and illustration, completeness, and arrangement Kidder's work surpasses many of the pocket-books published. For those of our readers who may not know it, we may say that it contains in its three parts every kind of mathematical, mechanical, structural, and scientific information that an architect or engineer can want. Part I., on practical arithmetic, geometry, and trigonometry, with rules, tables, and problems, is a very complete treatise on practical mathematics. Part II. deals with the "Strength of Materials and Stability of Structures." It treats of foundations, bearing-power of soils, rules for loads, chimney foundations, masonry, walls, retaining-walls, strength of masonry, stability of piers and buttresses (showing the graphic method), arches and their graphic solution of stability, resistances to tension, columns, strength of beams of wood and iron, wood and fireproof floors, including various methods of construction, fully illustrated by sections; roof trusses of wood and iron, withi llustrations from well-known roofs; chimney construction, including a variety of rules and tables useful in designing and estimating under. Part III. has a list of noted architects. Many valuable notes and data, heating, forms of contracts, &c., are to be found in this useful handbook, which summarises all the more valuable treatises of construction, including Notes on Building Construction. No fewer than 500 engravings are given. The pocketbook will be found a veritable *multum in parvo* of construction.——*Transactions of the Royal Scottish Society of Arts*, Vol. XIII., Part I. (Edinburgh).—This useful record of the Royal Scottish Society of Arts includes "Notes on a Method of Testing Steam Boilers," by T. Hudson Beare, B.Sc., F.R.S.E.; "Notes on the Early History of the Steam-Engine," by W. Allan Carter, C.E.; remarks on the "Kettering Sewage Works," by W. Fairley, Assoc.M.Inst. C.E.; "Ventilation of Schools," by W. Buchan, S.E., &c.; and a very interesting paper describing and comparing the "Methods of Electric-Lighting in Use in London," by Alex. B. W. Kennedy, F.R.S., Professor of Engineering in University College, London.——*The Public Health (London) Act*, 1891, with full explanatory notes, &c. By E. Lewis Thomas, M.A., LL.M., of Lincoln's Inn, Barrister-at-Law. (London: Knight and Co.)—This well-edited volume will be found a very valuable handbook for all officers, law and medical, of sanitary authorities, the vestries, and district boards of the Metropolis. The summary of the Act itself we have given. It is only necessary to speak of the manner this edition of the new Act has been prepared. Mr. Thomas has not only given the full text of the Act, which codifies and amends all sanitary enactments in London, and provides a code of laws which have been in operation since 1875 for the rest of the country (the Public Health Act), but gives full explanatory notes following the clauses of each section, in smaller type, by which the reader, after reading the section in its entirety, can consult the notes of interpretation. One valuable feature of this handbook of the Act is that references are made to all sections of the older Acts that have been reproduced or amended immediately after each section of the new Act, and a comparative table of the repealed enactments and sections of the Public Health Act, 1875, corresponding to those of the new code is given, by referring to which the official can see at a glance the provisions in the Act which correspond to those of the repealed Acts so familiar to him; and when we say that more than 30 of these have been repealed and re-enacted, including the Nuisances Removal Acts, Sanitary Acts, Metropolis Management Acts, Police and Smoke Acts, &c., the importance of such reference in a form easily consulted is obvious. Lists of cases and statistics cited are also given; also an exhaustive index, prepared by Mr. Ernest Gardner, Barrister-at-Law. In the appendix will be found the texts of the various existing Acts. This volume is absolutely necessary to every medical officer, inspector, architect, surveyor, and engineer in the Metropolis.——*Progress of School Design and the Origin of Certain Features found in Local Schools.* By Anthony R. F. Trew, M.S.A., Architect.—Mr. Trew, in a small pamphlet, describes certain new features in the planning of elementary schools in and around Bristol. The Windmill-hill Board School, built in 1884 from J. W. Trew and Son's designs, introduced the plan of one large room for each department, divided by sliding screens into four class-rooms, and many new schools have since reproduced some of the special features. Cookery was taught in a room specially built, a teacher's room with lavatory to each department was added for the first time, cloak rooms and lavatories were made separate rooms, hot-water coils were put under the racks to assist in drying the clothes. Another improvement was to introduce "ventilating hot-water coils" in recesses under the windows, by which fresh air could be admitted from the outside. The principal and most useful of the features described is the sliding-screen or partition. The sliding-screens are now to be seen in nearly all the old Board and other schools in Bristol, and the author justly regards these reproductions as complimentary rather than a procedure to be condemned.——*A Manual of Physics*, by William Peddie, D.Sc., F.R.S.E. (London: Baillière, Tindall, and Cox, King William-street, Strand), is a very well-arranged and comprehensive handbook admirably suited to the general student of physics. In this manual Dr. Peddie, Professor in the University of Edinburgh, has inculcated the principle of the interdependence of the various physical sciences. He is not content to give dry results, but to explain the theory or hypothesis upon which each proposition is founded. The methods of physical science are to this end clearly laid down in Chapter II., and the next chapter treats of the theory of contours and its physical applications. The laws of motion, gravitation, properties of gas, light, and heat are ably treated, but the mathematical portions might have been simplified. The engravings are numerous and well chosen. For the use of university students Dr. Peddie's manual is admirably suited.——*Lockwood's Builder's, Architect's, Contractor's, and Engineer's Price Book for* 1892. Edited by Francis T. W. Miller, A.R.I.B.A. (London: Crosby Lockwood and Son), maintains its repute as one of the best price-books. The volume, which was lately re-written and enlarged, is bulkier than ever, and we find by referring to the prices that they are quite up to date, and have in several instances been extended. The memoranda and rules for measuring are useful features, and the present edition is rendered more useful by the insertion of the new Building Rules of the London County Council, in addition to the Metropolitan Building Acts, Regulations of Public Bodies, and Rules on Electric Lighting. The latter subject has been fully treated, and the section on Electric Lighting has been extended. The remarks on sanitary appliances, the Legal Notes and Memoranda, the Marks and Qualities of Wood, and other valuable summaries, make Lockwood's Price Book a most indispensable office-volume to the architect, engineer, builder, and contractor.





It is strongly bound, and, what is equally important, clearly printed, in a good readable type.

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CONSTRUCTIONAL DRAWINGS.—I.

Details of an Iron Roof.

EXTRACT FROM SPECIFICATION.

WROUGHT IRON.—The whole of the wrought iron must be of the best double-wrought Staffordshire iron, capable of bearing the following strains:—That for angle and T-irons, 22 tons per square inch; contraction of area at point of fracture, 15 per cent. That for flat, round, or other shaped bars, 23 tons per square inch; contraction of area at point of fracture, 20 per cent. The contractor will have to supply samples of all materials for testing.

Rivets and Bolts.—The rivets and bolts to be made of the best scrap-iron; all bolts and nuts to have strong and clean threads cut upon them of uniform pitch; all heads exposed to be hexagonal.

Cast Ironwork.—The metal for the castings shall be of such a mixture of irons as is best adapted for the purpose, and shall be such that a bar 1in. square and 4½ft. between the supports shall bear, without fracture, not less than 550lb. in the centre. The castings to be made to the pattern and dimensions when cold, as shown on the drawings, and all to be cast smooth, with sharp arrises, and free from air-blows, twists, and flaws of every description. The whole of the ironwork shall be made of the exact dimensions shown on the respective drawings; any ironwork made of less dimensions than those shown on the drawings will be rejected, and any excess of weight caused by the given dimensions having been exceeded will not be allowed for. Before being sent out on to the works, the whole must be carefully erected and fitted together in the maker's yard, and each piece numbered so as to come together again and correspond when being permanently fixed in position.

Swagging, Drifting, and Welding.—All bars, rods, angles, ties, and other iron must work well in the smith's fire at a cherry-red heat, and must bear swagging, drifting, and welding without materially wasting, splitting, cracking, or otherwise showing unsoundness.

Drilling, Punching, Riveting, &c.—All bolt and rivet holes must be accurately marked from templates. All rivet holes to be carefully drilled. All sharp edges round rivet holes to be taken off. The rivets to be of the diameter and pitch shown on drawings, heads and snaps are to be neatly formed to a spherical shape, and should any be cracked or badly made, the rivets to which they belong are to be removed and replaced by others. If any holes should be made in the wrong place, the bar in which such mistake has occurred will be condemned. Plugging will not be allowed in any case.

Forged Work.—All angle and tee-irons, knees, and other forged work must be brought to a proper heat and carefully bent, or worked to the required form, and any bar, angle, tee, or other iron which is overheated, strained, distorted, or discovered in any way unsound or imperfect will be rejected, and must be replaced by a sound one.

Bolts.—Bolts are to be made to Whitworth's standard proportions, with ample length of screwed part.

Joints in Iron Gutters.—The joints in cast-iron gutters must be faced where necessary, and in all cases made with rust or other approved cement to render them perfectly water-tight; spun-yarn or other materials for this purpose must be supplied where required.

Wind Ties.—Wrought-iron wind ties of 1in. round iron are to be provided and fixed as shown; the same to be well bolted to each principal, and to be provided with screw couplings.

Gutters.—The gutters to be of cast iron, ½in. thick, of form shown, to have stiffening flanges well bolted together, and the joints to be well caulked with sal-ammoniac and iron borings; the whole to be left perfectly water-tight.

Painting.—The whole of the ironwork to have four coats of good oxide paint, one coat before fixing, and finished with three other coats of such colours as may be directed.

Notice before Painting.—The ironwork must not be painted over before an examination of it has been made by, or under the orders of, the engineer, who must be apprised in writing when it is ready. All the wrought iron to be well oiled before commencing to build the principals.

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The Technical Instruction Committee at Halifax have instructed Messrs. Jackson and Fox, their architects, to obtain tenders for the new buildings, and subscriptions are to be invited towards the cost. The subjects to be taught will include those given at the local Mechanics' Institution, also practical wood-carving, joinery and carpentry, and illustrations of machine-tool making.

A two-light memorial window has recently been placed in St. Paul's Church, Bury, Lancs. St. Peter and St. John healing the lame man at the Beautiful Gate of the Temple is the subject in the first light, and in the second light is the restoring to life, by St. Peter, of Dorcas. The artist is Mr. William Pape, Aire-street, Leeds.

COMPETITIONS.

Chacewater.—The competition for the rebuilding of Chacewater Church, Cornwall, has resulted in the selection of Mr. Edmund Sedding's plans. There were six sets of plans sent in, and various were the suggested methods of treating the hideous building which was erected early in the present century with accommodation for 1,500 persons. The church has for some time been unfit for public worship, and it is intended to commence the work at once.

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WATER SUPPLY AND SANITARY MATTERS.

An Immense Intersecting Sewer.—At Brooklyn, N.Y., a mammoth intersecting sewer is on the verge of completion for the purpose of relieving the low-lying districts of the town from the effects of heavy rainfalls. For the new intersecting sewer the claim is advanced of being the third in size yet constructed, the only larger ones being those in Washington and Paris. This at Brooklyn is for 11,400ft. run circular in section, starting with a diameter of 10ft., and 12in. wall thickness, and enlarging successively to a diameter of 12, 14, and 15ft., with 16in. walls. At its outlet the form changes to an approximate rectangle, with an elliptical section to the bottom. The main tunnel has been built by the firm of Messrs. Hart, Anderson, and Co.; the terminal being constructed by Mr. Daniel J. Creene. Mr. Robert Von Baren, city engineer of Brooklyn, designed the work, which has been carried out under the direction of Messrs. L. Russell Clamp and David Stower, assistant city engineers.

King's Norton Rural Sanitary Authority.—On the 5th inst., Colonel Charles Henry Luard, R.E., one of the inspectors of the Local Government Board, held an inquiry at the board-room of the guardians of the King's Norton Union as to an application by the Rural Sanitary Authority for permission to borrow £1,350 for the purpose of extending some of the existing sewers, a work rendered necessary by the increasing population of the district. The plans and estimates, which were prepared by Mr. K. Godfrey, Assoc.M.Inst.C.E., engineer to the authority, were explained by him. There was no opposition, and at the close of the inquiry Colonel Luard visited the different places where the work was to be done.

Cambridge.—The question of the diversion of the sewage of Cambridge from the river has occupied the attention of the local authorities for upwards of a quarter of a century; but at length a complete scheme has been resolved upon. The Cambridge town council adopted some time back a scheme of main drainage upon lines laid down by Mr. J. T. Wood, of Liverpool, but have not hitherto decided as to the disposal of the sewage. Acting upon the advice of Prof. Dewar, the Jacksonian Professor of Natural Experimental Philosophy, they have now resolved on acquiring 67 acres of land adjoining the Milton-road at Chesterton for the purpose of precipitating the solids and utilising and purifying the effluent. The Chesterton sanitary authority are to be invited to join in this scheme, which is a compromise between broad irrigation and a system of precipitation pure and simple. The plan now adopted will cost £20,000, and the main drainage scheme will involve another £98,000, giving a total of about £120,000.

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CHIPS.

An illustrated lecture on "David Wilkie" was given on Saturday week in the Glasgow Corporation Art Gallery, Sauchiehall-street, by Mr. Robert Walker, secretary to the Glasgow Institute of Fine Arts.

At a meeting held at Henshaw, near Yeadon, recently, it was decided to form a committee for enlarging the parish church. Plans prepared by Mr. T. H. Healey, architect, of Bradford, were adopted. These provide for reseating the church and adding a chancel, organ-chamber, and vestries, and towards the estimated cost of £1,200 about £650 was promised in the room.

A county police-station is about to be built at Berkhampstead at a cost of about £4,000. Mr. F. Dupont, of Colchester, is the contractor.

Two new elementary schools provided by the School Board for Yardley, near Birmingham, were opened last week, one at Redhill and the other at Greet. The Redhill school will accommodate 500 children, and is to be hereafter enlarged. It has been erected by Mr. Thos. Johnson, of Ashted, from the designs of Messrs. Crouch and Butler, at a cost (including land and fittings) of £5,699. The school at Greet will accommodate 1,000 children, and has cost £10,407; the architect being Mr. Arthur Harrison, and the builders Messrs. Harley and Sons, of Smethwick.

Our Illustrations.

ROYAL ACADEMY GOLD MEDAL GROUP, 1891.—"JACOB WRESTLING WITH THE ANGEL."

This group, which we illustrate to-day, was awarded the Royal Academy Gold Medal and Travelling Studentship, and Mr. Paul Raphael Montford, the artist, is to be congratulated on the success of his work, which represents one of the most familiar incidents recorded in the ancient Scriptures. The picturesque treatment adopted for the wings of the angel seems specially bold and clever.

NEWINGTON PUBLIC LIBRARY.

We give herewith the plan and perspective of the selected design for the new Public Library, Newington, by Mr. Edward I'Anson, M.A.

EASTGATE HOUSE, ROCHESTER.

This house is described in the paper read before the Architectural Association last week, and reported on another page.

"SUGGESTIVE DOMESTIC WORK SEEN ON PAST A.A. EXCURSIONS."

This sheet of sketches of old English houses and the double-page plate representing the ancient timber mansion in the High-street at Rochester, will be found alluded to in our report on p. 257 of Mr. Maurice B. Adams's paper read before the Architectural Association last Friday.

CONSTRUCTIONAL DETAILS.

See description and further sketch on page 236.

CHIPS.

A new Wesleyan chapel is in course of completion at Penryn. The chief façade is of polished granite. Mr. A. Carkeek, of Redruth, is the contractor.

Good progress is being made with the new Craig House Lunatic Asylum at Edinburgh, and it has recently been decided to erect in the grounds as adjuncts to the main buildings six villas to afford greater facilities for curative treatment. The first of the villas has just been completed, and will be occupied next week, but the main buildings will not be completed for two years. Mr. Sydney Mitchell, of Edinburgh, is the architect, and Mr. Lownie the general contractor.

The Dean of Bristol laid on Saturday the foundation stone of a new mission church in Coldharbour-lane, Westbury Park. The building has been designed by Messrs. Crisp and Oatley, of Bristol, and will be of brown Pennant stone, with freestone dressings and red tiled roof. It will provide accommodation for 260 people at a cost of £1,000.

The improved ventilation of the Polytechnic has been intrusted to Messrs. Baird, Thompson, and Co., ventilating engineers, of London and Glasgow.

Two stained-glass windows have recently been erected in the parish church of Kilsaran—the one on the left of the altar in memory of Lady Constance Bellingham, the other in memory of the late priest of the parish, Father Corrigan. Both are from the firm of Messrs. Eardley and Powell, of Dublin. The subject of the former window is the Annunciation of the Blessed Virgin, whilst that of the latter is our Lord exhibiting His Sacred Heart.

The reconstruction of the Leipsic University buildings will necessitate the pulling down of the old library of the Dominican Cloister of St. Paul, which dates from about 1250. This is regrettable, as it contains some fine wall paintings, executed between 1250 and 1515.

A bust of Sir Edward Harland was unveiled on Friday at the offices of the Belfast Harbour Board. The artist is Mr. Bruce Joy.

A new police station has been erected at Walham Green, and special attention has been paid to the ventilation, the extraction of the vitiated air being effected by Messrs. Robert Boyle and Son's latest improved patent self-acting air-pump ventilator.

We are informed that the limit of time for receiving applications in the art work branch of the Building Exhibition has been extended to Feb. 27.

A superintendent registrar's office in Liverpool-road has just been completed for the Guardians of Islington from the designs, and under the direction of, Mr. Wm. Smith, of Chancery-lane, W.C. The building is executed in red brick and stone, with a slated roof. Messrs. Brass and Sons were the contractors.

The death is announced, at the age of 62, of Mr. Charles James Lewis, a well-known landscape and *genre* painter in both oil and water colours, and a frequent exhibitor at the Academy.

Building Intelligence.

Leeds.—The London and Midland Bank, Limited, have opened new branch bank premises in Kirkgate, Leeds. The designs are prepared by Mr. William Bakewell, F.R.I.B.A., architect, of Leeds. The façade is executed in stone. The building is two stories in height, Classical in character. The character of the interior of the banking-room is solid. The floor of the bank is laid with mosaic pavement. Mr. Charles Goulden has acted as clerk of works.

Manchester.—New school buildings in connection with the Moss Side Unitarian Free Church, Shrewsbury-street, Brooks's Bar, were opened on Saturday. The building is a two-storied one. The lower portion is occupied by eight classrooms, arranged in two sets on either side of a corridor, the rooms being divided by a series of revolving shutters. There is also a lecture-room. In the upper floor is the large schoolroom, 65ft. by 35ft., providing seating accommodation for 420 persons. The building is of brick, the front being of Ruabon pressed brick and terracotta. The works have been carried out in accordance with designs prepared by Messrs. J. W. and R. F. Beaumont, architects, St. James's-square, by Mr. W. Thorpe, builder, of Cornbrook. The cost of the building and the land is £3,900.

Merevale Church.—This church is about to undergo careful reparation. Plans and estimates have been prepared by Mr. Alfred Bickerdike, architect, of Adam-street, Adelphi, under whose direction the work will be carried out. He was called in to report upon the state of the building eighteen years since, and since that time various repairs have been carried out. Last summer the building showed serious signs of giving way, and had to be temporarily supported, and the present work of repair has become necessary in order to prevent it from falling to ruin.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

The Architectural Association.—The seventh ordinary meeting for the session was held on Friday evening, Mr. F. T. Baggallay, the president in the chair. Mr. W. J. Langley was elected as a member. Mr. Maurice B. Adams, F.R.I.B.A., read a paper, entitled "Domestic Work seen on past A.A. Excursions," which we report in full on p. 257. The lecture was illustrated by a large number of excellent lantern slides from photographs taken during the excursions by Mr. J. L. Robinson, A.R.H.A., and at the close a hearty vote of thanks was accorded Mr. Adams, on the motion of Mr. H. D. Searles-Wood, seconded by Mr. Arthur W. Earle.

National Association of Master Builders of Great Britain.—This Association held its twenty-eighth half-yearly meeting at the rooms of the Central Association of Master Builders of London on the 26th ult. Mr. J. C. White, of Liverpool, the president, occupied the chair, and representatives from London, Liverpool, Manchester, Birmingham, Bristol, Hull, the Potteries, Cambridge, and Preston were present. The report and accounts for the past half-year were read and adopted. The following officers and council were appointed for the ensuing year:—President, J. C. White, Liverpool; vice-presidents, Robt. Dennett, Nottingham, and John Bowen, Birmingham; hon. vice-presidents, Stanley G. Bird, London, Robt. Neill, jun., Manchester, and J. Howard Colls, London; hon. treasurer, Jos. Stevenson Jones, Liverpool; hon. auditor, C. W. Green, Liverpool. Council:—Birmingham, C. H. Barnsley and W. Sapcote; Bolton, Jos. Hy. Marsden; Bradford, William Moulson and William Holdsworth; Bristol, A. Krauss; Cambridge, A. G. Bell; Derby, John Walker; Edinburgh, Thomas Bonnar; Glasgow, R. Bennett; Hull, R. Beevers; Leeds, C. Tomlinson; Lincoln, Wm. Hy. Close; Liverpool, A. G. White and J. B. Johnson; London, Thos. F. Rider; Manchester, Wm. Southern and Alderman Wm. Brown; Northampton, W. H. Smith; Potteries, Jas. Bowden; Wigan, Chas. B. Holmes; Wolverhampton, J. Bradney. Several matters of interest and importance to the building trades were discussed, and it was decided to hold the next half-yearly meeting at Newcastle-on-Tyne.

Sheffield Society of Architects and Surveyors.—At the monthly meeting held on Tuesday night Mr. Innocent, the president, was in the chair, and Mr. W. Randolph, of Manchester, read an interesting paper on "Town Churches, Ancient and Modern." The lecturer referred to the absence of a matured type of town church in Mediæval England. We had smaller populations and smaller surroundings than our Continental neighbours, and while we multiplied our churches, they rather magnified theirs. On the other hand, our country churches were, as a group, of exceptional excellence. This, together with other considerations, caused them to be adopted 50 years ago as models for the orthodox church of the Gothic Revival. Exceptions in favour of a broader treatment were instanced in the works of Pugin and a few other architects; but no general movement was apparent till about 1850, when both the art and literature of the Revival began to witness to the influence of foreign studies. New ideals in church architecture were opened out; ideals of breadth, mass, freedom, contrivance, expressed in design generally, in the use of materials, and in the character of fittings. Mr. Randolph insisted chiefly on the qualities of breadth and simplicity, and drew special attention to "continuous," "single-naved," and "one-bodied" churches. Some of the best examples of such buildings were to be found in the churches of the Friars, *e.g.*, Ghent, Erfurt, Toulouse, London (Grey Friars), &c., and the last two classes were somewhat generalised in the south of France and in Catalonia. After dealing with the brickwork and church furniture of North Germany and the Netherlands, the lecturer passed on to English precedents. The individual examples of large town churches were referred to; King's College, Cambridge, was classed as "one-bodied"; St. Michael's, Coventry, as "continuous," and it was pointed out that the whole East Anglian district afforded suggestive examples of architectural breadth and beauty. The last portion of the paper was devoted to showing how the character of church work since the middle of the century had been widened under such influences as had been reviewed. Though we had retained much of the breadth of foreign forms at large, we had now happily reverted to a national treatment of individual features and detail generally. Numerous examples illustrative of the different ancient types were instanced in the late church work of London and the provinces. The paper concluded with an allusion to recent church work abroad, instancing, as regarded the revival of the single-span church, the literary efforts of the Rev. Dr. Schneider, of Mainz, and the new churches at Gratz, Rochusberg, and Oostacker.

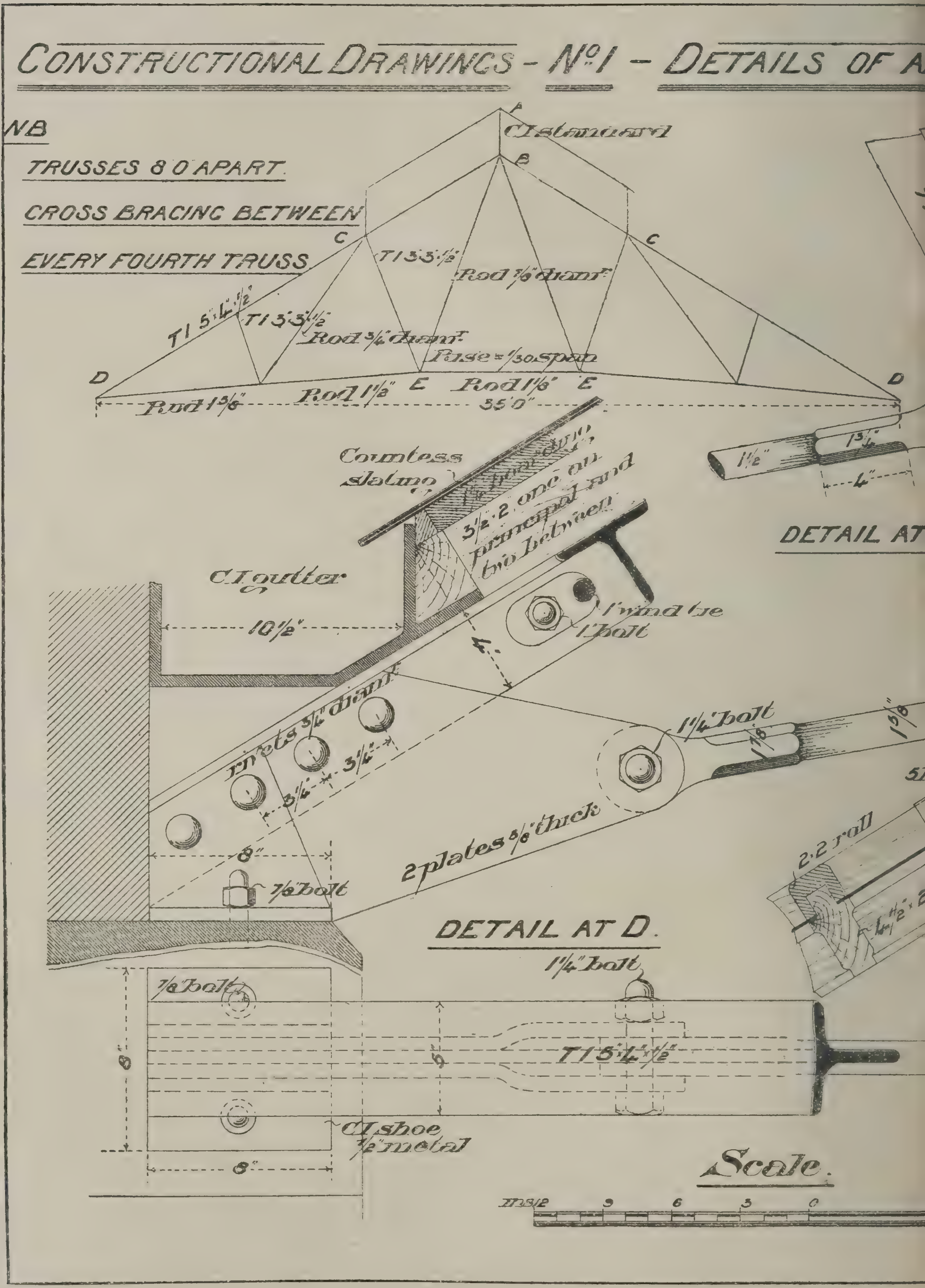
* * *

Edward Pidcock, builder, Buxton, went home on Monday afternoon, pulled the blinds down, and hanged himself from a bannister. Deceased had been about as usual just before; he was married a year ago, and was about forty years of age.

A lecture was recently given, under the auspices of the Greenock Philosophical Society, to a large audience in the Watt Museum, Greenock, by Professor G. Baldwin Brown, F.R.I.B.A., Edinburgh, on the subject of "The Mediæval Monastery as the Home of Art and Culture." The lecture was illustrated with limelight views.

Dr. Reid, medical officer for the County of Staffordshire, says that slop-water closets are growing in favour for artisans' dwellings. About 13,000 of them are now in use in various parts of the country. They work well, give no trouble, and are not affected by frost.

The seventh annual report of the National Footpaths Preservation Society states that 108 members joined during the past year, the roll now including 859 names. The society has successfully intervened in several cases, notably at Bristol and Pontesbury, and is taking action in others. The society is doing very useful work at an exceptionally small outlay, for the total income for the year was but £277, and the balance in hand has been raised from a few shillings to nearly fourteen guineas. We see that the Bill introduced by Mr. Jesse Collings on Wednesday, entitled "The Preservation of Footpaths," proposes to throw upon the County Councils the duty of protecting public rights of way from every form of encroachment—a much-needed enactment.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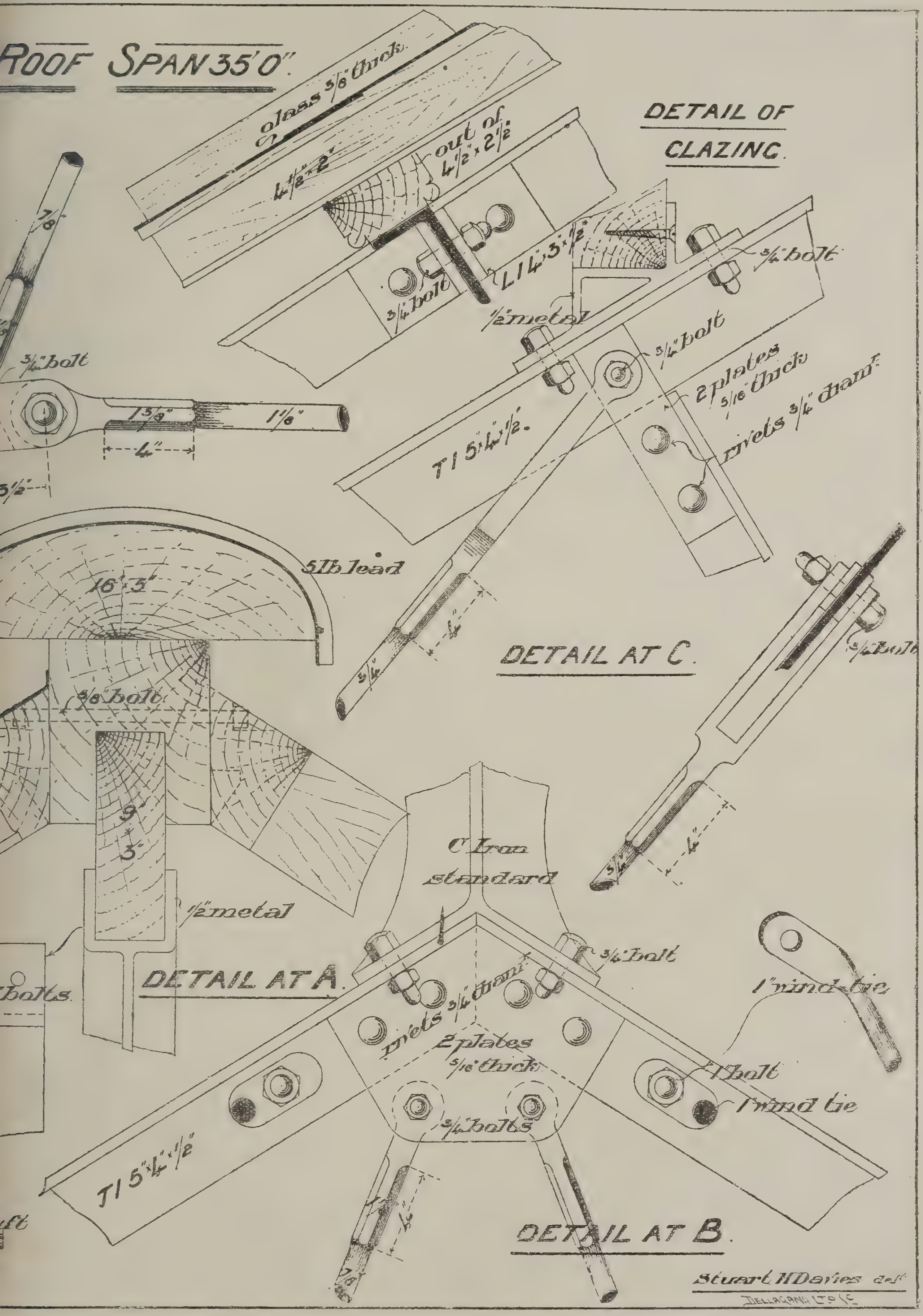
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WAYSIDE NOTES.

NOTWITHSTANDING the views of the underwriters of Chicago with respect to the effectiveness of ordinary fireproof construction, matters would probably have been different had the destroyed New York hotel been so built. We read that the hotel was of "flimsy and inferior construction." Consequently the disaster was complete. Whatever may be the drawbacks to iron and concrete by reason of the expansion and contraction of girders and joists, and the fracture of columns by heat, such construction at least admits of the escape of the inmates of a building that has caught fire, as it is only old-fashioned wood-floored and wood-staircased houses that are set blazing in every part with the rapidity of tinder. A building with an iron or steel skeleton may not be worth much after a fire, but it admits of the saving of human life, which, after all, is the great point.

One of the last works of the first London County Council will probably be the formation of new by-laws and regulations with respect to theatres and theatre construction. At Tuesday's meeting of the Council discussion on the drafted items of these regulations was resumed, and among other recommendations, was a proposal to submit the matter to the R.I.B.A. and the Surveyors' Institution for their criticism, which, considering the average estimate of the capabilities of the L.C.C., doesn't seem a bad idea. Perhaps an even better idea would be to leave the final decision to the succeeding Council, the present one being on the eve of dissolution. Maybe their successors will have a soul above coveting the management of tramways and waterworks and the wholesale blocking of new metropolitan railway schemes, not to mention the neglect of London improvements and bridge-approaches. Music for the masses and municipal lodging-houses are all excellent in their way; but London and London citizens will not thrive on this alone, be it Belgravia or Bethnal Green, rich man or poor man. It is good to look after the housing of the poor; but I fail to see the wisdom of hindering municipal works and causing stagnation in private enterprises that would create more work for the labouring classes and reduce the number of unemployed.

"Fresh Air's" challenge with respect to the ventilation of churches did not go unanswered, and several letters have appeared in the *Standard* giving the personal experiences of clergymen, doctors, vergers, and others. Mr. H. Holden is trenchant:—"Architects, building committees, clergymen, and ministers are all indifferent." This, of course, is an absurd charge to make. A vicar of a London church says he always sees to the ventilation of his building, but has some little difficulty, "for our verger—a worthy fellow—belonging to a class of persons who keep their cottage windows fast closed for fear of a draught, regards fresh air with keen suspicion." A "Verger of a London Church" says that, of his whole congregation, only two persons ask for fresh air, many of the others complaining if they do not find the church hot and stuffy. Here, I fancy, we have a key to the cause of much of the disagreement about this matter. Opinions about ventilation differ as tastes for meats. What may be pleasant and comfortable to one man, may be the acme of discomfort to another. One may even imagine that some parties like their air a little foul, as some people like their victuals a little "high"! As "A Verger" says, he may be believed to "have enough to do to please all parties."

Nevertheless, this is partially begging the question. There is a suitable temperature for all assemblies. It may not please everyone in the assembly, but it will be the most healthy—by common consent of those who have studied the subject—for the greatest number, and the most comfortable. All people—except any individuals with the eccentric taste to which I have alluded as possibly existing—like fresh air, although they do not like it in the shape of cold draughts. To maintain this temperature and freshness of the air without draught is, therefore, the aim of the "ventilationist." We know well enough that this is not done in every church by a very long way. The discussion that "Fresh Air" has evoked is, therefore, beneficial, and justified if it lead to some slight improvement somewhere, somewhen, and somehow.

The Bishop Suffragan of Peterborough has written a short letter to the *Times* explaining the nature of the restorations, repairs, &c., that will be inaugurated at the grand old cathedral on June 2. Among other things are the fine new marble pavement to the choir, a new pulpit, and new bishop's throne. Further works are, however, immediately contemplated, according to the Bishop of Leicester, and further funds are, as a natural consequence, required. The great west front appears to be the most extensive undertaking in the category of works to be done, and a new marble pavement for the nave and the complete re-glazing of the cathedral are not light matters.

It is stated that the Dean and Chapter of Lichfield have just determined to appeal for an additional £20,000 with which to complete the restorations of their cathedral. An enormous amount of money has been spent on restoration of cathedrals and churches in this country; one may wonder a little where it all comes from. I see it is stated that the sum subscribed for church-building and restoration alone in England in 1890 was £1,698,829—a sum including, however, money for the acquisition of burial grounds, endowed benefices, and building parsonages. Heading the list is the diocese of London, with £211,745. It is pleasing to think that so much money has been forthcoming for a work which, in spirit, is so good. In the flesh, or *stone* rather, the matter, so far as it concerns the restoration of old buildings, takes a different light. We see acres of sleek new masonry, and harsh new mouldings and carvings, in place of beautiful old stonework that might easily have been patched and repaired, as it may have been done time and again at any period within the last five centuries. And not a little addition of new features that falsify the history of the building, though possibly not so much as the workings of the restoration-back-to-a-certain-date mania.

Only a few days ago I was looking at a beautiful old church in Buckinghamshire, and reflecting how it is the very patching and repairing of our forefathers that give us at this day, the picturesqueness of our old churches. Here was a transept end that needed repair. The upper part of the gable appears to have required rebuilding. What did they do? Not pull down the whole feature and rebuild in sleek masonry; but, bricks being apparently ready to hand, and the repairers—having, perchance, in their hearts a conviction that God might be as truly worshipped in a church repaired with a few odd bricks as in one rebuilt with stone, tooled, squared, measured-up, and 5-per-cented—employed the bricks to reinstate the gable, cutting some brickwork to form the coping and simple finial. And, now, the glory of it!

I see no broad-gauge engines or trains on the G.W.R., and fear that they must be at last in truth disappearing, in accordance with the decision of the Board at Paddington. It may be that in a short run on the main line the other day I chanced to miss seeing any rolling-stock of the old type that may yet be running. Anyhow, a few months more will reach the limit ordered for the life of the broad gauge.

The proposed extension of the M. S. and L. R. to London will continue to attract attention, the Bill having been again deposited. Talking to a gentleman much engaged with the iron trade between London and the Midlands, he said that the new line was much needed; but it is to be presumed that his views are not wholly unbiassed. Personally, the need of the railway does not strike me with great force, but on principle I am for any new enterprise, except international tunnels—when you have a "right little, tight little island" of your own, —and "free ferries to Ireland," which I see has just been seriously proposed. The plan of the now contemplated terminus for the new line shows a comparatively small area of ground fronting the Marylebone-road, near Baker-street station, and a large area east of Grove-road and Lisson Grove. The Marylebone Cricket Club appear to have been at last "squared," and the trustees of the Clergy Orphan Schools, it is said, will, under the new arrangements, offer no opposition to the scheme. To endeavour to forecast, I should say that the Bill will go through this session, more especially as the Great Northern Company have withdrawn their opposition. It is probable, therefore, that, wanted or not, the new line will be constructed, and Londoners find themselves with four trunk lines to the North, or five, as doubtless the G.E.R., now running to Doncaster viâ Lincoln, would put in a claim for recognition. GOTH.

CHIPS.

Mr. Charles Turner died on Saturday at his residence, Cumberland-place, Southampton. He was a pupil of the late Sir Isambard K. Brunel, and afterwards practised in Southampton as a civil engineer and architect, but retired many years since.

A vestry, added on to the south-west angle of Wellington parish church, Salop, was opened on Friday. Mr. A. Roper, of Wellington, was the contractor.

Lord Sudeley has signified his intention of rebuilding, at his own cost, the parish church of Tregynon, the parish in which his Montgomeryshire seat is situate. The work will be carried out under the care of his agent, Mr. W. Scott Owen.

Lord Kyllachy, in the Scottish Court of Session, has issued his judgment in the action at the instance of the Steel Company of Scotland against Tancred, Arrol, and Co., the contractors for the construction of the Forth Bridge, in which £50,000 was sued for as damages on account of defenders not having taken all the steel needed in the building of the bridge from them and the Landore Steel Company. The principle upon which defenders' liability was to be determined was recently fixed, and his lordship has fixed the amount payable by them at £24,400.

New Roman Catholic schools on the Town Walls, Shrewsbury, were opened on Tuesday. They adjoin the Catholic Church, and cost £2,600. Mr. Whittingham, of Newport, Salop, was the builder.

Mr. Edward Geflowski is engaged upon a full-length statue of the late Duke of Clarence and Avondale, which will be complete before the opening of the Royal Academy. The Duke is in civilian dress.

Mr. Alfred Arago, the art connoisseur, died in Paris on Thursday night, the 4th inst., at the age of 77. He was the younger son of the astronomer, studied painting under Paul Delaroche, and was appointed Inspector of Fine Arts by Louis Napoleon.

The Glasgow corporation decided at their last meeting to purchase, as from 1st March, the electric-light business, plant, and machinery belonging to Messrs. Muir, Mavor, Coulson, and Co., at the price of £15,000.

We regret to hear that Mr. Conquest, borough surveyor of Folkestone, has had to undergo amputation of the lower portion of the right leg, as a sequel to blood-poisoning following influenza. He is progressing satisfactorily.

Mr. George Taylor, architect and builder, died at Coventry on Sunday week, at the age of 84. A quarter of a century ago Mr. Taylor was one of the principal builders of the city. Among the buildings erected by him was St. Osburg's Church. Mr. Taylor retired from the trade some years ago, taking to farming, but in this pursuit he lost a considerable sum of money. He subsequently returned to Coventry, and resumed his original trade.

Spencer-street Chapel, Leamington, was re-opened after alteration and reseating, carried out at a cost of £3,200. Mr. Victor Scruton, Birmingham, was the architect, and the work has been carried out by John Fell (Limited), Leamington. The works comprise a new school and lecture-hall at the rear of the chapel, the substitution of open pitch-pine seats for the box pews, and the provision of an organ-chamber, new vestries, and committee-room.

In the February issue of the *New Review*, Mr. M. H. Spielmann has an article on "The National Gallery of British Art," in which he discusses the merits of the various sites suggested for the housing of Mr. Henry Tate's collection, and strongly pronounces in favour of utilising for the purpose the space now occupied by St. George's Barracks, at the rear and west of the National Gallery. These barracks involve a constant risk of fire spreading to the National Gallery, and the area would afford the best and most central site for the new gallery. The paper is illustrated by sketch-plans by Mr. H. P. Burke Downing, A.R.I.B.A.

DOMESTIC WORK SEEN ON PAST A.A. EXCURSIONS.*

"Building royally
Their mansions curiously."

AMONG the many practical educational undertakings connected with the Architectural Association, there are few which have proved more successful or more useful than our annual excursions in August. When your secretary asked me to read a paper during the present session, it occurred to me that a retrospective glance giving the opportunity of a comparative review at least of some of the buildings we have seen, would serve to afford timely reminders to those who have joined the excursions, and possibly suggestive ideas to many more who have not before gone over exactly the same ground. I, therefore, with the generous co-operation of my friend, Mr. John L. Robinson, A.R.H.A., the genial and able hon. photographer of the A.A. Excursions, propose to bring before you this evening a selection of buildings, illustrated by some of his photographs, showing a few typical specimens of Domestic work seen on some of our holiday outings. It was the late Mr. G. E. Street, if I remember rightly, who described these excursions of ours as "Architectural Scrambles," an expression which I believe he subsequently saw good reason to modify, although I am not so certain but that, at any rate on some occasions, his words were not actually justified. The founder of these excursions was, as you all know, our very dear friend, the late Mr. Edmund Sharpe, who, with much foresight and zeal for the welfare of the architectural student, conceived the idea of organising systematic trips on the co-operative principle, to different parts of the country for the study and examination of our national architecture. As a pupil of Rickman, and one of the pioneers of the Gothic Revival, he naturally desired to further the progress of that movement by turning the attention of students to some of the more typical examples of Mediæval work, which he had so carefully annotated and analysed in his "Architectural Parallels," and other books. During the six annual excursions, therefore, which he conducted so wisely and so well, the buildings visited were almost exclusively chosen for their Gothic style, and so were chiefly of an ecclesiastical character. The first trip was made in 1870 to Lincoln, Sleaford, and the Spalding neighbourhood; in 1871 Ely, Lynn, and Boston formed the chief centres of the excursion; then the year following, 1872, Stamford, Oundle, Wellingborough, and Northampton. In 1873 Mr. Sharpe took his friends to Grantham, Newark, Southwell, and Lichfield, and in 1874, going over to France for the first time, the A. A. excursion party visited Paris, Soissons, Laon, Rheims, and the surrounding district. The last of the excursions conducted by Mr. Sharpe was the most ambitious trip of all, when he visited, with his friends, the Department of the Charente, to study the Early Gothic domed churches of that district of France. All of you know the memorial volume which was afterwards published, illustrative of the buildings then seen, and those who were so fortunate as to hear Mr. Sharpe's lecture, delivered on June 13, 1876, descriptive of this excursion, are little likely to forget the occasion. The first excursion to Lincoln formed the subject of a most useful book on the architecture of the district, published by Mr. Sharpe at the time. "The Churches of the Nene Valley," issued some years later by Messrs. Kersey and Johnson, illustrated the third excursion. The 1874 excursion to Paris furnished Mr. Sharpe with the text for the celebrated lecture which he gave in Willis's Rooms in 1875. I remember the evening well when Burges and Godwin were there, full of life and fun. Sir Gilbert Scott had two years before delivered his Academy lecture on the use of the Pendentive and Dome in Gothic Architecture† directing the attention of architects in a masterly way to the possible development of these features for new uses in modern monumental buildings. In the central hall of his own design for the Law Courts Scott had endeavoured to realise his aim; but with the exception of Mr. Emerson's design for the cathedral at Liverpool, and some of the South Kensington competitive designs, few other attempts, at any rate in England, have been made on a large scale in this direction, and none of the designs for South Kensington Museum buildings were Gothic in style. Scott, Sharpe, Street, Burges, and Godwin have all passed away, and the old zeal which marked their enthusiasm for the perfecting of the Gothic revival inaugurated by Cottingham, Carter, and Pugin, aided by Rickman, has been allowed to fall short of original intentions, as taste, in these days of restless eclecticism, has taken a turn in favour of the Renaissance. All that is good in this change of fashion undoubtedly derives its origin from the foundations which these honest workers after truth and beauty in design laid down, and if few may now be found who will seriously mourn the departure which we have seen from the cold resuscitation of 13th-century work, or even the enkindled fervour inspired by ecclesiological awakening, we must all, I venture to think, agree that the best of our contemporary work has been very considerably influenced for the better by the grammar of design inculcated by the masters whose names are associated with the hey-day of the Gothic Revival. With this change so marked in the general field of modern architecture, naturally enough has followed a change in the immediate aims of the Architectural Association excursions. Churches at first were chiefly thought of, grand minsters and crumbling monastic buildings; but now, after passing through an intermediate state, with a craving for what was called "Late and Flat," interest is mainly directed towards specimens of Domestic work—Renaissance by preference, and, if possible, with a flavour of that Debased character which has been fancifully designated "twiddle." To witness almost to a man the working bees of the A. A. excursion party, hungry for lunch, but still more eager for food of this mode, mere crumbs of more than "Free Classic," all gathered round in a swarm, sketching and measuring Jacobean monuments, as was witnessed only last August at Acton Burnell, while the ruined Edwardian House, hard by the churchyard, a unique specimen from the hand of the same architect who erected the Bishop's Palace at Wells, was not seen at all by more than half the party, is surely enough to make a purist like Edmund Sharpe turn in his grave. Rightly or wrongly, fashion has changed, and while it will scarcely be denied that contemporary architecture, chiefly civic and domestic, has, speaking as a whole, largely improved in merit, it is certainly obvious that mere "twiddles" do not constitute the backbone of true architecture, any more than the dry bones of archæological formula which the rising architects of to-day affect to so unreservedly despise. More conspicuous effort, of course, is being displayed nowadays than ever before in furthering the education of students intended for the calling of the architect in the future; but is it so certain that in the attractive scheme of the studio forcing-house, a very great risk is not run of dissipating all remaining trace of the traditional side of an architect's work and study, such as distinguished the pupils and followers of a Pugin, a Scott, a Street, and a Burges? Are we not tending to reduce our students to an average dead level? I fancy the Institute prize drawings this year were an evidence of this being so. In old time, when the finest works the world has ever seen were built, it was tradition alone which guided designers and craftsmen in their work. Now, as then, there must be some leading principles, some definite aims, some semblance at least of a unity of ideas, if good and living work is really to be secured. To waste valuable energies over the fruitless squabble so recently carried on as to whether architecture be an art or a profession seems a matter for much regret when so many practical matters need attention. Architects worthy of the name must plan and build houses structurally sound, well lighted, and conveniently arranged before ever they can deserve the credit which some seem so anxious to secure of being called high-art architects. To erect a crumbling ruin, a house without foundations, a disintegrated structure posing as an ancient building, is not even good construction, and deserves nothing but the stoutest condemnation whoever may be guilty of like things; and such as these are by no means unheard-of circumstances even nowadays, to the bad name and discredit of architects with the public be it said. During our excursions it has often been remarked that the more modern the work the less the merit discoverable in the example. This, however, is only half the truth. Bad design, bad construction, and bad planning can be found, of course, in all periods; but whether the work be old or whether it be new, it is generally certain that its badness will be correspondingly found associated with pretentiousness and the marked absence of simplicity. Old, well-worn word-saw as this is, we can never realise the fact too often. Above all things, an architect has to deal with facts, and his success must be measured by the manner in which he deals with them. Looking back over many annual excursions with members of the Architectural Association, these trite remarks suggest themselves as being among the most apposite by way of introduction. With respect to the excursions themselves, as at present conducted they seem to be admirably suited for those who have for so many years constituted the bulk of the excursion party; but it is to be noted that this is so because we have grown older and more experienced, more readily able to catch the main distinguishing features or peculiarities of a building when visiting it than formerly. For the junior student and young beginner these outings are scarcely so adapted, and if some such guide as our own founder, Mr. Sharpe, could be discovered who would start a second personally-conducted excursion for the younger men, it no doubt would more nearly realise the original aim and prove a great advantage. My first excursion was in 1876, when the A. A. went to Winchester, and I have attended each year ever since. It was on this occasion that our late President, the late Mr. C. R. Pink, first acted as assistant secretary, and the subsequent success of the yearly outings which followed were due to his care and unselfish industry on our behalf. Warwick, in 1877, followed, with my old friend, the late Mr. Bowes A. Paice, as President, and all the older men among our ranks remember the work he carried out as Hon. Sec. of the A. A. In 1878 we went to Hull, visiting Beverley, Selby, Howden, and other fine Yorkshire churches. Next year, 1879, we visited Wells, Shepton Mallet, Glastonbury, and neighbourhood. This, perhaps, was the queen of all our excursions, and here the late Mr. J. D. Sedding first joined our party. In 1880 we went to Norwich, an event of some importance to the A. A., as on this occasion Mr. John L. Robinson first brought his camera with us. Since then he has never missed coming. In 1881 Mr. Aston Webb conducted the excursionists to Worcester, on which trip we saw some of the best Domestic work we have ever seen, and all who were there well remember the breakfast with the late Lord Beauchamp at Madresfield Court. Next year we went to Mr. J. A. Gotch's headquarters, Kettering, and his intimate knowledge of the buildings of his county made the Rutland and Northamptonshire excursion one of the most profitable yet enjoyed. At Yeovil, in 1883, we had a jolly time, the weather was grand, and the work was admirable. Bury St. Edmund's, the headquarters of the Suffolk excursion in 1884, under our good friend, Mr. Cole Adams, came next, when we had great fun, and saw some splendid churches and good brick mansions. In 1885 our first Oxfordshire excursion took place, starting from Banbury as the centre of a very rich district, and including a visit to such famous places as Compton Wynyate, in Warwickshire; Canons' Ashby, the seat of grand old Sir Henry Dryden; and Broughton Castle, with its gate-house, church, and mansion. The Red Lion hotel, at Banbury, too, placed hospitality of no mean character on record. Malling, in Kent, in 1886, was a failure in this latter aspect; but Maidstone would not undertake our accommodation. Mr. James Fowler, of Louth, ever ready in days gone by to describe buildings for the party, this year conducted the excursionists over Rochester Castle and Cathedral, after which, Restoration House and the old timber mansion in the High-street were seen. At Maidstone, Mr. J. D. Sedding distinguished himself in explaining the Founder's Tomb, and other features of interest, in the great parish church. At Bath, in 1887, Sedding was last with us, and we put up at the Pump House hotel. The landlord remarked, at parting, that "architects were excessively good fellows, but they were blessed with exceedingly good appetites." The qualification really employed by "mine host" was even more expressive than polite. The Derbyshire excursion, when we saw Haddon, Hardwick, and Bolsover, was held in 1888, with Matlock Bath as headquarters. This excursion was Pink's last. In 1889 we went to King's Lynn, and saw some of the most beautiful and big churches to be seen in the county of Norfolk. Oxford in 1890 occupied our attention, with as rich a programme as need be, not forgetting Burford, Ewelme, and Water Eaton. Last year we visited Shrewsbury, and saw Ludlow, Stokesay, Pitchford Hall, Plaish Hall, also Moreton Corbet, and Condover. Such, in brief terms, is an outline of the districts seen during the past sixteen years. Mr. Searles-Wood has contributed in no small degree to the continued success of these outings, acting continually as excursion hon. secretary, and if there is another name which should deservedly be mentioned, it is that of our hon. quartermaster, Mr. Charles Wellard, without whose whistle and catering care we should often have fared worse and not gone so far. The difficulty immediately presenting itself at the outset of such a task as that before us is the amount of material to be dealt with. To reduce this to something like order, it may be well to broadly classify the buildings under notice in the following groups, regardless of style, date, and locality — viz., "Half-Timbered Houses," "Stone Houses," "Brick Houses," "Plaster-Fronted Houses," "Garden Walls and Details," "Interiors," and "Furniture." The most notable specimens in the half-timbered method of building will at once strike you as being Pitchford Hall, Shropshire; Mere Hall, Worcester; Somershall Herbert, Derbyshire; the Market House, Ledbury; Salwarpe Hall, Worcestershire; Ford's Hospital, Coventry; Leicester's Hospital, Warwick; Huddington Court, Worcestershire; the Courtyard, Ightham Mote, Kent; Ewelme Almshouses, Oxfordshire; Severn End, Worcestershire; Stokesay Castle Gatehouse; and several old buildings in Shrewsbury, Worcester, Tewkesbury, Stratford-on-Avon, Warwick, and Kent. Only a few remain with their timbers not grimed up with black pitch or tar. In some the work, as at Mere Hall, is largely sham, with designs for timber framings coloured over plaster and brick surfaces.

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* By Maurice B. Adams, F.R.I.B.A. A paper read before the Architectural Association on Friday last, Feb. 5, 1892.

† Building News, March 21, 1873.

(*To be continued.*)

NOTES ON BUILDING PRICES.—XXII.

By John Leaning.

SLATER (*continued*).

Slate Damp-proof Courses.—For these the very cheapest slates are used, and consequently the smallest—i.e., 12in. × 6in. These may be bought for 35s. per thousand of 1,200 delivered—say 40s.; i.e., about 1d. per foot superficial, and almost every fragment would be used. The calculation would be as follows:—

Two thicknesses of slate at 1d.	2d
2½ per cent. waste on slates for cutting	0⅛
Cement $\frac{1}{27}$ bushel at 1s. 9d.	0¾
Bricklayer and labourer ·008 at 12s. 3½d. (Mixing cement and labour and laying.)	1
Cost per foot superficial	4

Ridges.—Of slate ridges, Thomas's patent is the best, and costs per foot run net at warehouse:—

	s.	d.
1¾in. roll, 5in. wings	1	10
2in. roll, 5¼ wings	2	0
2¼in. roll, 5¾ wings	2	3
2½in. roll, 6in. wings	2	7

If cut to lengths, ½d. per foot more.

Taking the first price as an illustration.

	s.	d.
1ft. of ridge	1	10
Carriage	0	0½
Incidental cuttings	0	0½
Cement, $\frac{1}{20}$ bushel at 1s. 9d.	0	1¼
Bricklayer and labourer ·005 at 12s. 3½d.	0	0¾
Oil cement for roll	0	0½
Per foot run	2	1½

Merchant's Prices.—The preceding calculations will suffice to show that, except by putting himself in the exact postion of the slate merchant—i.e., regularly employing slaters, buying his slates at the quarry in large quantities, or quarrying them himself, and conveying them by sea, the average builder cannot get the work done at anything like the price at which the slate merchant does it, and the reason for subletting to him is irresistible.

The fashion of specifying Countesses 20in. by 10in. tends to keep up their price as compared with other sizes; often as much as 2s. per square may be saved by adopting another size when the 20in by 10in. slate is scarce.

The current prices charged by the merchants for slating, laid complete, are as follows:—

	£	s.	d.
16in. by 10in. Bangor, laid to 2½in. lap, with two 1¼in. copper nails to each slate, per square	1	2	6
20in. by 10in. ditto	1	5	6
20in. by 12in. ditto	1	5	6
24in. by 12in. ditto	1	7	6
20in. by 10in. Portmadoc ditto	1	3	6
For the steep parts of Mansard or curb roofs, add per square	0	0	9
If zinc nails instead of copper, deduct per square	0	1	0
If slating is laid to a 3in. lap instead of 2½in., add per square	0	1	2
For Eureka slating add 40 per cent.			

Final Repair.—The cost of final repair will depend upon the quality of the management. Much damage is done by leaving plumbing too late, neglect to remove scaffolding after it should have been removed, and preventible carelessness of the men.

The Slater's bill of an estimate should contain a clause—"Allow for cleaning out gutters, and for leaving roofs perfect and weatherproof at completion of works." The value of the item is usually guessed at—its cost varies with each building. Like other items of its kind, the only way to arrive at a reasonable generalisation would be to keep the account of time and materials in a number of instances, and it is difficult to induce foremen to do so.

With care, 6d. for each square of ordinary slating like Countesses, will cover the cost; on more expensive slating the amount should be increased in proportion to the price per square, and it may be observed that slates are more likely to be broken than tiles.

A few instances of its estimation by different men are as follows:—

		per square s.	d.	£	s.	d.
10	squares of slating, Countess	3	0	1	10	0
40	,, ,, ,,	0	6	1	0	0
14	,, Eureka green	1	5	1	0	0
41	,, tiling	0	6	1	0	0
23	,, ,,	0	4¼	0	10	0
86	,, ,,	0	2¼	1	0	0

Slate Masonry.—The work of the slate mason is almost always sub-let by the builder. Lavatory tops, with their skirtings, shelves, urinal slabs, and cisterns, are always ordered complete and ready for fixing of the merchants, and the builder fixes.

As the grooving, rubbing, sanding, drilling, &c., are all done by machinery, and can in no other way be so cheaply done, the usual practice of the estimator is to send an extract from the bill of quantities to the merchant, and obtain a special estimate.

In the case of slabs, the price is quoted in the trade lists in two categories: one for slabs as they come in the merchant's stock, and another cut to size. The price is regulated not only by the thickness, but by the width and length. There is also a difference in price between self-faced splitting slate slabs, and slate slabs planed two faces edges from saw.

The current London net prices for slab at merchant's yard are as follows, and the table shows the distinctions of size which are observed:—

Planed Two Faces, Edges from Saw—Measured Net.

	¾in.	1in.	1¼in	1½in.	2in.	2½in	3in.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
From 3ft. to 5ft. long and 1ft. to 2ft. 6in. wide	0 10	0 11	1 1½	1 3	1 8	2 3	2 10
From 5ft. to 7ft. long and 1ft. to 3ft. 6in. wide	1 0	1 1	1 3½	1 6	2 0	2 5	3 0
From 7ft. to 9ft. long and 1ft. to 4ft. wide	—	1 3	1 5½	1 8	2 2½	2 7	3 2
From 9ft. to 10ft. long and 1ft. to 5ft. wide	—	—	1 7½	1 10½	2 4½	2 9	3 5½

Slabs cut to angular shapes are measured by the extreme dimensions either way.

Self-faced splitting slabs sawn to size are about 10 per cent. less than the foregoing.

The current London net prices for labours by the merchant are as follows:—

	s. d	s. d.	s. d.	s. d.			
Rubbed edges	0 2	0 2¼	0 2½	0 2¾	—	—	—
Rounded edges	0 2¼	0 2¾	0 3¼	0 3¾	—	—	—
Groove or rebate, per 1in. girth	0 2	—	—	—	—	—	—
Rounded corners to 1in.	0 4	—	—	—	—	—	—
Ditto to 1½in.	0 5	—	—	—	—	—	—
Rounded corners with rounded edges, 1in.	0 6	—	—	—	—	—	—
Ditto 1½in.	0 7	—	—	—	—	—	—

Moulded Edges.—

½in. and ¾in.	1in.	1½in.	2in.
4d.	5d.	6d.	8d. per foot run.

Holes drilled or countersunk for screws, per dozen:

	s.	d.
Depth of hole ½in.	0	1
,, ,, ¾in.	0	1
,, ,, 1in.	0	1½
,, ,, 1¼in.	0	1¾
,, ,, 1½in.	0	2
,, ,, 2in.	0	2½
,, ,, 3in.	0	4
Holes for basins in 1¼in.	2	6
,, ,, 1½in.	3	0

Sawn Slate Cisterns.—Where special shapes are not important, including delivery within usual limit, including galvanised iron bolts, and fixing complete, hoisting and tackle by purchaser.

			£	s.	d.
50 gallons	1in.	thick	2	0	6
80 ,,	1in.	,,	2	12	6
100 ,,	1in.	,,	2	17	6
120 ,,	1¼in.	,,	3	6	0
150 ,,	1¼in.	,,	3	18	0
175 ,,	1½in.	,,	4	16	0
200 ,,	1½in.	,,	5	8	0
250 ,,	1½in.	,,	6	2	6
275 ,,	1½in.	,,	6	7	6
300 ,,	1½in.	,,	6	15	0
350 ,,	1½in.	,,	7	7	6
400 ,,	1¾in.	,,	9	0	0
450 ,,	2in.	,,	11	5	0
500 ,,	2in.	,,	12	10	0

Cisterns requiring slabs over 7ft. long, or 2ft. 6in. wide, or containing less than 20 gallons, are a higher rate. When cisterns are made to specified sizes, they are charged by the foot superficial, and the following is the rate complete, and in all respects as last described.

	s.	d.
¾in. per foot super	1	5¾
1in. ,, ,,	1	7
1¼in. ,, ,,	1	9¼
1½in. ,, ,,	1	11½
1¾in. ,, ,,	2	3
2in. ,, ,,	2	8½
2½in. ,, ,,	2	11½
3in. ,, ,,	3	4

Enamelled Slate.—Long lists of the varieties of enamelling, and which are comparatively useless, will be found in the price books; it is questionable whether anyone who understands the subject ever refers to them. If enamelled chimney-pieces, or enamelled slabs, are required, the architect selects them from a manufacturer's stock, or gets a special estimate. The surveyor, in dealing with them, requires the production of the invoice. The independent valuation of any ornate enamelling is only possible to a valuer possessing technical knowledge beyond the average.

The current price for plain enamelling is 11½d. per foot supl. enamelling, plain edges.

½in.	¾in.	1in.	1¼in.	1½in.	2in.	3in.
2¾d.	3¼d.	3¾d.	4¼d.	5½d.	6¾d.	8¾d. per ft. run.

TILER.

The roofing tiles used in London are brought from Reading, Maidenhead, Bracknell, Broseley, or Ruabon, and the estimator's price per square usually includes the lathing. In their measurement the same system of allowing superficial quantity for labour and waste obtains as in slater's work.

The current prices are as follows for three localities, which will afford reasonable parallels to any of the districts from which London is supplied.

Lawrence's:—	Per thousand. s.	d.	Weight per thousand.
Red	34	6	1 ton
Rich dark red	36	6	1 ton
Strawberry colour, extra	1	6	—
Stained brown, extra	3	6	—
Fancy tiles (shaped ends)	38	6	1 ton
Hip, Valley, and plain-angle tiles	185	0	1 ton

In trucks at Bracknell.

Railway rate to Vauxhall, 3s. 8d. ton.

The foregoing holed only, nibs extra.

Broseley Tiles.—A trade discount of 5 per cent. deducted.

Pressed plain roofing tiles	33	3	.. 1 ton
Fancy tiles (as before)........	35	8	.. 1 ton
Gable tiles ("tile and half")..	66	6	.. 1½ ton
Eaves tiles (7in. by 6½in.)	33	3	.. ¾ ton
Hip tiles	257	3	.. 33¼cwt.
Valley tiles	257	3	.. 33¼cwt.
Angle tiles, plain	257	3	.. 33¼cwt.
Angle tiles, ornamental	257	3	.. 33¼cwt.

In trucks at nearest railway station.
Railway rate to Paddington, Brentford, or Chelsea basin, 7s. 11d. ton in 4-ton lots.

The foregoing holed or nibbed at same rates. They generally have both, so that if the nib is broken off, which frequently happens, the tile may be nailed.

Ruabon Tiles.	Per thousand. s.	d.	Weight per thousand.
Red, brown, or brindled....	35	0	...... 1 ton
Fancy tiles (as before)	37	6	...... 18 cwt.
Tile and half	70	0	...... 1½ ton
Eaves tile	35	0	...... 18 cwt.
Valley tiles	257	3	...... 1½ ton
Hip tiles..................	291	8	...... 1½ ton

In trucks at nearest station to works.

In 4-ton lots, 9s. 6d. per ton. In 2-ton lots, 25s. per ton.

If any of the foregoing are prepared with holes instead of nibs, add 2s. 6d. per thousand.

If blue instead of red, add 5s. per thousand.

	d.
Tiler, per hour	9
Labourer	5¾

Quantity required per square.—The tables as to the number of tiles required to cover a square vary considerably, and rarely state whether they express the calculated quantity or include an allowance for waste. The number may be computed in the same manner as directed for slates. The general size is 10½in. by 6½in., and ½in. to ⅝in. thick. The *calculated* quantity per square is as follows. They are most frequently laid with a 3½in. lap:—

4in. gauge	2½in. lap	554 tiles
3½in. ,, ...	3½in. ,, ...	633 ,,
3in. ,, ...	4½in. ,, ...	739 ,,

Tile Lathing.—Judging from published tables, considerable uncertainty exists as to the best size of laths for plain tiling. Some say 1¼in. by ¼in., others 1in. by ¼in. For good work they are never specified less than ¾in. thick; 1¼in. by 1in. is a reasonable size. Their size should always be specified.

They are imported ready sawn in various sizes—generally ¾in. by 1¼in., ¾in. by 1in., ¾in. by 2in., and are sold at the timber sales by the 144ft. run, or they may be bought at the sawmills, where common stuff is frequently converted into laths for tiles or slates, and sold at per hundred feet run. Anything beyond ¾in. thick would be obtained from the mills.

Common prices in quantity are as follows:—

	At timber sales—	At sawmills.
¾in. × 1¼in.	0s. 6d. per 144ft. ..	0s. 8d. per 100ft.
¾in. × 1in.	0s. 5d. ,, ,, ..	0s. 7d. ,, ,,
¾in. × 2in.	1s. 4d. ,, ,, ..	1s. 6d. ,, ,,

1¼in. by 1in. at sawmills would cost 9d. per 100ft.

	Nails.
The calculated number of feet run of lath and number of nails for 4in. gauge is 300ft.......	255
Ditto ditto for 3½in. gauge is 340ft.	289
Ditto ditto for 3in. gauge is 400ft.......	340

The gauge of the lath being the same as that of the tiles in 10ft. of roof slope, we should have for 4in. gauge 30 lines of lath, and 30 + 10ft. = 300ft.

With rafters 14in. from centre to centre we have 8½ by 30, the number of crossings which gives 255 nails to a 4in. gauge.

Five per cent. on laths and nails will cover the waste.

The constant for laying tiling with a 3½in. lap (3½in. gauge) is ·700 of bricklayer and labourer. Labourer unloading or loading per thousand ·010.

The constant may be modified for the different gauges by a calculation in simple proportion, as recommended for slating.

Two and a half per cent. will cover the waste, exclusive of cutting otherwise allowed for. The value of a square of Broseley tiling 3½in. gauge, laid down with nibs in London, would be calculated as follows:—

A labourer should keep three tilers supplied with material.

	s.	d.	
Broseley tiles in trucks	33	3	per thousand.
Railway rate	7	11	,,
Loading carts ·010, unloading carts ·010 = ·020 labourer at 4s. 9½d.	0	11½	,,
Cartage, say	4	6	,,
	46	7½	

	£	s.	d.
633 + 16 = 649 tiles at 46s. 7½d.	1	10	3½
·700 of bricklayer at 7s. 6d.	0	5	3
·233 of labourer at 4s. 9½d.	0	1	1½
357ft. 1¼in. by 1in. sawn for laths, 9d. carriage 2d. = 11d. per 100ft.	0	3	3¼
304 = $1\frac{1}{16}$lb. 1½in. cut clasp nails (sixpenny), 3½lb. per thousand, at 12s. cwt.	0	0	1½
Carpenter fixing per square ·40 at 7s. 6d.	0	3	0
	£2	3	0¾

Extra on Common Tiling for Tile and a Half to Verges is measured by the lineal foot. The plain tiles are 10½in. by 6½in.; the tile and half 10½in. by 9¾in. The extra-sized tile is used for the alternate courses only. The price per thousand is about twice that of the common tiles. The extra trouble of changing from common tiles to tile and half and fitting to verge (no cutting required) is extra labour, ·008 day of tiler.

The cost of Broseley tile and half is as follows:—

	£	s.	d.
1,000 at works	3	6	6
Railway rate on 1½ ton at 7s. 11d.......		11	10½
Cartage and delivery as before—1½ ton at 11½d.		1	5¼
	3	19	9¾

Adopting as an example a 4in. gauge, to half the lineal quantity measured tile and half is substituted for the common tiling; we have, therefore, to each lineal foot 6in. by 9¾in. = 5in. superficial of extra value. Then—

	£	s.	d.	£	s.	d.
568 Broseley tile and half at £3 19s. 10d. per thousand..				2	5	4
568 common tiles at £2 6s. 8d. per thousand	1	6	6			
Add one-half	0	13	3	1	19	9
Difference on 1½ squares				0	5	7

Two-thirds of the above difference, 3s. 8½d., represents the difference of value per square.

The value per foot-run would, therefore, be—

	£	s.	d.
$\frac{5}{12}$ths of a foot super. extra value of tiles at 3s. 9d. per square	0	0	0¾
Extra labour laying and fitting to verge, ·008 day bricklayer at 7s. 6d.	0	0	0¾
Per foot-run......................	0	0	1½

Extra on Common Tiling for purpose-made Hip and Valley Tiles to course and bond with General Tiling and allow for Cutting and Waste is an item, as it frequently appears in a bill of quantities, and is better measured thus than in two items—*i.e.*, extra for hip and valley tiles and the cutting put into the superficial measurement of the tiling. The difference between the amount of cutting to a valley or hip where lead is used and another where purpose-made tiles are adopted is considerable—in the former case, all the tiles must be cut to a raking line; in the latter, the cutting is only to be discovered by close scrutiny, and there is much less waste, because it is at a right angle with the ridge instead of raking. Hips and valleys are generally measured and billed together, although the mean length of gauge of which they take the place is not the same for hip as valley. The average may be taken as 10in. wide, and 1½in. on each edge would more than cover the waste. The width affected would, therefore, be 13in. in all, equal to the width of two tiles, and for a 4in. gauge, three courses to the foot run. Three hip or valley tiles would consequently take the place of six common ones. The difference of value of the tiles to each lineal foot would, therefore, be as follows:—

	£	s.	d.
The cost of Broseley hip and valley tiles, per thousand	12	17	3
Railway rate on 1½ ton at 7s. 11d.	0	11	10½
Cartage and delivery, 1½ ton at 11½d. ..	0	1	5¼
	13	10	6¾

	£	s.	d.
Cost of three hip or valley tiles at £13 10s. 7d. per thousand............	0	0	9¾
Deduct cost of six plain tiles at £2 6s. 8d. per thousand	0	0	3¼
Difference in value of tiles per foot run	0	0	6½

	£	s.	d.
Extra cost of tiles per foot run	0	0	6½
Extra labour—laying, fitting, and cutting, ·020 day of bricklayer at 7s. 6d.	0	0	1¾
Extra cost per foot run	0	0	8¼

Pegs and Pins.—When tiles have holes instead of nibs, they are secured with wooden or cast-iron pegs. The latter are best, and should be about 2in. long. One thousand weighs 25lb., and costs at the rate of 9s. 6d. per cwt., and if galvanised, 18s. cwt. The cost of these may be readily computed by allowing two for each tile. Wooden pegs cost about 1s. 9d. per bushel, and a square requires about a peck.

If tiles are bedded in lime and hair, the extra cost would be calculated as follows:—

	s.	d.
$\frac{2}{27}$ of a cubic yard of lime and hair at 15s. 6d. (see Torching, section Slater)	1	1¾
Labour, per square: bricklayer ·150 at 7s. 6d.	1	1½
,, ,, labourer ·050 at 4s. 9½d.	0	2¾
Extra cost per square..........	2	6

Tile Ridges.—Of tile ridges the prices and patterns are various. They may be selected by number from a trade list, and such a list will generally give the weight and the railway rate per ton for carriage. They are generally made in 12in. lengths.

If we take as an illustration Lawrence's No. 7, of which about 150 weigh a ton—

	£	s.	d.
Say 150 tiles at 6s. per dozen	3	15	0
Railway carriage, 1 ton at 3s. 8d per ton	0	3	8
Unloading, carting, and delivery at building, say..........................	0	5	0
150ft.)	4	3	8
Per foot	0	0	6¾
Cement, 1-20th bushel at 1s. 9d.	0	0	1¼
Bricklayer and labourer, ·006 at 12s. 3½d.	0	0	1
Cost per foot run	0	0	9

Oak Shingles.—Oak shingles are generally about 12in. long, and 3in. to 4½in. wide, and are laid to the same gauge as tiles; about 1,000 are commonly reckoned for a square, and the cost, delivered within three or four miles, is 8s. per hundred.

The laying may be taken as equal to the smallest slates or tiles of the same gauge.

The value of the cutting would vary with the angle. Assuming the size of a shingle to be 12in. by 4in., the calculation for the number required to cover a square to a 4in. gauge would be 4in. by 4in. = 16 exposed surface; 100ft. by 144in ÷ 16 = 900; 2½ per cent. will cover waste by damage = 23. There would be, therefore, 923 shingles and 1,800 + 90 nails. The calculation for the value of a square would be as follows:—

	£	s.	d.
923 shingles at 8s. per hundred	3	13	10
1890. 1¼in. copper nails, $9\frac{9}{10}$lb. at 9¼d...	0	7	7½
·700 carpenter at 7s. 6d.	0	5	3
·233 labourer at 4s. 9½d.	0	1	1½
Cost per square	4	7	10

For the double course to eaves the under shingle would be about 5in. long; say, half a shingle = 1½ shingle per foot run, and three nails = 5¾d., extra labour less than ¼d. = 6d.

The price per square having been computed, the cost for raking cutting may be obtained from it. A width of 3in. to each cut edge of the finished work would pay for the waste. Extra labour. Day of carpenter ·010 consequently.

	£	s.	d.
¼ft. at 87s. 10d. per square	0	0	2¾
·010 carpenter at 7s. 6d.	0	0	1
Cost per foot run	0	0	3¾

* * *

A new reredos of carved oak has been placed in the parish church of Yarcombe, near Honiton, as a memorial. It is to a great extent a replica of the reredos at St. Saviour's church, Torre, Torquay, designed by Mr. Medley Fulford (of the firm of Messrs. Fulford, Tait, and Harvey, architects, of Exeter), and made by Mr. Harry Hems, of Exeter, some years ago, and the same artists have been engaged in the present work. The groups are restricted to three figures in each panel. The central one is devoted to Our Lord's death, the Blessed Virgin, and St. John. In one of the other panels is Joseph of Arimathea, the Roman Centurion, and Nicodemus, and on the other side the Three Maries.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. Passmore Edwards.

TERMS OF SUBSCRIPTION.

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ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front Page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No front page or paragraph Advertisement inserted for less than 5s.

Situations.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is One Shilling for Twenty-four Words, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., L., LI., LIII., LIV., LVIII., LIX., and LX. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

Received.—G. W. and Co.—M. H. N.—Jas. Alderson.—Cestrian.—F. P. (Winchester).—J. W. H. Co.

Correspondence.

PATENT SCHOOL PLANS.

To the Editor of the Building News.

Sir,—I was much interested in the plans for the improvement of schools illustrated in your last issue, patented by Mr. T. Hughes, and as the subject of education generally is at present to the fore, I should be obliged if you could spare a little space for a few questions and remarks upon them, as the plans given are so microscopic, unfortunately, that many necessary details are omitted altogether, or are undecipherable. From the description given, the classrooms are 40ft. by 20ft., which appears to be an odd size and proportion for seating and supervision. As they are shut off from the central hall, general supervision also seems difficult by the head teacher; and if the school were designed for erection under the Education Department, the rules in many ways are lost sight of, and probably some difficulty would be experienced in obtaining sanction for it. In the matter of building, the great amount of outside walling would add much to the expense, and, too, their great extent would be a means of loss of heat. The deep and narrow recesses between the end classrooms would surely be objectionable.

Cloak - rooms that open directly out of a schoolroom or hall are not desirable either; they would be much better shut off, and properly warmed and ventilated.

In closing, I beg to assure Mr. Hughes that these few remarks are made in a friendly spirit, and with a few of further ventilation of a subject well worth consideration. And if more details could be supplied, a better understanding of the ideas put forth would result.

From my own experience it appears to be a wise thing to do to protect fresh notions, as there are numerous persons who appreciate any new and practical ideas, and make use of them in their own work, without scruple or recognition.—I am, &c.,

Anthony R. F. Trew, M.S.A.

Broad-street, Bristol.

MIDLAND TRUANTS' SCHOOL, LICHFIELD.

Sir,—In last Friday's issue of the Building News there is an announcement to the effect that the plans bearing motto "Adaptability and Economy" have been accepted by the Committee, and that Mr. E. R. Robson was the assessor.

This statement is calculated to convey the impression that these plans were placed first by the assessor, whereas such was not the case.

The designs bearing motto "Supervision" were placed first in order of merit by the assessor, but were set aside by the Committee for some reason of their own, and the former substituted.—I am, &c.,

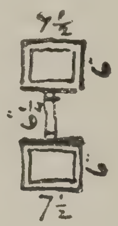
Richard James Rowe.

(Author of Designs Bearing Motto "Supervision.")
54, Broad street, Bilston, Staffs.

Intercommunication.

QUESTIONS.

[10714.]—**Safe Load.**—An old subscriber will be obliged if any of your correspondents will say what safe load (say 1-10th of breaking weight), a cast-iron pier—thus, will support? The two pillars are united at top, bottom, and centre, by a flange 4in. broad. The thickness of metal in the pillars ¾in., and the height 13ft., both ends flat, and carefully bedded.—No Name.



[10715.]—**Technical Schools.**—In what part of London can I see some good technical schools lately built?—Scot.

[10716.]—**Asphalte Floor.**—I propose laying floor for machinery, composed of 4½in. concrete bottom, and finished with 1½in. crushed black rockstone asphalte. Any information regarding proportions, and laying of above to make sound floor, will oblige.—A. B. C.

[10717.]—**Architect and Building Committee.**—When a building committee demands copies of quantities of all trades, is an architect bound to let them have same? If not, a few reasons against delivering same will oblige, as they state they cannot tell whether the extras and deductions in the contractor's accounts are correct without them, the architect having made out the statements.—Disgusted.

[10718.]—**Marble Floors.**—I shall be greatly obliged if some fellow correspondent will kindly inform me what is the best material to use in laying marble floors in churches—proportions, mode of laying, and thickness?—J. H.

[10719.]—**Salisbury Cathedral.**—Having obtained no reply to my questions on the above, given in the issue of Dec. 4, I beg to bring it again under notice, and should feel greatly favoured if anyone would give me the information. I find also, on p. 349 of Rosengarten's text-book, that the great eastern window of the above cathedral is said to be 35ft. broad, by 85ft. high! Surely this must be a mistake, as I don't remember seeing any large east window; besides, the Lady-chapel is only, I suppose, about 40ft. in height, and the nave and choir a little over 80ft. above the pavement. In Prof. T. Roger Smith's handbook on Gothic and Renaissance, p. 7, a section through the nave is given, with scale adjoining, but I don't know of any section through the nave which would only show a single aisle. Besides, if measured to scale, it represents more nearly the great transept; but then the windows don't correspond, if I remember properly. Any information on the above will oblige.—David F. Smith, Maidstone.

REPLIES.

[10703.]—**Concrete for Artisans' Dwellings.**—Breeze from gasworks makes a tough concrete and an excellent material for nailing wood thereto, but it is very far from being the strongest aggregate for self-supporting floors. It is too small in size (much of it being more suitable for making cement mortar than concrete), too uniform in texture, and possesses very little inherent strength. These combined render it incapable of withstanding the high compressive and tensile strains which large self-supporting slabs of concrete are subject to. It is used only for moderate spans, and then chiefly because it comes to hand ready for use, and can be had in towns oftentimes for nothing. Floors of 12ft. span, or even more, have been made with success; but in a general way 10ft. is better, and, all points considered, as profitable as any. Iron or steel girders have, as a necessity, to be employed when the span is greater than 10ft. or 12ft. Breeze is not a good material for walls, and of all the aggregates in use for that purpose, it is, perhaps, the worst. The back volumes of the Building News contain much information with regard to concrete floors, and, as may be supposed, it is a subject on which a good deal has been, and may be still, written.—Thomas Potter, Alresford.

[10703.]—**Concrete for Artisans' Dwellings.**—The coke-breeze concrete should be formed with four parts of coke-breeze to one of Portland cement, and should be well mixed in a dry state, and then water gradually added till the mixture is quite sloppy. This is necessary, because the coke absorbs a great quantity of water. Before the coke-breeze concrete is laid, strips of wood, ¾in. by 2in., should be placed on edge at intervals of 6ft. or 8ft., to form screeds for obtaining a level surface. I have not laid slabs of coke-breeze concrete in sand on the brick-rubbish concrete. This might be advantageous, if the time was short for laying floor. The slabs (and also coke-breeze bricks for fixing joiner's work), should be made under cover during frost. It does not matter how fine the coke-breeze is.—C. F. M.

[10711.]—**Wooden Houses.**—I have just returned from a trip to the States, where I looked into the question of house "raising" a little, and if "G." will write me definitely what it is he requires, I may be able to help him.—Surveyor, 1, Camden-road, Carshalton.

[10712.]—**Swimming Baths.**—Why not white glazed bricks as ordinarily? Water in volume in a white bath will look coloured according to its purity or otherwise. In London baths, those in a district supplied with less pure water have a green tint; where a harder and purer water is supplied, it appears of a blue-grey. See (when open in the season) the large swimming-ponds at Goulston-square, Whitechapel, and at St. George's Baths, Pimlico, which I call to mind as having appeared to me of a tint that "Architect's Pupil" may consider "transparent sea-green." Any attempt to give effect with tinted skylights will be a failure. First ascertain the nature of the water, and, it may be, there will be quite enough green, even with white bottom and sides. Most London bath superintendents think there is a deal too much, and will express themselves pretty strongly on the point.—R. O. D.

CHIPS.

In the House of Commons on Tuesday, notices were given of the introduction of Bills by Mr. Knowles for the registration of plumbers; by Lord Henry Bruce, to provide improved cottages for labourers; and by Mr. T. H. Bolton, to amend the Conveyancing Acts with regard to leaseholds.

Mr. Charles Waldstein has received a concession from the Greek Government for the American School of Classical Studies at Athens to excavate Sparta, with Amyclæ and any other site in the whole of Laconia, for seven years. It is proposed to make a beginning at Sparta next month.

The proposed new regulations affecting theatres and music-halls were further discussed at Tuesday's meeting of the London County Council, when it was explained that they would apply only to buildings to be constructed in the future. An attempt was made to postpone the consideration of the question in order that the proposals might be discussed by the Surveyors' Institute and the Royal Institute of British Architects; but the regulations were ultimately passed.

On Wednesday week Mr. W. Wilkinson, R.P.C., chief sanitary inspector for the borough of Derby, delivered a lecture entitled "Details of Plumbers' Work," at the Mechanics' Institute. The lecture was the fifth of the course of thirteen which are being delivered, under the auspices of the Sanitary Institute and the Derbyshire County Council, for the benefit of the sanitary inspectors, surveyors, and others employed in the county. The chair was occupied by Mr. W. Iliffe, medical officer for the borough of Derby.

According to the Parliamentary estimate, prepared by Mr. A. R. Binnie, the engineer to the London County Council, the cost of constructing the proposed extension tramway across Westminster Bridge and along the Thames Embankment to the South Eastern Railway Bridge, is only expected to be £9,616, including contingencies. Mr. Binnie gives the average cost of preparing the roadway for the lines, and reinstating the surface, at 104s. per lineal yard.

At an extraordinary meeting of the shareholders in the Eiffel Tower for Blackpool, held on Monday, it was decided to carry out a modified scheme, only the tower and the central portion of the buildings to be erected at present, the Aquarium and the Beach Hotel being left standing. It was reported that the foundations are being excavated by a firm of Manchester contractors, and that the contract for the tower had been let to Messrs. Heenan and Froude, of Manchester, at £42,000.

Colonel R. W. Edis, F.S.A., has prepared for the entire restoration of that part of Sandringham House which was recently destroyed and damaged by fire. In addition to this, several new rooms will be constructed. The work has already been begun by a local builder.

Mr. Aston Webb's plans have been approved for building a shallow north transept and porch in the place of the blacksmith's forge, which has so long disfigured the old priory church of St. Bartholomew-the-Great, West Smithfield; and plans for dealing with the west front and vestry-room have also been approved. "The Ladye Chapel" will afterwards be taken in hand.

Legal.

FINAL CERTIFICATES.

If persons agree to do something upon a certificate being given, they are not liable, in the absence of fraud, until it is given. This general rule has been repeatedly laid down in Courts of law upon questions arising under building contracts; and it was again enforced by the Master of the Rolls in the recent peculiar and important case of "De Morgan, Snell, and Co. v. Rio de Janeiro Flour Mills Company (Limited)" (*Times*, 3rd Feb.) in the Court of Appeal. There the contract was to build mills and granaries at Rio de Janeiro for the company, subject to the supervision of a resident local engineer, and the final approval of a chief engineer, who was to give his certificate on completion. While the works were in progress the resident engineer objected to certain bricks; thereon the contractor appealed to the chief engineer in London, who passed them, and so overruled his subordinate. This caused some months' delay, and when the works were completed the chief engineer refused to give his final certificate because disputes were pending, which were referred to arbitration. The arbitrator found that the company were liable to the contractor for the delay caused by their resident engineer, and that they were also liable for depreciation in certain Argentine securities in which a retention fund had been invested, because the chief engineer has caused delay by his refusal to give his final certificate when the works were completed.

A Divisional Court had declared the arbitrator to be wrong in both these views, holding that the company were not liable for the mistakes of their resident engineer, nor in any way responsible for the fall in the securities. The Court of Appeal affirmed their decision, pointing out emphatically the legal position of the engineers, in language equally applicable, of course, to architects acting under similar contracts. The resident engineer had to approve or disapprove of the work. He had no judicial office. Upon his refusal to pass materials, the contractors had to get others. That was their contract, and the contractors had no power of appeal to the chief engineer, so the delay they caused in so doing was their own fault. The resident engineer had acted honestly, and the company were in no way liable for his actions, they not having interfered with his course under the contract. In the same way the company were not responsible because the chief engineer refused his certificate. The parties to the contract made this certificate a condition precedent to payment. Until that certificate was given the contractors had no claim, and so the arbitrator was totally wrong in making the company liable for compensation, or for the fall in the securities caused by delay arising from the conduct of the resident and chief engineers named in the contract.

Fred. Wetherfield, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning, to insure answer same week.

L. L.—Contract.—Death.—The executors of the deceased builder can and should complete the contract he had begun; and, indeed, they are bound to do so in such a case as this, as it is not a matter of personal skill, as in the case of an architect. The executors should go on with it, especially because it will be to the benefit of the estate they have to administer.

Builder.—Extras.—Progress Certificates.—You should not have done these extras without the written advice of the architect, as provided by the contract; and you cannot recover for them unless you can show a subsequent ratification of some kind. His progress certificates do not affect the question, or relieve you from the clause as to written orders, even though they include work not expressly within the contract.

◆

The Commission appointed to report upon the question of restoring to Hampton Court Palace the Raphael cartoons, which were removed to South Kensington Museum in 1865, has, after much deliberation, and the examination of six eminent specialists upon the subject, arrived at the conclusion that the cartoons shall remain in their present position at South Kensington, subject to certain alterations being carried out, with a view to render the gallery in which they are exhibited more effectively fireproof.

Our Office Table.

An inquest was held on Tuesday at St. George's Hospital, Hyde Park-corner, as to the death of Charles Evans, aged 22 years, an architect, lately residing at 18, Kensington Court-place, who committed suicide on Friday morning last, after a terrible struggle with a fellow-lodger. Deceased, who had been a member of the Architectural Association since 1888, shared a bedroom with Mr. Herbert Campbell Moore, and became delirious on Friday morning when recovering from influenza. After a struggle with his friend he jumped from the window in a nude condition, sustaining fatal injuries. The jury returned a verdict of "Suicide during temporary insanity."

The qualities which are found to preserve timber from wet rot, density and resinousness, are those which have to be increased if possible in any attempts to promote the preservation of timbers. The great durability of oak, pitch-pine, and Jarrah is attributable to these qualities. The fixed oils fill the pores and render the wood dense. Oil-barrel staves are very lasting. According to one authority, pitch, or dead oil possesses advantages over all known substances for the protection of wood against changes of humidity. A colonial journal quotes Professor Letheby's opinion that dead oil first coagulates albuminous substances; second, absorbs and appropriates the oxygen in the pores and so protects from decay; third, resinifies in the pores of the wood, and shuts out both air and moisture; and fourth, acts as a poison to lower forms of animal and vegetable life, and so protects the wood from all parasites. These properties specially fit pitch oil for impregnating timber exposed to alternations of wet and dry states. Dead oil is distilled from coal-tar: its antisepic quality resides in the creosote it contains.

A deputation representative of the home and foreign timber trade of the United Kingdom waited on the President of the Board of Trade on Tuesday with reference to the new railway rates on timber, one of the main requirements being that all foreign and balk timber should be carried at computed measurement weight only. Sir Michael Hicks Beach, in reply, pointed out that the subject had been very thoroughly threshed out in the recent inquiry before Lord Balfour of Burleigh and Mr. Courtenay Boyle, and by the joint-committee of both Houses; in addition to which, in the subsequent progress of the Bills in Parliament, he had assented to several amendments brought forward on behalf of the trade. If they were not satisfied with the decision arrived at by Parliament last Session, their course would be to frame amendments to the Bills that were coming before Parliament this Session, and petition Parliament and be thoroughly represented before the Commissioners to whom those Bills would be referred.

CHIPS.

At Carpenters' Hall, London-wall, on Wednesday evening, Sir Douglas Galton, K.C.B., gave an address on "Ventilation, Warming, and Lighting."

In the matter of the application for discharge by Peter Balmer, of Aughton, near Ormskirk, architect, the discharge has been suspended for one calendar month, which ended on the 8th inst.

The local board of Hoylake and West Kirby, near Liverpool, decided on Monday to advertise for plans for public offices to be built in three sections, at a cost not to exceed £3,000.

The Annual Convention of the American Association of Master Builders was held in Cleveland, Ohio, on Monday, Tuesday, and Wednesday, the 25th, 26th, and 27th ult. The attendance was large. Mr. McAllister, of Cleveland, the President of the Association, in his brilliant address, took for his theme the unsatisfactory character of those building contracts which put the contractor entirely at the mercy of the architect. The remaining time was occupied by the hearing and consideration of committee reports, and election of officers, and by various excursions and entertainments.

At a meeting, on Wednesday, of the members of the Royal Scottish Academy, held in Edinburgh, Mr. James Guthrie, Mr. J. C. Noble, and Mr. J. Denovan Adam were elected Academicians, to fill the vacancies caused by the death of Sir William Fettes Douglas, Sir John Steell, and Mr. J. Dick Peddie, F.R.I.B.A.

MEETINGS FOR THE ENSUING WEEK.

Monday.—Clerks of Works' Association. Annual Dinner, Holborn Restaurant. 6.30 p.m.
Surveyors' Institution. "An Explanation of the London Water Question," by J. W. Grover, C.E. 8 p.m.
Society of Arts. "The Development of Electrical Distribution," Cantor Lecture No. 2, by Professor George Forbes, F.R.S. 8 p.m.

Tuesday.—Society of Arts. "The Forthcoming Exhibition at Kimberley," by Lewis Atkinson. 8 p.m.
Institution of Civil Engineers. Discussion on "Gold Quartz Reduction Machinery." 8 p m.
Glasgow Architectural Association. Annual supper.

Wednesday.—Civil and Mechanical Engineers' Society. "Gas Producers," by R. Booth. 7 p m.
St. Paul's Ecclesiological Society. "Religious Subjects on Misericordes," by T. A. Martin. 7.30 p.m.
Society of Arts. "The Pamirs," by Capt. F. E. Younghusband. 8 p.m.

Friday.—Architectural Association. "Domestic Electric Lighting," by Max Clarke. 7.30 p.m.
Royal Institution. "Micro-Organisms," by Professor P. F. Frankland, F.R.S. 9 p.m.

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Architectural Association. — February 19th, the Ninth Ordinary General Meeting at 7.30 p.m. Paper by Max Clarke, Esq., on "Domestic Electric Lighting."
February 20th, the Second Spring Visit at 3 p.m. The Imperial Institute, South Kensington.

Ernest S. Gale
F. T. W. Goldsmith } Hon. Secs.

◆

The Examinations of the Royal Institute of British Architects.—Notice is hereby given that, after the close of the year 1893, all gentlemen who desire to qualify for Candidature as ASSOCIATE of the Royal Institute of British Architects (except in special cases submitted to and approved by the Council) will be required to enter for the PRELIMINARY Examination, and having passed it, work up through the INTERMEDIATE to the FINAL Examination, which in 1894 will take the place of the present "Examination in Architecture." The only examinations to which young Architects who are in practice, and who desire to become Associates without passing the Progressive Examinations, can enter, take place twice in the year 1892 and twice in the year 1893. Those, therefore, who may not be prepared to enter for the "EXAMINATION IN ARCHITECTURE," before the close of 1893, should take immediate steps to secure registration as Probationers, which they can do by passing the Preliminary Examination or obtaining the grant of exemption therefrom

ASTON WEBB, Hon. Secretary.
WILLIAM H. WHITE, Secretary.

The Royal Institute of British Architects, 9, Conduit-street, Hanover-square, London, W , 25th January, 1892.

◆

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TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

Brighton.—For repairs, &c., to No. 68, Lansdowne-place, Hove, Brighton, for the Misses Harbord. Mr. Walter J. Ebbetts, F R.I.B.A., Savoy House, 115, Strand, W.C., architect:—

Baylis, H., London	£160	0	0
Elliott, W. and A., Brighton ...	140	0	0

Chelsfield.—For rebuilding shop, house, and premises after fire, at Pratt's Bottom, Chelsfield, Kent, for Mr. G. Osgood. Mr. St. Pierre Harris, 1, Basinghall-street, E.C., and Orpington, architect and surveyor:—

Knight, T., Sidcup	£979	0	0
Wood, F., Chislehurst	963	0	0
Lowe, R. A., Chislehurst	953	0	0
Owen, W., Farnborough (accepted)	798	10	0

Chichester.—For new Congregational church, schools, &c., Chichester, Sussex. Mr. E. J. Hamilton, architect, Brighton. Quantities by the architect:—

Stevens, Bastow, and Co., Bristol	£3,400	0	0
Holloway, Bros., Battersea, S.W.	3,138	0	0
Curtis, W. H. C., Poole	3,107	0	0
Burrell, A., Littlehampton ...	3,100	0	0
Wallis, W., Balham	2,794	0	0
Light, W. R. and C., Portsmouth	2,757	0	0
Holt, J. O., Chichester	2,730	0	0
Snewin, Bros., Littlehampton ...	2,687	0	0
Croad, J., Portsea	2,670	0	0
Hall, T. P., Southsea	2,658	0	0
Potter, J., Horsham	2,545	0	0
Budden, J. C., Chichester* ...	2,535	0	0
Peters, P., Horsham	2,460	0	0
Stallard, G., Havant	2,450	0	0
Jones, A, Selsey	2,350	0	0
Stephens, F., East Grinstead ...	2,329	0	0
Winslade, W., Selsey-on-Sea ...	2,120	15	0

*Accepted, subject to a reduction for omission.

Clevedon, Somerset.—For the erection of a ladies' cloak-room on the beach, for the local board of health. Mr. S. W. Knowles, surveyor:—

Green, W. A.	£221	0	0
Lee, J.	207	16	0
Hill, Thos. (accepted)	190	0	0

Eastbourne.—For the erection of institute in Old Town, Eastbourne, in memory of the late Canon Pitman. Mr. Herbert Spurrell, F.R.I.B.A., architect:—

Harding	£2,295	0	0
Peerless	2,159	0	0
Noakes...	2,136	0	0
Backhurst	2,132	0	0
Hart	2,095	0	0
Miller and Selmes	2,078	0	0
Martin, M.	2,050	0	0
Cornwell	1,990	0	0
Martin, J.	1,957	0	0
Dennis, C. P....	1,880	0	0
Stanbridge and Tupper	1,752	0	0
Coster, J. (accepted)	1,575	0	0

All of Eastbourne.

Hackney.—For the erection of school-buildings, water-closets, playgrounds, boundary-walls and gates, school-keepers' house, &c., at Gayhurst-road, in the Hackney Division, for the School Board for London. Mr. T. J. Bailey, architect to the Board. Quantities by Mr. Henry Lovegrove:—

Mowlem, J., and Co.	£17,850	0	0
Boyce, T.	17,750	0	0
Williams, C., and Son	17,094	0	0
Hart Bros.	16,876	0	0
Lawrence, E., and Sons	16,346	0	0
Cox, C.	16,266	0	0
Killby and Gayford	15,936	0	0
Dabbs, W. M. (accepted)... ...	15,697	0	0

Hampstead.—For repairs, &c., to No. 1, Rosslyn-gardens, Belsize-lane, Hampstead, for Messrs. Clarke and Calkin. Mr. Walter J. Ebbetts, F.R.I.B.A., Savoy House, 115, Strand, W.C., architect:—

Yerbury, R. A....	£270	0	0
Manktelow and Co.	227	0	0
Baylis, H.	185	0	0
Steel, W....	168	0	0

Haverstock Hill.—For additions and alterations to the Orphan Working School, Haverstock-hill, N.W. Mr. Charles Bell, architect. Quantities by Mr. Henry Lovegrove:—

Clarke and Bracey	£4,383	0	0
Holliday and Greenwood	4,139	0	0
Burford and Sons	3 886	0	0
Wall, C.	3 647	0	0
Wallas	3,589	0	0
Allen and Sons	3,550	0	0
Bryan and Sons (accepted) ...	3,508	0	0

Heywood, Lancs.—For constructing slipper and vapour baths as additions to the public swimming baths for the town council:—

Fowles, Heywood (accepted).

Leek.—For two houses at Wall Grange, for Mr. W. Challinor. Messrs. W. Sugden and Son, architects:—

Knowles, W., & Stubbs, J. (accepted)	£415	13	0

Leek.—For Alsop Memorial Gateway at the Cottage Hospital. Messrs. W. Sugden and Son, architects:—

Grace, T. (accepted)	£61	4	0

Leyton.—For constructing teachers' rooms and other alterations to the Harrow-green schools, for the Leyton School Board. Messrs. J. T. Newman and Jacques, 2, Fen-court, E.C., architects to the board:—

Wood	£423	0	0
Reed	413	0	0
Scott	397	0	0
Catley	380	0	0
Gregar	368	0	0
Coxhead	349	0	0
Holland (accepted)	344	0	0

Liverpool.—For the construction of two hydraulic engines for use in (A) the Vyrnwy subway beneath the Manchester Ship Canal, and (B) in the aqueduct tunnel beneath the Mersey, for the County Council. Mr. S. F. Deacon, engineer:—

Easton and Anderson, Whitehall-place, S.W. (accepted), (A) £876 0 0; (B) £945 0 0.

Liverpool.—For alterations and repairs to properties in Ennerdale, Roscoe, and Back Bridewell-streets, for the City Council:—

Crosbie, J. and T. (accepted)... ...	£150	0	0

London.—For the erection of warehouse in rear of No. 6, Upper Thames-street, E.C., for Messrs. Hilton, Anderson, and Co. Messrs. Hudson and Booth, architects. Quantities by Mr. Henry Lovegrove:—

Rider, T., and Son	£1,698	0	0
Lawrence, E., and Son	1,647	0	0
Hall, Beddall, and Co.	1,620	0	0
Scrivener, W., and Co.	1,619	0	0
Nightingale, B. E.	1,525	0	0
Greenwood, J.	1,499	0	0

London.—For alterations and repairs to 152, Fleet-street, E.C., for Mr. S. Alderton. Mr. Walter J. Ebbetts, F.R.I.B.A., Savoy House, 115, Strand, W.C., architect:—

		Extra.
Drew and Cadman	£930	£98
Spreckley, C....	922	52
Smith, W.	798	47

Newport, Isle of Wight.—For the erection of an engine-house at the waterworks, for the town council:—

Barton Bros.	£375	0	0
Jenkins, T. (accepted)	348	0	0

Notting-Hill.—For alterations and additions to Nos. 9 and 10, Norland-terrace, Uxbridge-road, Notting-hill, W., for Messrs. Hunt, Mills, and Co. Mr. C. L. Tudor, 81, Lancaster-road, Notting Hill, W., architect:—

Watts, Notting Hill	£1,088	14	7
Colley, Notting Hill	797	0	0
Cowley and Drake, Lisson-grove ...	758	0	0
Nash, Kensington	749	0	0
Tozer, Notting Hill	709	0	0
Moody, Folkestone (accepted) ...	630	0	0

Rugeley.—For the preliminary boring for water-supply at Stoney-brook, Fair Oaks, for the local board. Mr. W. H. Radford, engineer:—

Isler, C., and Co., London (accepted).

Orpington.—For the erection of a shop and house and three cottages at the Chislehurst-road, Orpington, Kent, for Mr. James Cox. Mr. St. Pierre Harris, 1, Basinghall-street, E.C., and Orpington, architect and surveyor:—

Owen, W., Farnborough	£938	0	0
Wood, F., Chislehurst	865	0	0
Stebbings, C., Sidcup	845	0	0
Knight, T., Sidcup	815	0	0
Somerford and Son, Clapham and Orpington (accepted)	697	0	0

Orpington.—For additions and alterations to the Wellington-road school, Orpington, Kent, for the Orpington School Board. Mr. St. Pierre Harris, 1, Basinghall-street, E.C., and Orpington, architect and surveyor. Quantities by Messrs. C. Stanger and Son:—

Lowe, R. A.	£2,683	0	0
Grubb	2,673	0	0
Laurence and Son	2,625	0	0
Staines and Son	2,598	0	0
Smith and Son	2,579	0	0
White and Son	2,565	4	0
Wallis, W.	2,536	13	0
Duthoit	2,535	0	0
Holt and Son	2,492	0	0
Stebbings	2,481	0	0
Mid Kent Building Co.	2,352	0	0
Graty	2,339	0	0
Rick	2,248	0	0
Martin and Co.	2,229	0	0
Somerford and Son	2,216	0	0

Orpington.—For Poor-Law Schools, Orpington, Kent. Mr. Fred A. Walters, F.S.A., 4, Great Queen-street, Westminster, architect. Quantities by Mr. John B. Lofting, 4, Great Queen-street, S.W.:—

Stimpson and Co., London ...	£14,450	0	0
Holloway Bros., London	14,019	0	0
Patman & Fotheringham, London	13,975	0	0
Silver and Sons, Maidenhead ...	13,768	0	0
Smith, W., London	13,675	0	0
Bottrill and Sons, Reading ...	13,600	0	0
Sanders, H. J., Southampton ...	13,385	0	0
Higgs, F. and H., Loughborough Junction	13,360	0	0
Smith, J., and Sons, S. Norwood	13,095	0	0
Longley, J., and Co., Crawley, Sussex	12,925	0	0
Gregory, T., and Co., Clapham Junction	12,797	0	0

Radstock, Somerset.—For the completion of the play-ground, latrines, and drains at the board schools now partially built:—

Bird (accepted)	£200	0	0
For school desks and furniture:—			
Illingworth and Co., Leeds (accepted)	85	6	0

[Lowest of five tenders received.]

Shirley, Hants.—For paving the footway between Fourposts-hill and Waterloo-road, for the Shirley and Freemantle local board of health. Mr. H. J. Weston, surveyor:—

Preedy, J., Southampton	£110	0	0
Roe, J. W., and Co., Southampton*	97	17	0

*Accepted.

Stafford.—For the supply and erection of new purifiers at the gasworks, for the town council:—

Walker, C. and W., Donnington (accepted) £1,723.
(Lowest tender of 14 received.)

Stafford.—For columns, girders, and joists at the new purifying-house at the gasworks, for the town council:—

Walker, C. and W., Donnington (accepted) £1,160.
(Twenty-one tenders received, of which this was the lowest.)

Stafford.—For steel girders and curved plates for new retort-house floor at the gasworks, for the town council:—

Ocean Ironworks Co., Manchester* ...	£251	10	0

* Accepted.

Stafford.—For the conversion of the loggia and porch at the public baths into lock-up shops for the town council:—

Chatfield and Wrench (accepted) ...	£84	10	0

West Ham.—For alteration and additions to the Hallsville Schools, Canning Town, for the West Ham School Board. Messrs. J. T. Newman and Jacques, 2, Fen-court, E.C., architects to the board:—

Maddison	£3,381	0	0
Hearle and Farrow	3,246	0	0
Sharpe (accepted)	2,060	0	0

TWELVE GOLD AND SILVER MEDALS AWARDED.

ZINC ROOFING.

F. BRABY & CO., L^D.

VIEILLE MONTAGNE SOLE MANUFACTURING AGENTS.

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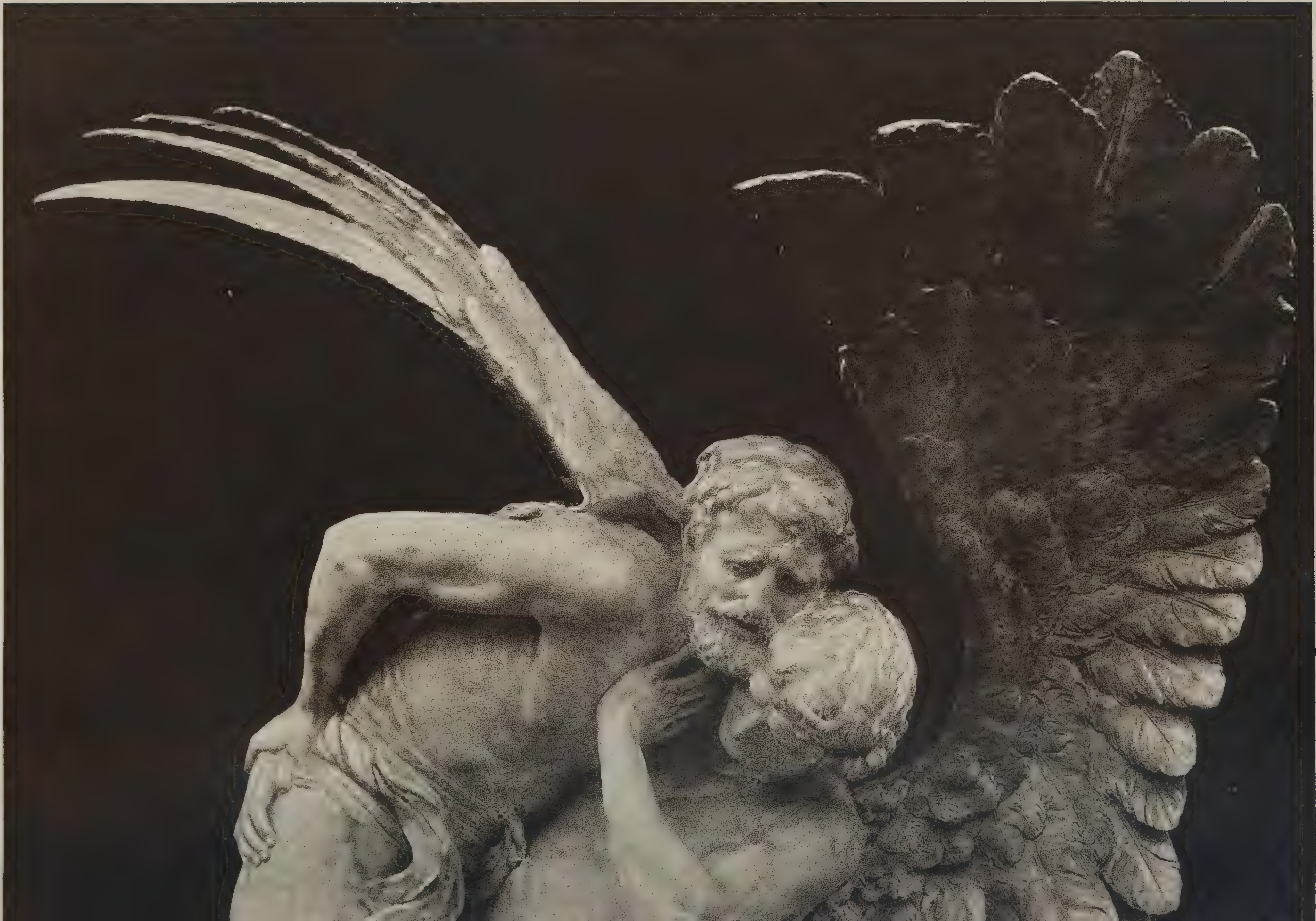
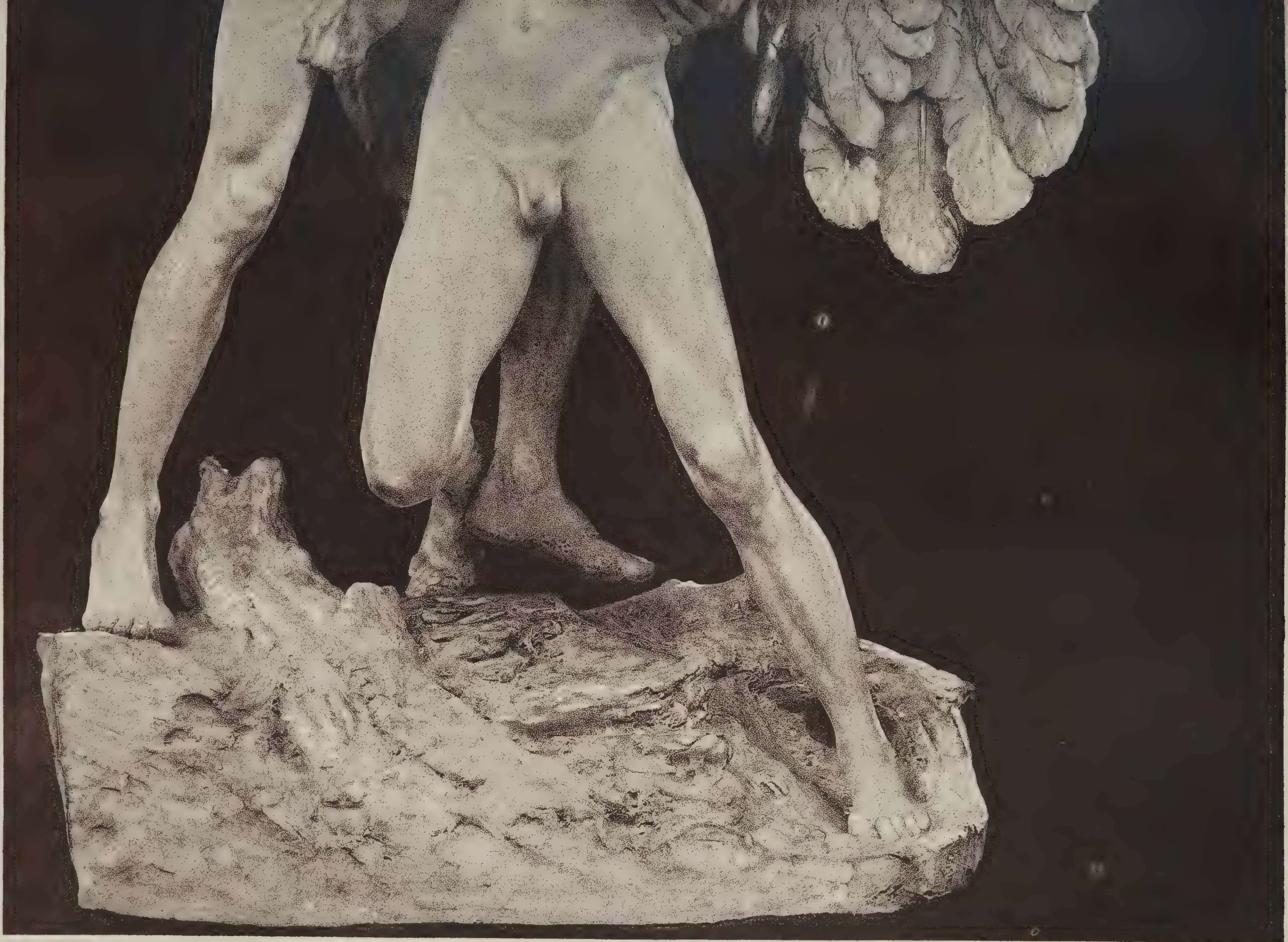
LIVERPOOL: 6 & 8, HATTON GARDEN.

GLASGOW: 47 & 49, ST. ENOCH SQUARE.

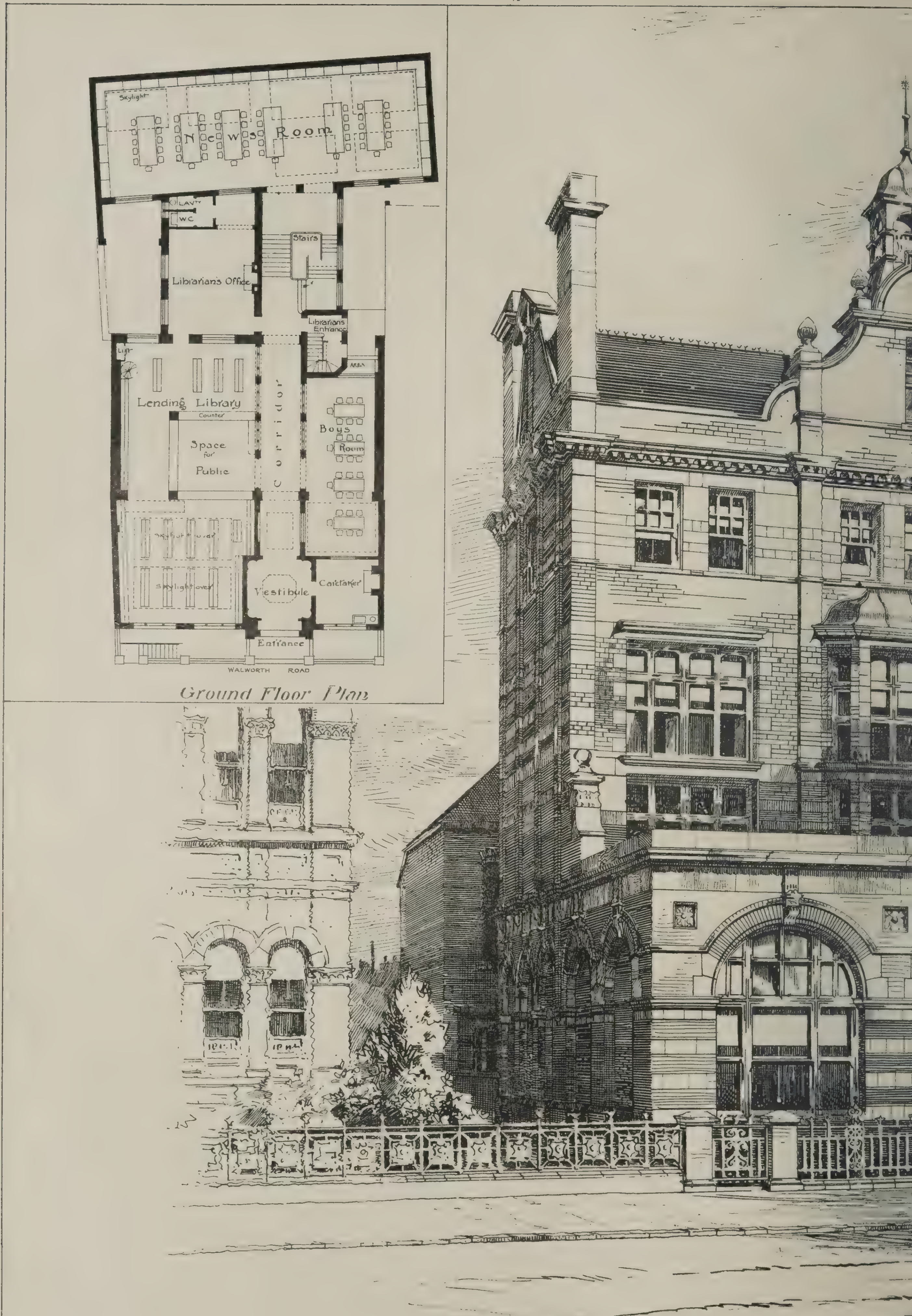




"PHOTO-TINT," by James Akerman, 6, Queen Square, London, W.C.

"JACOB·WRESTLING·WITH·THE·ANGEL" ROYAL·ACADEMY·GOLD·MEDAL·SCULPTURE·GROUP; BY·PAUL·RAPHAEL·MONTFORD.

UNIVERSITY OF ILLINOIS



Ground Floor Plan

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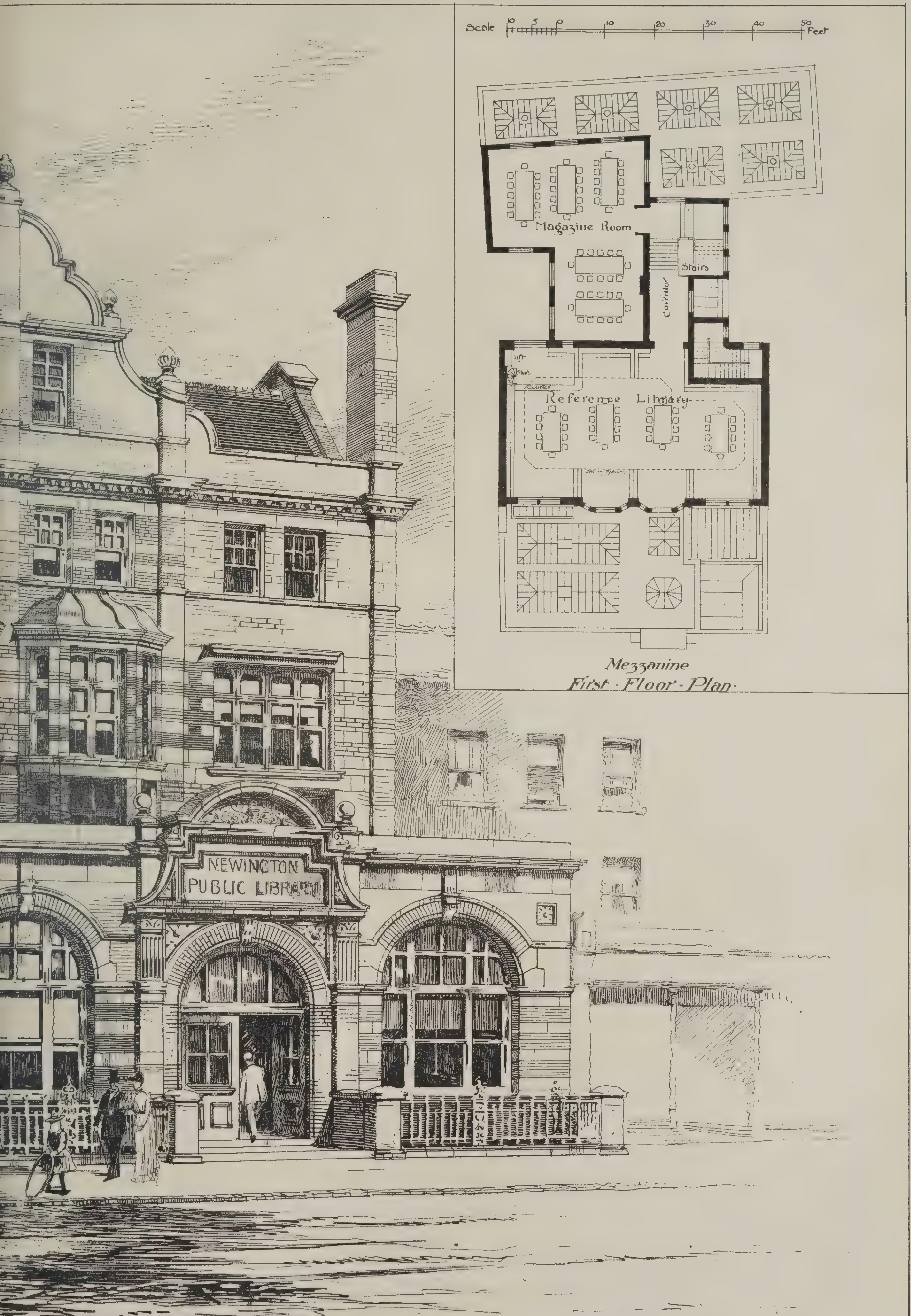

Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.C.

ELECTED · DESIGN · BY · EDWARD · I'ANSON · M·A·

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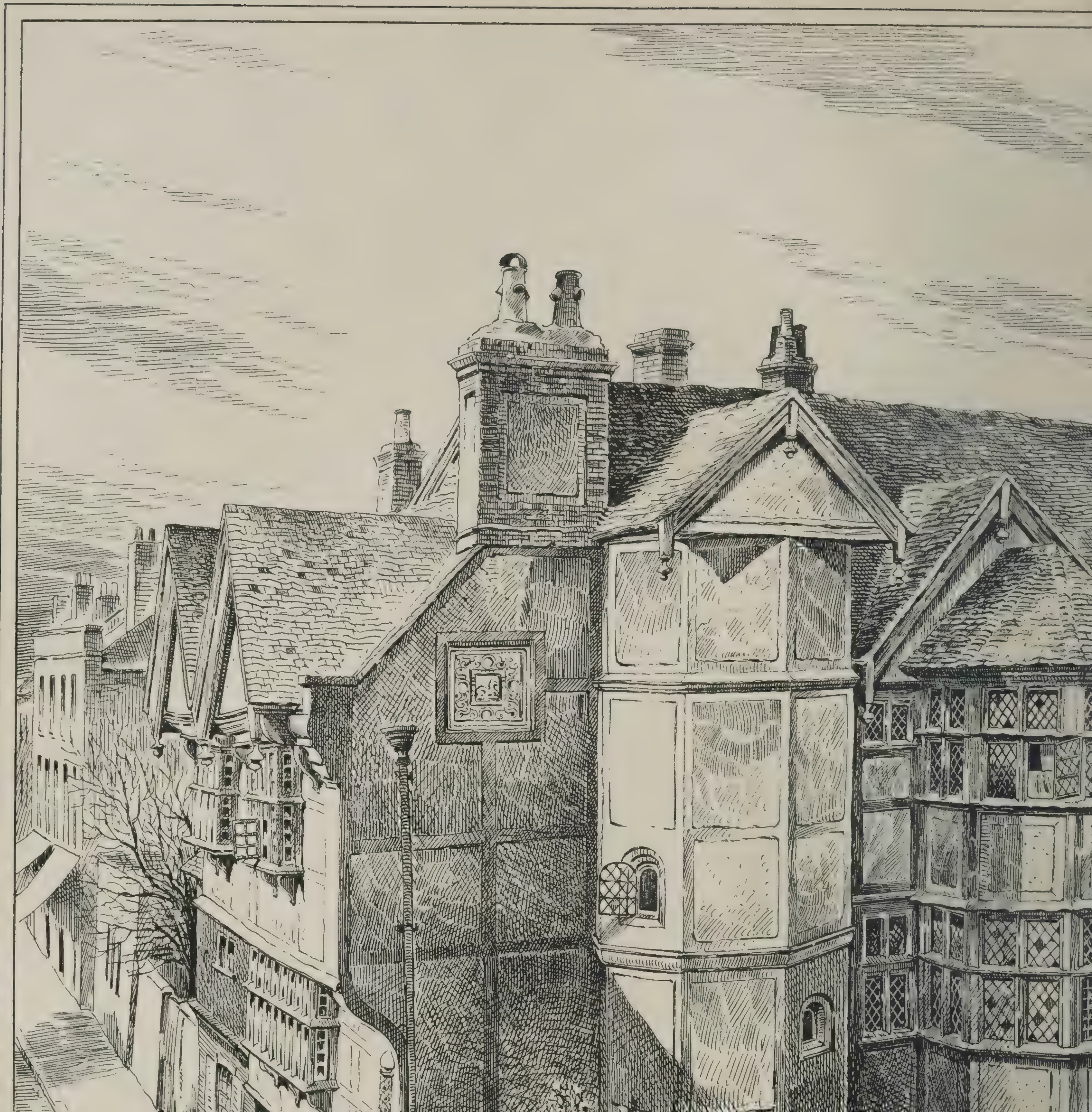
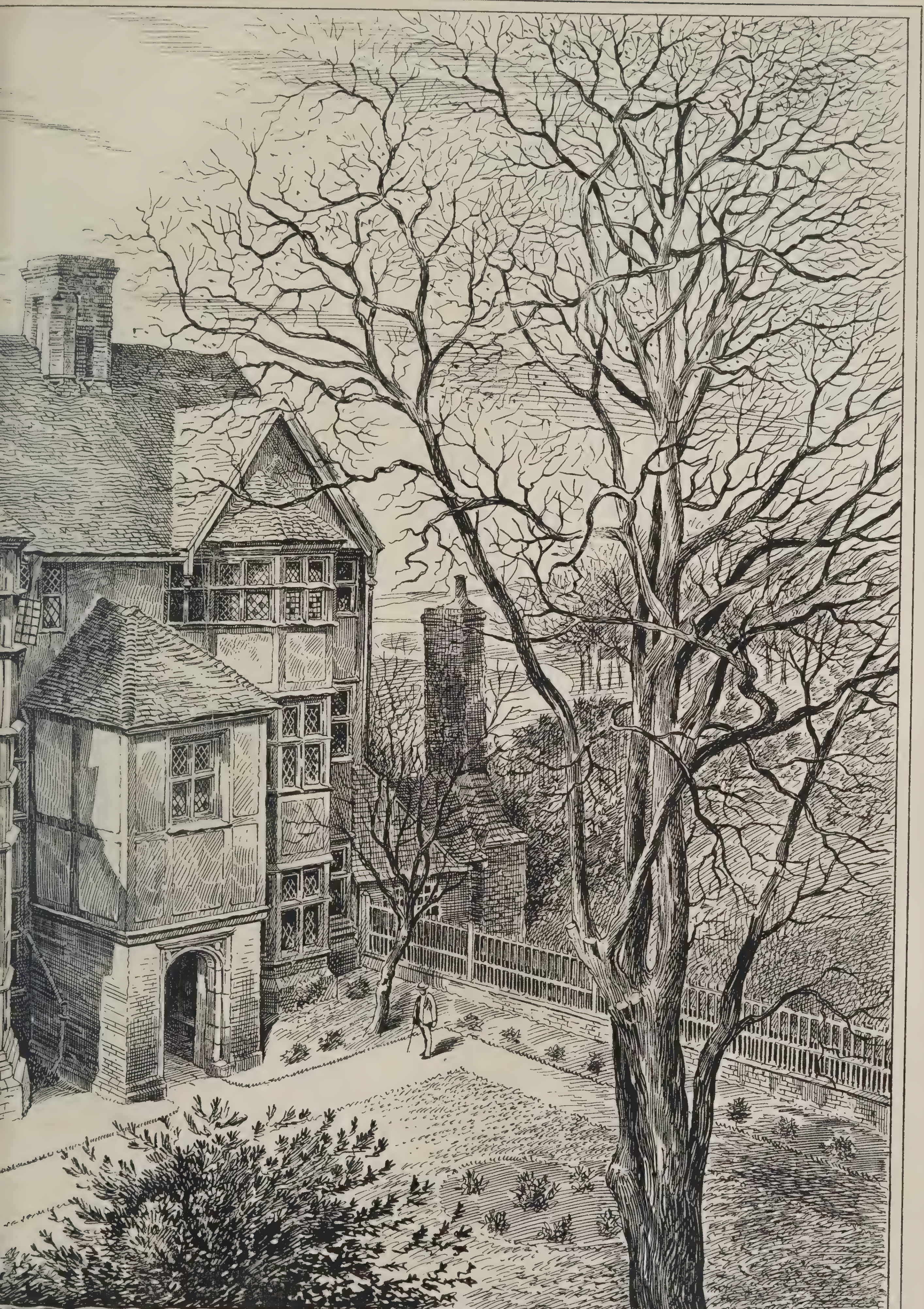


ILLUSTRATING PAPER "NOTES ON SOME DOMESTIC WORK SEEN ON PAST A·A EXCURSIONS" BY MAURICE·B·ADAMS·FRIBA



VIEW OVERLOOKING THE GARDEN

DRAWN BY
MAURICE B. ADAMS

Photo-Lithographed & Printed by James Akerman, 6, Queen Square W.C

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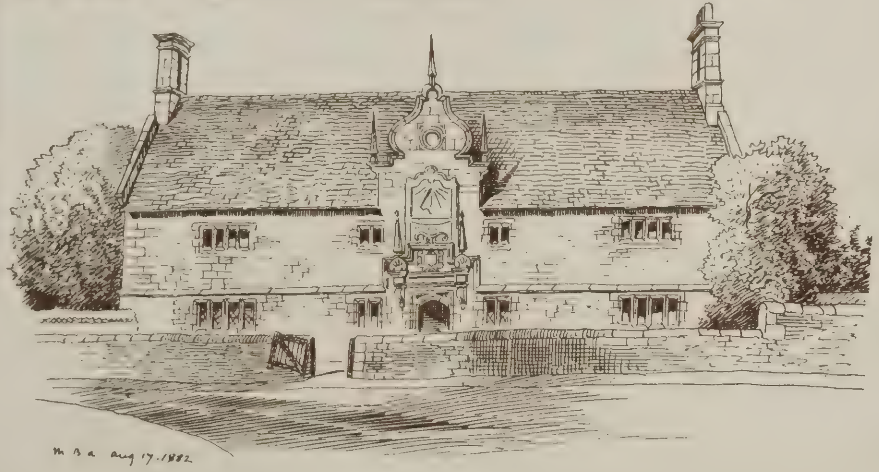
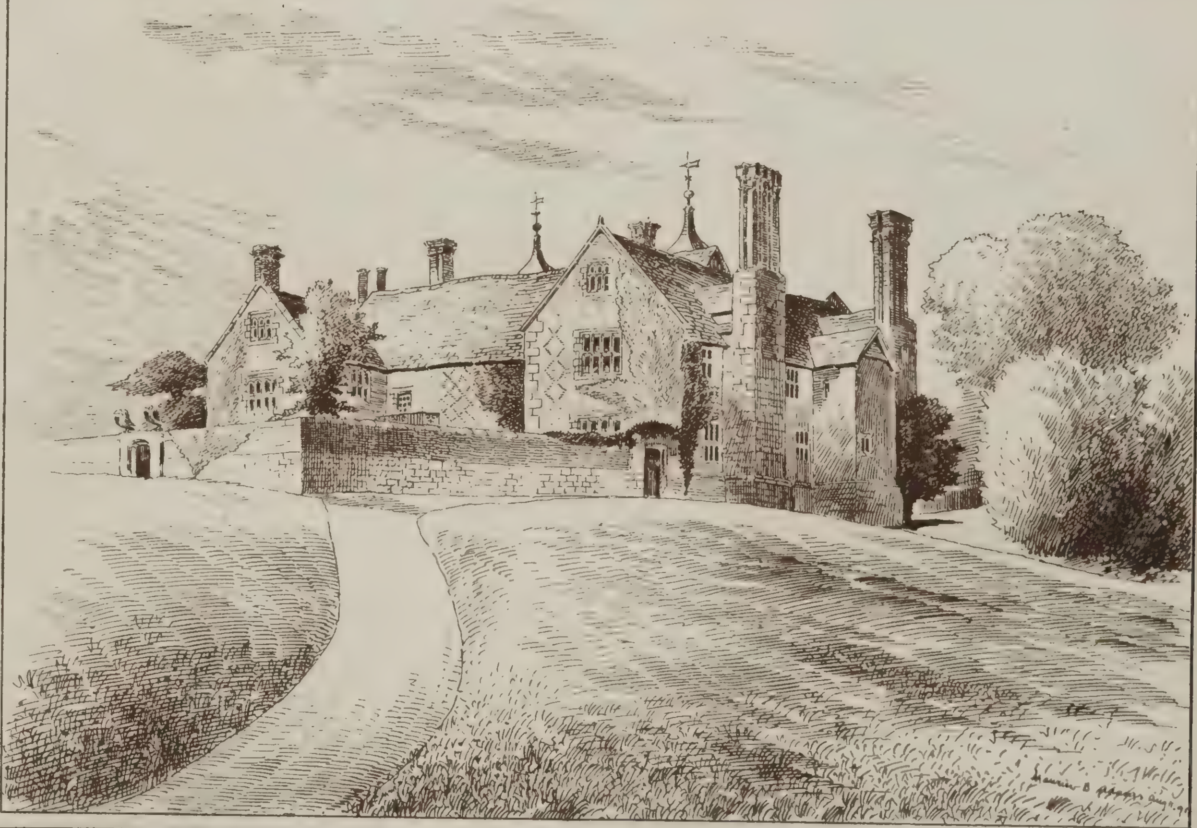
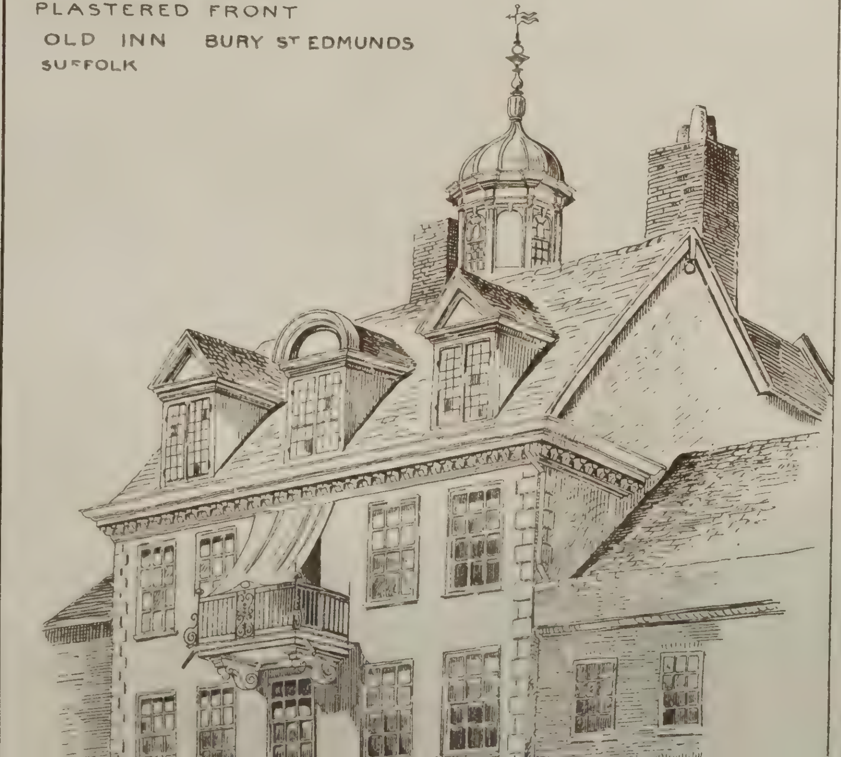
WEEKLEY HOSPITAL NORTHANTS



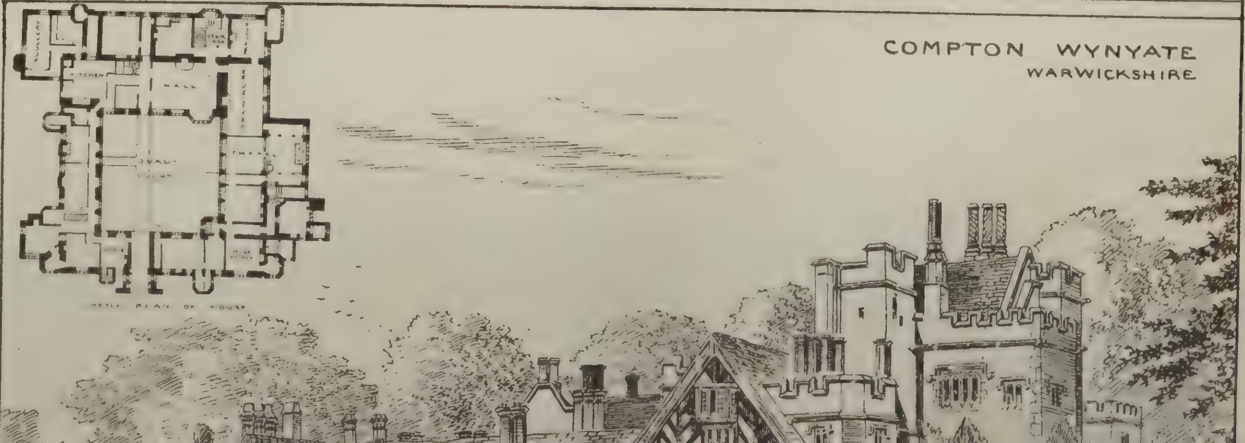
PLAISH HALL, SALOP.


Maurice B Adams Aug. 9?

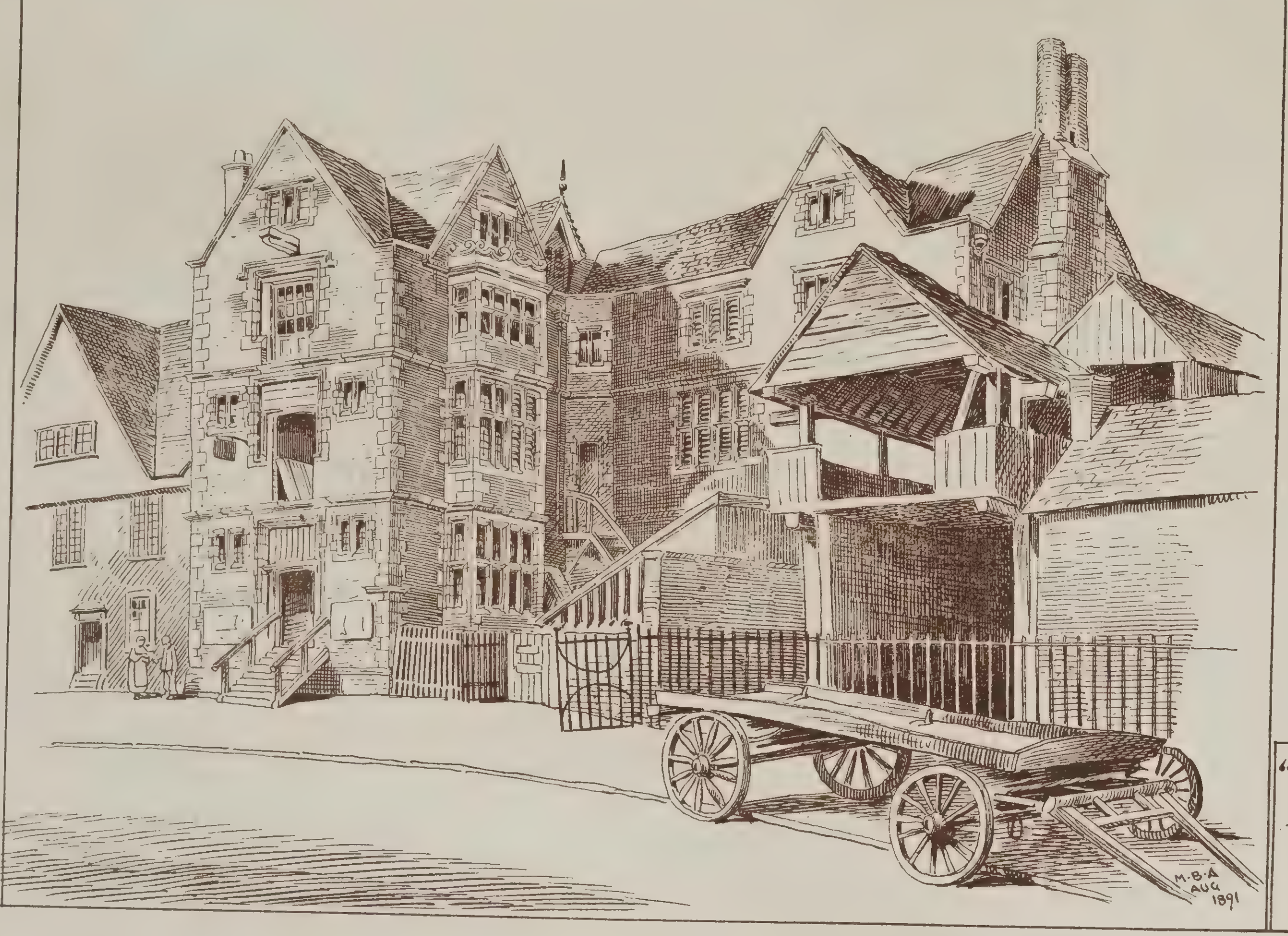
PLASTERED FRONT
OLD INN BURY ST EDMUNDS
SUFFOLK



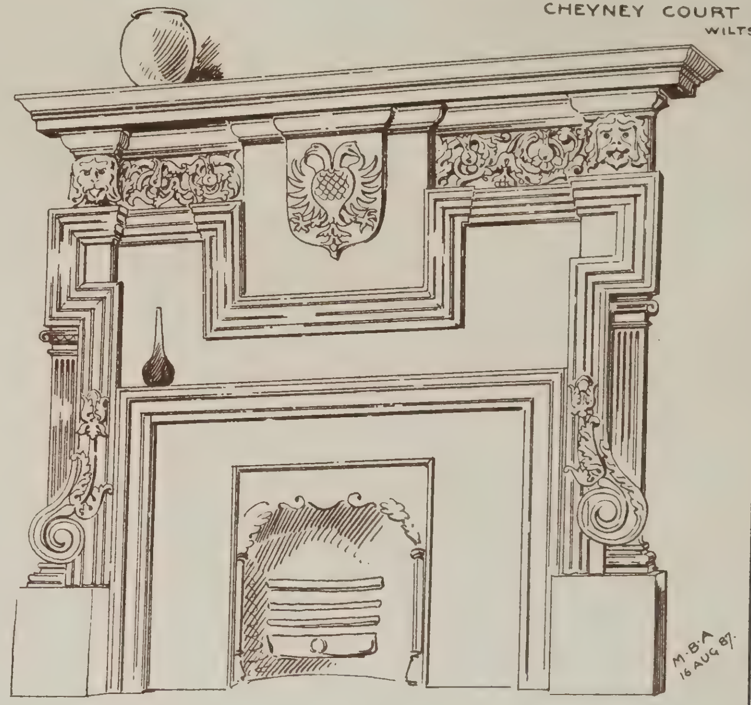
COMPTON WYNYATE
WARWICKSHIRE



HILL'S " MANSION
SHREWSBURY



CHIMNEY PIECE
CHEYNEY COURT
WILTS



8FT LONG X 8FT HIGH

"SUGGESTIVE DOMESTIC WORK
SEEN ON PAST A·A· EXCURSIONS"

Illustrating Lecture by Maurice B Adams F·R·I·B·A·

Photo Lithographed & Printed by James Akerman, 6 Queen Square W.C.

OF THE
TY OF ILLINOIS

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXII.—No. 1937.

FRIDAY, FEBRUARY 19, 1892

DANGEROUS STRUCTURES.

IT is absurd to imagine that the term "dangerous structure" is applicable only to those buildings which come under the cognisance of local authorities or the London County Council, for we have many overwhelming facts to prove that there are structures which contain the elements of danger within their four walls which no statutory provision can touch. The records of failure and disaster to buildings alone in London during the last few years are sufficient to convince anyone that inherent weaknesses are possible to exist in buildings for years unsuspected, and all at once, from a very trivial or slight cause, to exhibit dangerous symptoms, or cause immediate collapse. No law, however stringent, can guarantee the construction of stable buildings, as the limits of its operation are confined to a superficial inspection of certain points, and those only of matters that admit of examination in a perfunctory sort of way. However comprehensive the by-laws, or vigilant the district surveyor, a great many things may pass or escape his notice. Defective bond, inferior mortar, shaky timber, flaw in iron, bad foundation, are points that would likely elude the most circumspect officer who would pay particular attention to those matters which are scheduled and are visible.

If we examine the causes which make buildings dangerous—that is unstable, we find one to be age and neglect. Thousands of houses and buildings in the Metropolis have suffered from the vicissitudes of time and neglect. The natural decay of stone and brick and timbers have reduced their strength; repairs have not been made at proper intervals, and the structure passes into that state of senility and decay, which makes it difficult to do anything but rebuild. Bad construction is another cause that requires often radical or remedial measures to be taken, and which the Building By-laws are primarily intended to prevent; but beyond these causes of danger, there are two or three others which elude inspectors and district surveyors. The most important of these may be placed under the head of Disturbance. There is scarcely any building of size in the Metropolis that is not exposed to disturbing causes of one sort or another. Perhaps the most frequent kind of disturbance is that due to excavations near the foundations, underpinning operations of adjoining premises, new drains, &c. These works are undertaken often without careful supervision by adjoining owners, and the danger is not found out till it is too late to do anything except to remedy the mischief or to make compensation. The rights of building and adjoining owners, as laid down in the Metropolitan Building Act, cap. 122, section 83, are not invariably carried out, though a building owner has a right to make good or repair any party structure out of repair, or to pull it down and rebuild it if so defective as to be dangerous. Then we find disturbance by the removal of walls of support by the demolition of adjacent property. Numerous buildings in London are seriously impaired by the removal of adjacent property, but the damage done is not always detected, nor is there any by-law which controls the pulling-down of premises. Vibration is a source of danger, as was found to be the case in the formation of the underground railway tunnels and their recent extensions eastward. Many premises showed signs of settlement, and we know heavy compensations had to be paid. In the case of the Mersey Tunnel Railway, many tradesmen of Birkenhead brought actions for injuries to their premises. A clause of the Act provided for full compensation to owners of property. A large hotel was found to be in a dangerous condition, owing to subsidence; but it is needless to cite cases. The Land Clauses Consolidation Act makes it compulsory for promoters of new works to compensate for such injuries.

There is a further cause of mischief arising from the inherent defects of buildings which escape the surveyor's attention. Amongst these defects we may mention a weak or yielding foundation, such as that which caused the subsidence of the Yarmouth Town Hall, or running sand. Defects or flaws in iron girders, which have caused the collapse of many recent buildings, are beyond ordinary control. Then we have, lately, the example of a large block of business premises at Battersea, which, through a recent fire, caused the death of two girls, still a subject of inquiry. The evidence at least shows that many inherent defects in the old buildings existed, and that it is quite possible for a bressummer or beam insufficiently supported to cause the total collapse of a building in case of a fire breaking out. These are a few of the conditions which make buildings dangerous, and which may exist undetected by those appointed under local authorities.

In the new clauses of the London Building Law Consolidation Bill now under consideration, several necessary amendments have been made. The expression "structure" is made to include "any building, wall, or other structure, and anything affixed to or projecting from any building, wall, or other structure." But more is wanted to bring buildings under the designation of "dangerous and neglected structures," which is the amended heading of Part III. of the Consolidation Bill. Sect. 64 says, "Where it is made known to the County Council that any structure is in a dangerous state, the Council shall require a survey of such structure to be made by the district surveyor, &c," and he is to make known any information which he may receive, &c. But how can information reach the County Council or the surveyor that will give them any clue as to the foundations, the sufficiency of support to bressummers, flaws in girders, and other defects that are concealed from view.

Numerous defects and dangers will exist and remain undiscovered unless the Building Act renders them impossible. What, for example, is there to prevent a weak bressummer being put up, or one with inadequate support? The proposed amendments are in the right direction; but what is wanted are definite rules, such, for example, that every beam or girder is to be tested to carry a certain load before a competent inspector, that every bressummer has sufficient bearing at each end, and intermediate story-posts or stanchions; that these under no pretence can be removed for extensions or alterations without a certificate from the County Council; that a staircase should be provided to a certain area of floor, and be constructed within brick or fire-resisting walls; that matchboarded partitions and ceilings should be disallowed on business premises, that houses should not be united into one, except under particular conditions of structure being complied with, that chimney-breasts should in no case be cut away without a careful examination of the wall, and other support be given to it. The evidence given of the Battersea and other recent cases is instructive in this matter, and proves the inadequacy of the existing law to discover latent defects of construction, and to provide for the stability or safety of buildings in certain emergencies.

OTHER METHODS OF REMOVING SNOW FROM TOWN STREETS.

A PRACTICABLE method of removing snow from town streets by melting it *in situ* was given in the BUILDING NEWS, January 15; but other methods have been proposed at various times, some of which have been patented, but not yet, as far as we know, brought into use. One of these was that of Pownall, for a method of removal by means of steam or hot air in a close chamber. For this purpose a steam-tight vessel of iron was to be mounted on a carriage to facilitate its removal from place to place. The vessel was to be divided into two or more compartments, the object being that while the process of conversion was proceeding in one the others were being filled with snow. Each of the compartments was to have a perforated lining, with a space between the lining and the sides of the vessel, so that the steam or hot-air might circulate on all sides; or, if found more suitable, pipes for discharging the steam or hot air upon the snow might be employed. Each chamber was to have a steam-tight door or lid, through which the snow was to be filled, capable of being readily secured, so that when shut a tight joint was made all round. A valve at the bottom was provided for the discharge of the water. A steam boiler or hot-air apparatus, capable of generating a sufficient supply, was to have a force-pump and necessary fittings, which were to be mounted on the same carriage as the snow chamber; or these might be on a separate carriage with connections between them for the passage of steam.

In the same year Crane devised improvements for speedily and effectually removing snow from streets by means of a small steam-boiler, mounted on a carriage drawn by one or two horses, for the production of steam at a pressure of 40lb. per square inch, the boiler to be provided with pipes or hose to convey the steam, and apply it as follows:—A gang of men to be employed to bring the snow from distant parts on each side of one of the sewer openings, a perforated iron shield being placed over the opening to keep the snow from actual contact with the grating. The pipe or hose from the boiler was to be inserted beneath the shield, and the steam was made to play upon the snow as fast as it could be conveyed and piled upon the shield. When only one boiler was employed it was to be removed from one opening to another, and the process repeated. In lieu of the shield a trough or hopper could be used, which, though more cumbrous, would more rapidly dispose of the snow, as a large quantity would be acted upon and the waste steam reduced. It was calculated that by this process, with 40lb. steam, and a pipe 1in. diameter, from 15 to 20 tons of snow could be disposed of per hour.

The apparatus of John Farrend Clarke, gas engineer, of Moorgate-street, was to be worked by a blast of air being driven through a tube which was inclosed in another tube containing gas, the air and gas passing on together to a nozzle, where after the mixture of the air and gas, a flame was produced. The other end of the gas tube was connected with the gas main of the street, or with a street lamp service pipe. The tubes were to be flexible, or might be of metal if required. The nozzle, of brass or other metal, was composed of an inner and an outer tube connected to the inner and outer tubes above referred to. When the gas supply was turned on and ignited a strong blast of air was forced through the inner tube by means of a fan or of bellows, the nozzle being directed to any point in the manner of a fire-engine hose, by means of which ice or snow could be quickly melted. The inner or air tube was made a little shorter than the outer or gas tube, so that the air in its passage should produce a draught in the gas tube. Instead of using a nozzle, the gas and air tubes might be made to terminate in a chamber within another chamber, from which double tubes or nozzles might radiate in a fan-like manner.

In the year 1868, Bayley, of Newington-causeway, made improvements in carts and other vehicles for the removal of snow from streets and for melting it and disposing of the water, which consisted of a wrought-iron tank, mounted on wheels, say four in number, with shafts or a pole fitted thereto. At the top of the cart, and constituting the whole of its upper surface except a seat for the driver, was a hopper or receptacle for the snow as it was shovelled up from the streets. The hopper was divided into two parts—an upper and a lower part—by a sieve or perforated metal plate, to prevent the entrance of stones and other solid refuse into the lower chamber. The hinder end of the hopper projected somewhat over the tank, so as to allow the furnace to be placed under the projecting end, and thereby give its heat directly thereto. The heat was applied to the lower chamber of the hopper by means of serpentine flues from the furnace placed in the lower chamber, and having interstices into which the melted snow could enter, so as to utilise the heat to the fullest extent. The passage of the water into the tank was accomplished by means of a large pipe with its mouth projecting into the upper chamber of the hopper, and covered with strong wire gauze. As the snow is fed into the hopper it comes in contact with the sieve, which is itself in contact with the upper surface of the flues, and melts and fills up the lower chamber, and as much of the upper chamber as reaches to the level of the tank pipe. The lower part of the snow is thus always in warm water, and gradually melts and supplies the tank.

It is a feature of both this invention and the next to be mentionened that they are combined with means of watering the roads. In the same year, but later, in which the above-named project was made public, Mr. Sims, of Glasgow, a contractor for public works, proposed to water streets from fixed pipes laid along the edge of the footpath on one, or in some cases both sides of the street, perforated with holes through which, when the water is turned on, jets of water issue with force enough to carry them either half way across or completely across the street. One of the streets of Glasgow—Buchanan-street—was provided with these pipes, and Mr. Sims found that holes of about $\frac{1}{16}$in. diam. and 12in. apart answer very well. It is better to have pipes on both sides, watering to the middle of the street only, as that leaves half the width clear for traffic while the other is being watered. These pipes along the side of the roadway are connected at intervals with the street mains, the watering was then done in sections of the length of the street. Where such a system was adopted for the street watering, it was proposed to use the same means for removing snow when not accompanied by too intense a frost; but, secondly, by travelling furnaces for liquefying the snow when accompanied by hard frost, or when the use of water would be inconvenient. In this case the apparatus was to consist of a furnace surmounted by an open metallic vessel with raised sides, but with openings along the bottom of the sides, and a portion of snow being shovelled into the vessel, and melting therein, ran out as hot water and melted a further portion of snow on its way to the street gullies.

The next proposed process was a communication from abroad to Mr. Hughes, the patent agent, whereby snow was to be removed in the following manner. At convenient distances along the street gas-main, branch, or service-pipes were to be fixed, on which hoses of indiarubber, leather, or other convenient elastic material were to be screwed. For clearing a length of 300ft. and a breadth of 180ft., a hose 180ft. in length was employed, wound upon a hose-cart, one end of the hose having a screw coupling corresponding with the thread upon the branch from the main pipe, and at the other end of the hose a metal tube, about 3ft. long, furnished with a stopcock. The tube serves as a handle to the workman for directing the jet of gas, as well as for increasing and decreasing the gas flame. A perforated cylinder forming the gas-burner is screwed to the mouth of the metal tube, the burner varying in length from 6in. to 2ft. When the hose-pipes are connected, and the gas ignited, the operation begins in the centre of each section, the length of which is about 300ft., and the snow and ice of the half-width are melted, the water running into the side channels. For each section one man is employed for directing the gas, another for the service of the hose and hose-cart, and two men with brooms for preventing the spread of the water and for clearing away obstructions, one side of the street being left free for traffic while the other is being cleared. When arrived at the end of the section the men return and clear up the same side of the street in the opposite direction from the centre of the section. The hose is then unscrewed and the opening in the branch pipe closed, and similar operations are performed on the other side of the street. One man can clear 130 square yards in an hour when the depth of the snowfall does not exceed the average depth.

In the year 1875 two engineers, one Bickerton, of Oldham, and Wormald, of Regent's Park, devised an improved means and apparatus for dissolving snow in town streets, the object of which was to dispose of it on the spot by a machine called a digester, of similar form to that of a tank water cart, having fitted to it a furnace, flues, and smoke-pipe, with the furnace at the hinder end of the digester. The flue passed from the furnace to and was connected with the smoke-pipe, which was placed out of the way of the proper filling of the digester. Fuel bunkers and ash-pan formed part of the construction of the machine, and mud doors were placed in convenient positions for cleaning it out. The fire having been lighted and the snow collected towards the sides of the street, it is shovelled up and thrown into the digester through a part of the top left uncovered in the manner in which mud-carts are filled, through temporary openings.

The snow, falling upon the internal furnace-covering and flues, is dissolved, and the machine passes slowly along the street, being drawn by a horse, the water being discharged on the way into the street channels, and is, therefore, not required to be carted away and deposited at some distant spot as at present, but is collected and dealt with at one and the same time. It may be observed that in all the various plans we have described, including the one which seems to us by far the best, and which we have described more in detail, as before mentioned, the snow must be collected as at present, or very similarly, and that it is chiefly in the matter of carting and finding a suitable place of deposit for it that any of these plans are superior to the present one.

DUDLEY GALLERY ART SOCIETY.

THE annual exhibition of water-colours of this society opened on Monday, at the Egyptian Hall, with a collection of drawings and studies that show, if anything, an improvement on previous displays. The president, Mr. Walter Severn, contributes six pictures, illustrating mountain and lake scenery, Loch Lomond, the Clyde, and Mentone being the chief hunting grounds. His "Heather and Birch Trees, Loch Lomond" (261), and "A Cloudy Day" (124), are examples of broad handling; the mass of pink heather in the first, and the sky and quiet lake, and the smooth, reflecting surface of the water, broken by ripples, in the other work, are characteristic of the painter. The view of Mentone, showing the old town and cemetery (191), is large and luminous in colour. As in previous exhibitions, Miss Rose Barton sends two or three clever studies, two illustrating some pretty stanzas:

> "One little child in an ancient church,
> A fair young life in an old old setting."

Another, "The Bishop's Garden" (60), exhibiting in each a touching sentiment. K. Macaulay contributes also one of her crisply-handled coast and craft studies—No. 18, "A Fishing Town," in which we find a free use of opaque pigment thickly laid on—a mode of execution that can hardly be called water-colour. Helen O'Hara is another lady artist of the sea, her "Early Morning" (22), "A Rising Gale" (66), and "Evening near Giant's Causeway" (282) being exceptionally clever studies of white foamy surf and swelling waves, admirable in the colour and minute handling. R. Wane has shown his ability and power in several coast studies, as in No. 27, No. 189, "On the Manx Coast," a headland, and those from Anglesey. We can also admire Sidney Evans's small sketches of Windsor—32, 36, "The Curfew Tower" and the "High Street"—and his views of Eton. Lexden L. Pocock's "On the Avon" (35) and other landscapes are, it is needless to say, thoughtful and painstaking. A very broad and pleasingly-handled landscape is sent by G. J. Carlisle (42), whose other views of Lyndhurst (267), &c., may be noted. Very charming and delicate in tone and handling are Celia P. Culverwell's "Silver Birches" (147), and some drawings by Josephine Culverwell (48, 265); excellent colour and feeling in David Green's "On the Canal, Dordrecht" (51); "A Fair Wind" (55)—a trawler leaving harbour—and some very clever sketches in Holland, especially the painting of boats and fisher-folk (219), and a series of small studies on the screen, all of coast and life by the sea. Dudley Hardy has three cleverly-drawn figure subjects, "Homewards," "Spring," and "Watching" (56, 331, 332). The old shepherd and his flock, and the emblematically-conceived figure of Spring, are drawn with Mr. Hardy's facility; the latter is French in motive. Albert Stevens is strongly represented. The views near Lake Como (57, 302), and notably his "Sunshine and Cloud," are painted with power and subtle colour. J. M. Donne is welcome, as usual, in his colour and atmosphere studies on the higher Alps—No. 73, and his "Chalk Cliffs, Devon" (225) is equally charming in subtle colour and manipulation. Other examples of broad handling colour are Reginald Jones's Dutch fishing boats, "At Dordrecht" (230) and "Land at Dordt" (231). Hubert Medlycott, whose views on the Thames are well known, sends some Venetian lagoons and fishing boats (88, 114, and 128), and a nice sketch at Limehouse (169). Nora Davidson, a new member, shows careful drawing and nice feeling in "Freshening Breeze," "The Far North" (90), and "A Farewell Visit" (67), all marine subjects; the vessel getting up sail in the latter, and the bow of large vessel, No. 90, are promising of future work in this direction. Centrally hung at end of gallery is a study of a girl clad in loose white drapery against a canvas background, "In Idle Mood," by Reginald Barber, is rather meaningless in motive, albeit the drawing and expression are good. Miss Margaret Bernard (121) sends a haymaking sketch of much beauty in drawing and colour; Miss H. Skidmore's "A Glow of Eventide," a charming silhouette effect of landscape; Mrs. Mary Stevens two nice studies of hayfield wild flowers, full of clever technique (118, 122); Mrs. Hartshorne, "Edward the Confessor's Tomb" (276); Miss Mildred Butler, two or three inimitable studies. "A Wood" (153) is admirable in feeling, and the two small sketches of cows reposing (153), and "A Cosy Corner" (317), are also, we need not say, equal to this lady's skill. Harry Goodwin's views of "Lucerne by Twilight" (162) and at sunset (181), with its tile roofs and mirror-like lake, and Claude Hayes' "Yorkshire Hillside" (173), are worth attention. R. A. K. Marshall has a view of the "River Usk, Monmouthshire," full of sunlight (205) and minute delicacy of touch; N. E. Green, a drawing of "West Gate, Winchester" (206) of merit; Heley Smith, a study of girl leaning on a rail overlooking the sea, excellent in drawing and fresh colour—"After the Boats are Gone" (281). Only one study, rather a sketch for a picture, represents historical incident, and that is J. A. Fitzgerald's "The Fall of Wolsey," where the cardinal, after leaving the king, is grossly insulted by mocking courtiers and a man-at-arms. Other works of mark are G. E. S. Walters (311); "British Ironclads" (280), by the President and W. D. Severn, Jun.; T. A. de Moleyns (340); Powell May (83).

DOMESTIC WORK SEEN ON PAST A.A. EXCURSIONS.[*]

(*Concluded from p.* 258.)

AT Stokesay and Somershall Herbert, where the oak has been left untouched, the wood has become delightful in colour, for the most part a silvery grey. Where the tar has been allowed to perish or soak into the wood, as at Severn End, the effect, of course, is less startling. Many a so-called "Magpie" house is quite spoiled architecturally by the absence of repose due to the periodical coatings of pitch with which over-zealous owners bedaub the framings. The original way of filling in these timberings probably was the "dab and wattle" with two or more sheetings of interwoven oak laths and plaster to exclude the wind and weather. Brick filling is, of course, not uncommon, and it is eminently picturesque, giving touches of colour and irregularity, though, from a constructional point of view, it is very heavy and difficult to render satisfactory. Where half-timber building is almost exclusively employed, as at Pitchford and Salwarpe Halls, you will notice that the effect of excessive verticality of form due to the countless number of upright timberings, is overcome by long, low lines of roofs and general proportions, which again are made to prominently dominate by the oversailing of the upper stages. This also is observable in the narrow strips of frontages which occur in contemporary street buildings. The timberings, too, in the best specimens are simple in form and massive in scale, often being allowed to follow the natural shapes of the limbs of the trees from which they were cut. In those smug and conceitedly spruce, high set-up, match-like and meaningless imitations which have brought half-timber house-building into contempt among people of artistic appreciation, the spirit of the style has really never been apprehended at all, and although good taste is not realised in attempting to make a new building, erected for new requirements and modern ideas of comfort, look like an old one, it is certain that the traditional elements of the old work taken as a model must be understood as an inspiring influence in any successful work. The difficulty of obtaining nowadays sound-seasoned timber of ample scantlings, and the general requirements of large windows and tall pitches for our living-rooms, furnish good reasons for not adopting this mode of construction generally for present use, to say nothing about the enhanced risk of fire. For gables and minor portions of a house façade in country dwellings, half-timber is still used with great advantage and a charmingly homely effect. Clients have been heard to remark, I am told, however, that draughty upper floors, windy corridors, and windows perched up so high that no one may look out unless aided by a ladder, are not infrequently the result of an architect's first care having been devoted to the cultivation of the picturesque in half-timber. Turning next to the stone houses under review, we naturally find our examples more numerous, much larger, and of greater variety in date and style. For the practical architect those of English Renaissance period furnish by far the greater points of interest and suggestiveness. The feudal strongholds of Rochester and Ludlow, and such like masses of masonry, consume the antiquary with delight; but to the builder of modern houses the work of Sir Thomas Tresham in Northamptonshire; Burford Priory and Water Eaton in Oxfordshire, and Moreton Corbet in Shropshire, are much more to the point, as also are such examples as Brympton, near Yeovil, with its font, by Inigo Jones; Asthall Manor, near Witney, and Woollas Hall in Somerset. The Edwardian work at Haddon, the Tower of Stokesay, Leeds Castle, Kent, and Penshurst in the same county, and South Wingfield Manor in Derbyshire all have their individual charms, particularly the latter, with its elegant and refined Late Gothic detail. So, too, the ponderously heavy style has its lessons in contrast to such as these, as exemplified at Blenheim, parts of Bolsover Castle, Burleigh-on-the-Hill, Northants; Houghton Hall, for Sir Richard Walpole, in Norfolk, by Colin Campbell; Sudbury Hall, in Derbyshire, a brick house; and Ickworth, another in Suffolk. They teach us broadly what to avoid in new work, while furnishing much that is historically interesting as a reflex of the times they represent, and as records of the men who built them. The Mediæval Domestic buildings which we have seen, commencing with the Norman Hall at Oakham, in Rutland, the older part of Lacock Abbey, Meare Hall and Fish House near Glastonbury, the Vicar's Close, and the Palace at Wells and Lyddington Bede House, in Rutland, on the other hand, each, in turn, exemplify far more that is worthy of our study and attention, even though the failure of the Gothic Revival has, perhaps, demonstrated beyond dispute that a rigid adaptation of the work of the Middle Ages is now an impossibility. In point of general forms, however, and in the same principal scheme of building, the style may, with advantage, still be our guide, even though we must needs considerably modify items of detail. Thus the dominating necessity of high roofs and a good skyline, the advantage of strongly-contrasted proportions of solid and void, and the homelike quality of simple picturesqueness, are all characteristics essential to the suitable treatment of an Englishman's house, be it a cottage or a mansion. The Renaissance, as illustrated in its earlier stages in many of the old specimens which we have seen, successfully realises this idea, and therein we shall do well to follow their lead. They combine all the freedom of the Gothic style, coupled with a sufficient amount of the horizontal method and rectilinear forms suggested by Classical types, while, most important of all, their internal plan and arrangements are expressed externally in their elevations. I do not lay claim to any originality in this statement; indeed, the best of our contemporary work has for some time demonstrated the principle. That its more general use and commonsense development may be rightly extended is ample reason for thus briefly drawing attention to the subject. Our old brick-built houses illustrate precisely the same notion; and while bound to admit that Compton Wynyate is, perhaps, the most delightful house I have ever seen both for colour and suitability of composition as well as detail, I fancy it is to later models that we must rather turn for inspiration. This house, erected in 1525—the same year as dates Hengrave Hall, Suffolk—is more decidedly Tudor in style: a name which, in the 19th century, has had to answer for numberless atrocities. The houses to which I refer are represented by Woollas Hall (1611) and Norton Manor in Worcestershire; Barrington Court, Somerset; Water Eaton and Burford Priory in Oxfordshire; Weekley Hospital and Exton Hall in Northamptonshire; Charlecote in Warwickshire; Brympton, near Yeovil; Rushbrook, Kentwell, and Coldham Halls in Suffolk; the brick part of Severn End, Worcester; St. Catherine's, near Bath; and Plaish Hall in Shropshire. Larger houses such as Moreton Corbet, Montacute, Blickling, Westwood House, near Droitwich, Kirby, Corsham, Court, Rushton, and perhaps Hardwick, deserve the closest study, and for new works of corresponding consequence might possibly be taken as guides, for they are all masterpieces. The craving for the dignity of balance and grandiose effect led their designers, however, into some incongruities, such as a series of sham windows; or big windows cut up inside regardless of their exteriors; or over-fenestration, as at Hardwick, and perhaps useless ones, like the portals at Cobham. Much of their detail, too, lacks refinement, and, at least, in some the construction is radically bad. Take, for example, the masonry of Moreton Corbet in the main front, and notice how clumsily the jointing of the stonework is managed; in some parts the transome stones are run through the window architraves, and in others merely joggled in most awkwardly. The members of the cornices do not mitre properly, and, in some of the breaks, fail to carry on at all. This want of refinement is illustrated by the two details which I shall show you, one of a doorway from this building, and another of a similar doorway from Kirby, which is exquisite in every way. A very similar doorway you will call to mind as having seen at Ashbourne, in Derbyshire, at the Grammar School. The masonry, too, of Burford Priory is also very poor, indeed it could hardly be worse, especially in the unique and beautiful chapel there of somewhat later date. The house itself is probably partly an older building refaced, and, strange as it may seem, some of the stone mouldings round the bay windows are nailed on. This is worse than mason's joints in joinery so common with some fashionable architects now. St. John's College, Oxford, commenced in 1631, and the contemporary Market House at Peterborough, seem perfect examples of the style I so much admire. In the old houses a great feature is nearly always made of the lead stack-pipes and water-heads; but you will observe that for the most part they are used in conjunction with parapets, and not eaves. To employ large massive down-pipes and wrought heads implies a monumental treatment, but quite lately I saw a new mansion recently erected by a well-known London architect, to which most costly lead-work of this character has been applied, taking water from the commonest half-round eaves guttering procurable. Nothing could be more incongruous! There is a wonderful variety of lead-work at Haddon Hall, Woollas, Blickling, and most of the places I have named; but at Canons' Ashby you will find, perhaps, the richest and most beautiful lead heads and spouting to be seen in England. Before passing on to the plaster houses in our list, I should like briefly to name a point observable in some of the brick ones where terracotta was used, such as East Barsham Hall, Norfolk, and Oxburgh Hall in the same county, or Bardwell Manor and West Stowe Hall in Suffolk. There are other specimens, of course, about the country, like the house at Canterbury, and Layer Marney, but these have not been visited on our A. A. excursions. In them all the terracotta is not too much in evidence, but is sparingly used in a subordinate manner; whereas, in our latest editions of this useful material, it has been very much overdone, and the buildings look "as hard as iron." The big heraldic beasts modelled in the clay at East Barsham deserve, too, to be named as specimens of terracotta largely treated, but you will observe how quiet the effect is because the spandrels are inclosed in brickwork. Value is given to the ornament by the contrast of adjoining plainness, for the old builders knew the advantage of concentration and sizes. We, on the other hand, produce our ornament by machinery, and spread it over the entire surface, thinking it looks clever. It may be fine, but it is not good. Our details also now are getting too small in their parts, and ineffective from want of scale. The plaster-fronted houses which we have seen are, for the most part, very plain ones as compared with such specimens as that in the Butter-market at Ipswich, but they are none the less suggestive. We may divide them into two kinds—viz., first, those with rough-cast or plastered stone walls flush with stone dressings, such as Witney Grammar School and the old street houses at Lacock, Corsham, and Burford; secondly, those which are plastered over timber framings, such as the old Georgian Inn at Bury

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[*] By Maurice B. Adams, F.R.I.B.A. A paper read before the Architectural Association on Friday last, Feb. 5, 1892.

St. Edmund's, the house in the High-street at Oxford, the Cake-shop at Banbury, Bardwell Manor, Suffolk, and the old houses at Maidstone. Most of these we shall see to-night. For my part, I think that there is a capital opportunity open to architects and sculptors for the development of plaster-work in the external treatment of Domestic building. Nothing could be more durable if properly used than stucco duro, say, for the frieze of a house front, or an upper stage under a well projecting eaves. If our younger sculptors would turn their attention to modelling in plaster for architectural purposes, a fine field for the lasting display of great artistic ability would be found, and instead of figure-work in plaster now being prohibitive in price, architects would be enabled to turn to a school of capable and willing artists to co-operate with them in producing work which might compare with that of any period, and reflect the skill which we know exists in a latent form among many who are struggling to become monumental sculptors, but are without patrons. Mr. T. E. Collcutt years ago in Fleet-street showed how plaster-work might be treated with scratched ornament, and the late Mr. F. P. Cockerell did a house at Datchet with plaster panels. Mr. Norman Shaw, foremost in this as in many other matters, has shown us what to do, and so has Mr. T. G. Jackson, A.R.A., as in his High School at Oxford, and Military College outside that city. More, however, remains to be done, and the old houses above-named have inspired others besides ourselves. In respect to the garden-craft details which we have seen at Haddon, Rockingham Castle, Drayton House, Claverton, and St. Catherine's near Bath, Hardwick, and Blickling, as well as Montacute, very much might be said did time allow. The importance of these minor matters of Domestic architecture renders them worthy of more attention than they have lately received, and they certainly should be designed by the architect, and not left to specialists and landscape gardeners. Architects, however, must study and master this branch of their artistic work, if they would render themselves worthy of being intrusted with it. My two last divisions, including Interiors and Furniture, for lack of time, must be even more briefly alluded to than our previous ones. The houses which are remarkable for interior plaster-work among those we have seen are South Wraxhall in Wiltshire, the Reindeer Inn at Banbury, Blickling Hall Library, Lytes Carey in Somerset, Hardwick Hall and Haddon, and the domed drawing-room at Canons' Ashby. The ponderous vulgarity of the Rococo plaster-work at Houghton Hall, Norfolk, and other like specimens, need not detain us, wonderful as it is in size and voluptuousness. Most of the houses visited have been more or less modernised inside; but I can show you some which have not, such as Plaish Hall, Broughton Castle, Haddon, Bolsover, Wollaton, Hardwick, and Pitchford. The chimneypieces from Ightham Mote, Benthall Hall, and Bolsover will interest you. When Mr. Robinson's camera studies have all been seen, I know you will be pleased, but I fear my task attempted too much for one evening. I must leave untouched the furniture we have seen, simply recalling, in conclusion, many a fine example, such as those at Oxburgh Hall, Charlecote, Hardwick, Cobham, Ightham (now dismantled), Brigstock Manor, Rushbrook, Coldham Hall, and other places.

PRICES.*—XXX.

(All Prices Include Profit.)

JOINER (*continued*).

Hardwood doors: Wainscot or American walnut; segment headed, ordinary sizes, and measured square—

		£	s.	d.
2in. four-panel, top panels sashed, bottom panels square.	per ft. sup.	0	4	6
Ditto ditto ditto in small squares ...	ditto	0	5	0
Ditto ditto raised panels one side ...	ditto	0	5	6
Hung folding add	ditto	0	0	2
2½in. ditto square framed	ditto	0	4	6
Ditto ditto bead butt	ditto	0	4	9
Ditto ditto ditto flush	ditto	0	4	11
Ditto ditto moulded one side	ditto	0	4	10
Ditto ditto ditto two sides	ditto	0	5	2
Ditto ditto ditto and one side bolection moulded	ditto	0	5	5
Ditto ditto bead butt and moulded.	ditto	0	5	1
Ditto ditto flush and ditto	ditto	0	5	3
2½in. four-panel, stop-chamfered one side and plain stops ...	per ft. sup.	0	5	0
Ditto ditto ditto two sides	ditto	0	5	6
Ditto ditto top panels out for glass, not including loose beads	ditto	0	4	10
Ditto ditto top panels sashed	ditto	0	5	6
Ditto ditto ditto in small squares ...	ditto	0	6	0
Ditto ditto raised panels one side ...	ditto	0	5	6
Ditto ditto ditto two sides	ditto	0	6	6
Ditto ditto hung folding add	ditto	0	0	2
1½in. six-panel, square framed	ditto	0	3	8
Ditto ditto bead butt	ditto	0	3	10
Ditto ditto ditto flush	ditto	0	4	0
Ditto ditto moulded one side	ditto	0	4	0
Ditto ditto ditto two sides	ditto	0	4	4
Ditto ditto ditto and one side bolection moulded	ditto	0	4	6
Ditto ditto bead butt and moulded .	ditto	0	4	4
Ditto ditto ditto flush and ditto	ditto	0	4	6
Ditto ditto stop-chamfered one side and plain stops	ditto	0	4	2
Ditto ditto ditto two sides	ditto	0	4	8
Ditto ditto top panels out for glass, and not including loose beads	ditto	0	3	11
Ditto ditto top panels sashed	ditto	0	4	6
Ditto ditto ditto in small squares ...	ditto	0	5	0
Ditto ditto raised panels one side ..	ditto	0	4	6
Ditto ditto hung folding add	ditto	0	0	1½
2in. six-panel, square framed	ditto	0	4	6
Ditto ditto bead butt	ditto	0	4	8
Ditto ditto ditto flush	ditto	0	4	10
Ditto ditto moulded one side	ditto	0	4	10
Ditto ditto ditto two sides	ditto	0	5	2
Ditto ditto bead butt and moulded.	ditto	0	5	0
Ditto ditto ditto flush and ditto	ditto	0	5	2
Ditto ditto moulded one side and bolection the other ..	ditto	0	5	4
Ditto ditto stop-chamfered one side and plain stops	ditto	0	5	0
Ditto ditto ditto two sides	ditto	0	5	6
Ditto ditto top panels out for glass, not including loose beads	ditto	0	4	9
Ditto ditto top panels sashed	ditto	0	5	2
Ditto ditto ditto in small squares ...	ditto	0	5	8
Ditto ditto raised panels one side ...	ditto	0	5	6
Ditto ditto ditto two sides	ditto	0	6	6
Ditto ditto hung folding add	ditto	0	0	2
2½in. ditto square framed	ditto	0	5	0
Ditto ditto bead butt	ditto	0	5	3
Ditto ditto ditto flush	ditto	0	5	5
Ditto ditto moulded one side	ditto	0	5	4
Ditto ditto ditto two sides	ditto	0	5	8
Ditto ditto ditto and one side bolection moulded	ditto	0	5	10
Ditto ditto bead butt and moulded .	ditto	0	5	7
Ditto ditto ditto flush and ditto	ditto	0	5	9
Ditto ditto stop-chamfered one side and plain stops	ditto	0	5	6
Ditto ditto ditto two sides	ditto	0	6	0
Ditto ditto top panels out for glass, not including loose beads	ditto	0	5	3
Ditto ditto top panels sashed	ditto	0	5	10
Ditto ditto ditto in small squares ...	ditto	0	6	6
Ditto ditto raised panels one side ...	ditto	0	6	0
Ditto ditto ditto two sides	ditto	0	7	0
Ditto ditto hung folding add	ditto	0	0	2

Hardwood doors; semi-headed; pitch pine—

		£	s.	d.
1¼in. two-panel, square framed	ditto	0	1	4
Ditto ditto bead butt	ditto	0	1	6
Ditto ditto ditto flush	ditto	0	1	8
Ditto ditto moulded one side	ditto	0	1	7
Ditto ditto ditto two sides	ditto	0	1	10
Ditto ditto ditto and bolection moulded on one side ...	ditto	0	2	0
Ditto ditto bead butt and moulded.	ditto	0	1	9
Ditto ditto ditto flush and ditto	ditto	0	1	11
Ditto ditto stop-chamfered one side and plain stops	ditto	0	1	11
Ditto ditto ditto two sides	ditto	0	2	6
1½in. ditto square framed	ditto	0	1	6
Ditto ditto bead butt	ditto	0	1	8
Ditto ditto ditto flush	ditto	0	1	10
Ditto ditto moulded one side	ditto	0	1	9
Ditto ditto ditto two sides	ditto	0	2	0
Ditto ditto ditto and one side bolection moulded	ditto	0	2	2
Ditto ditto stop-chamfered one side, and plain stops	ditto	0	2	1
Ditto ditto ditto two sides	ditto	0	2	8
Ditto ditto raised panels one side ...	ditto	0	2	6
Ditto ditto top panels out for glass, not including loose beads	ditto	0	1	9
Ditto ditto top panels sashed	ditto	0	2	0
Ditto ditto in small squares	ditto	0	2	3
Add if hung folding	ditto	0	0	1
2in. ditto square framed	ditto	0	1	8
Ditto ditto bead butt	ditto	0	1	10
Ditto ditto flush	ditto	0	2	0
Ditto ditto moulded one side	ditto	0	1	11
Ditto ditto ditto two sides	ditto	0	2	2
Ditto ditto ditto and bolection moulded on one side ..	ditto	0	2	4
Ditto ditto stop-chamfered one side and plain stops	ditto	0	2	3
Ditto ditto ditto two sides	ditto	0	2	10
Ditto ditto raised panels one side ...	ditto	0	2	8
Ditto ditto ditto two sides	ditto	0	3	8
Ditto ditto top panels out for glass, not including loose beads	ditto	0	1	11
Ditto ditto top panels sashed	ditto	0	2	2
Ditto ditto ditto in small squares ...	ditto	0	2	5
Add if hung folding	ditto	0	0	1
1¼in. four panel, square framed	ditto	0	1	5
Ditto ditto bead butt	ditto	0	1	7
Ditto ditto ditto flush	ditto	0	1	9
Ditto ditto moulded one side	ditto	0	1	8
Ditto ditto ditto two sides	ditto	0	1	11
Ditto ditto ditto and one side bolection moulded	ditto	0	2	1
Ditto four-panel bead butt and moulded	ditto	0	1	10
Ditto ditto ditto flush	ditto	0	2	0
Ditto ditto stop-chamfered one side, and plain stops	ditto	0	2	0
Ditto ditto ditto two sides	ditto	0	2	6
1½in. ditto square framed	ditto	0	1	6
Ditto ditto bead butt	ditto	0	1	8
1½in. four-panel, bead flush	per ft. sup.	0	1	10
Ditto ditto moulded on one side	ditto	0	1	9
Ditto ditto ditto two sides	ditto	0	2	0
Ditto ditto ditto and one side bolection moulded	ditto	0	2	2
Ditto ditto stop-chamfered one side and plain stops	ditto	0	2	0
Ditto ditto ditto two sides	ditto	0	2	6
Ditto ditto raised panels one side ...	ditto	0	2	8
Ditto ditto top panels out for glass, and not including loose beads	ditto	0	1	9
Ditto ditto top panel sashed	ditto	0	2	0
Ditto ditto in small squares..	ditto	0	2	3
Add if folding	ditto	0	0	1
2in. ditto square framed	ditto	0	1	8
Ditto ditto bead butt	ditto	0	1	10
Ditto ditto ditto flush	ditto	0	2	0
Ditto ditto moulded one side	ditto	0	1	11
Ditto ditto ditto two sides	ditto	0	2	2
Ditto ditto ditto and one side bolection moulded	ditto	0	2	4
Ditto ditto stop-chamfered one side and plain stops	ditto	0	2	2
Ditto ditto ditto two sides	ditto	0	2	8
Ditto ditto raised panels one side ...	ditto	0	2	8
Ditto ditto ditto two sides	ditto	0	3	8
Ditto ditto top panels out for glass, not including loose beads	ditto	0	1	11
Ditto ditto top panels sashed	ditto	0	2	2
Ditto ditto ditto in small squares ...	ditto	0	2	5
Add if hung folding	ditto	0	0	1
2½in. ditto square framed	ditto	0	1	10
Ditto ditto bead butt	ditto	0	2	0
Ditto ditto ditto flush	ditto	0	2	2
Ditto ditto moulded one side	ditto	0	2	1
Ditto ditto ditto two sides	ditto	0	2	4
Ditto ditto ditto and one side bolection moulded	ditto	0	2	6
Ditto ditto stop-chamfered on one side and plain stops...	ditto	0	2	4
Ditto ditto ditto two sides	ditto	0	2	10
Ditto ditto raised panels one side ..	ditto	0	2	10
Ditto ditto ditto two sides	ditto	0	3	10
Ditto ditto top panels out for glass, not including loose beads	ditto	0	2	1
Ditto ditto top panel sashed	ditto	0	2	4
Ditto ditto ditto in small squares ...	ditto	0	2	7
Add if hung folding	ditto	0	0	2

Hardwood doors: Semi-headed Honduras mahogany—

		£	s.	d.
1¼in. two-panel, square framed	ditto	0	3	0
Ditto ditto bead butt	ditto	0	3	2
Ditto ditto ditto flush	ditto	0	3	4
Ditto ditto moulded one side	ditto	0	3	3
Ditto ditto ditto two sides	ditto	0	3	6
Ditto ditto ditto and bolection moulded on one side	ditto	0	3	8
Ditto ditto stop-chamfered one side and plain stops	ditto	0	3	7
Ditto ditto ditto two sides	ditto	0	4	2
1½in. ditto square-framed	ditto	0	3	3
Ditto ditto bead butt	ditto	0	3	5
Ditto ditto ditto flush	ditto	0	3	7
Ditto ditto moulded on one side	ditto	0	3	6
Ditto ditto ditto two sides	ditto	0	3	9
Ditto ditto ditto and one side bolection moulded	ditto	0	3	11
Ditto ditto stop-chamfered one side and plain stops	ditto	0	3	10
Ditto ditto ditto two sides	ditto	0	4	5
Ditto ditto raised panel one side	ditto	0	4	2
Ditto ditto top panel out for glass, not including loose beads	ditto	0	3	6
Ditto ditto top panel sashed	ditto	0	4	0
Ditto ditto ditto in small squares ...	ditto	0	4	4
Ditto ditto add if hung folding	ditto	0	0	1½
2in. ditto square framed	ditto	0	3	9
Ditto ditto bead butt	ditto	0	3	11
Ditto ditto ditto flush	ditto	0	4	1
Ditto ditto moulded one side	ditto	0	4	0
Ditto ditto ditto two sides	ditto	0	4	3
Ditto ditto ditto and one side bolection	ditto	0	4	5
Ditto ditto stop-chamfered one side and plain stops	ditto	0	4	4
Ditto ditto ditto two sides	ditto	0	4	11
Ditto ditto raised panels one side ...	ditto	0	4	9
Ditto ditto ditto two sides	ditto	0	5	9
Ditto ditto top panel out for glass, not including loose beads	ditto	0	4	0
Ditto ditto top panel sashed	ditto	0	4	6
Ditto ditto ditto in small squares ..	ditto	0	4	9
Ditto ditto add if hung folding	ditto	0	0	1½
1¼in. four-panel, square framed	ditto	0	3	0
Ditto ditto ditto bead butt	ditto	0	3	2
Ditto ditto ditto flush	ditto	0	3	4
Ditto ditto moulded one side	ditto	0	3	3
Ditto ditto ditto two sides	ditto	0	3	6
Ditto ditto ditto and one side bolection moulded	ditto	0	3	8
Ditto ditto bead butt and moulded..	ditto	0	3	5
Ditto ditto ditto flush and ditto	ditto	0	3	7
Ditto ditto stop-chamfered one side and plain stops	ditto	0	3	7
Ditto ditto ditto two sides	ditto	0	4	2
1½in. ditto square framed	ditto	0	3	9
Ditto ditto bead butt	ditto	0	3	11
Ditto ditto ditto flush	ditto	0	4	1
1½in. ditto moulded one side	ditto	0	4	0
Ditto ditto ditto two sides	ditto	0	4	3
Ditto ditto ditto and one side bolection moulded	ditto	0	4	5
Ditto ditto top panels out for glass, not including loose beads	ditto	0	4	8
Ditto ditto top panels sashed	ditto	0	4	9
Ditto ditto in small squares	ditto	0	5	0
Ditto ditto stop-chamfered one side, and plain stops	ditto	0	4	4
Ditto ditto ditto two sides	ditto	0	4	11
Ditto ditto raised panels one side ...	ditto	0	4	9
Ditto ditto two sides	ditto	0	5	9
Dtito ditto add if hung folding	ditto	0	0	1½
2in. ditto square framed	ditto	0	4	8
Ditto ditto bead butt	ditto	0	4	5
Ditto ditto ditto flush	ditto	0	4	7
Ditto ditto moulded one side	ditto	0	4	6

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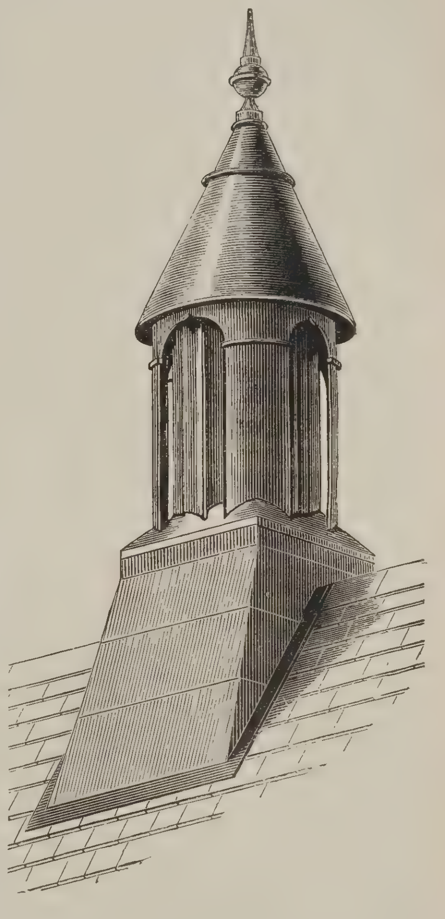
		£	s.	d.
2in. four-panel, moulded two sides...	per ft. sup.	0	4	9
Ditto ditto ditto and one side bolection moulded	ditto	0	4	11
Ditto ditto top panels out for glass, not including loose beads	ditto	0	4	6
Ditto ditto top panels sashed	ditto	0	5	0
Ditto ditto ditto in small squares ...	ditto	0	5	3
Ditto ditto stop-chamfered one side including plain stops.	ditto	0	4	10
Ditto ditto ditto two sides	ditto	0	5	5
Ditto ditto raised panels one side ..	ditto	0	5	3
Ditto ditto ditto two sides	ditto	0	6	3
Ditto ditto add if hung folding	ditto	0	0	2
2½in. ditto, square framed	ditto	0	5	0
Ditto ditto bead butt	ditto	0	5	3
Ditto ditto ditto flush	ditto	0	5	5
Ditto ditto moulded one side	ditto	0	5	4
Ditto ditto ditto two sides	ditto	0	5	8
Ditto ditto ditto and one side bolection moulded	ditto	0	5	10
Ditto ditto stop-chamfered one side including plain stops.	ditto	0	5	8
Ditto ditto ditto two sides	ditto	0	6	4
Ditto ditto top panels out for glass, not including loose beads	ditto	0	5	3
Ditto ditto top panels sashed	ditto	0	5	9
Ditto ditto ditto in small squares ...	ditto	0	6	0
Ditto ditto raised panels one side ...	ditto	0	6	0
Ditto ditto ditto two sides	ditto	0	7	0
Ditto ditto hung folding	ditto	0	0	2
1¼in. six-panel, square framed	ditto	0	4	0
Ditto ditto bead butt	ditto	0	4	2
Ditto ditto ditto flush	ditto	0	4	4
Ditto ditto moulded one side	ditto	0	4	3
Ditto ditto ditto two sides	ditto	0	4	6
Ditto ditto ditto and one side bolection moulded	ditto	0	4	8
Ditto ditto stop-chamfered one side including plain stops.	ditto	0	4	8
Ditto ditto ditto two sides	ditto	0	5	4
Ditto ditto raised panels one side ...	ditto	0	5	0
Ditto ditto ditto two sides	ditto	0	6	0
Ditto ditto top panels out for glass.	ditto	0	4	4
Ditto ditto top panels sashed	ditto	0	5	0
Ditto ditto small squares	ditto	0	5	6
Ditto add if hung folding	ditto	0	0	1½
2in. ditto square framed	ditto	0	4	9
Ditto ditto bead butt and square ...	ditto	0	5	0
Ditto ditto ditto flush	ditto	0	5	2
Ditto ditto moulded one side	ditto	0	5	1
Ditto ditto ditto two sides	ditto	0	5	5
Ditto ditto bead butt and moulded .	ditto	0	5	7
Ditto ditto ditto flush	ditto	0	5	9
Ditto ditto ditto and one side bolection moulded	ditto	0	5	7
Ditto ditto stop-chamfered one side and plain stops	ditto	0	5	5
Ditto ditto ditto two sides	ditto	0	6	1
Ditto ditto top panels out for glass, not including loose beads	ditto	0	5	3
Ditto ditto top panels sashed	ditto	0	5	0
Ditto ditto ditto in small squares ...	ditto	0	5	6
Ditto ditto raised panels one side ...	ditto	0	5	9
Ditto ditto ditto two sides	ditto	0	6	9
Ditto add if hung folding	ditto	0	0	2
2½in. ditto, square framed	ditto	0	5	6
Ditto ditto bead butt and square ...	ditto	0	5	9
Ditto ditto ditto flush	ditto	0	6	0
Ditto ditto moulded one side	ditto	0	5	10
Ditto ditto ditto two sides	ditto	0	6	2
Ditto ditto ditto and bolection moulded one side	ditto	0	6	5
Ditto ditto bead butt and moulded .	ditto	0	6	1
Ditto ditto ditto flush	ditto	0	6	4
Ditto ditto stop-chamfered one side and plain stops	ditto	0	6	2
Ditto ditto ditto two sides	ditto	0	6	9
Ditto ditto top panels out for glass, not including loose beads	ditto	0	5	9
Ditto ditto top panels sashed	ditto	0	6	3
Ditto ditto small squares	ditto	0	6	10
Ditto ditto raised panels one side ...	ditto	0	6	6
Ditto ditto ditto two sides	ditto	0	7	6
Ditto ditto hung folding extra	ditto	0	0	2

Hardwood doors: Spanish Mahogany; semi-headed—

		£	s.	d.
1¼in. two panel square framed	per ft. sup.	0	4	4
Ditto ditto bead butt	ditto	0	4	7
Ditto ditto ditto bead flush	ditto	0	4	9
Ditto ditto moulded one side	ditto	0	4	4
Ditto ditto ditto two sides	ditto	0	4	8
Ditto ditto ditto and bolection moulded the other ...	ditto	0	4	10
Ditto ditto stop-chamfered on one side, and plain stops...	ditto	0	4	10
Ditto ditto ditto two sides	ditto	0	5	4
1½in. ditto square framed	ditto	0	4	9
Ditto ditto bead butt	ditto	0	5	0
Ditto ditto ditto flush	ditto	0	5	2
Ditto ditto moulded one side	ditto	0	5	1
Ditto ditto ditto two sides	ditto	0	5	5
Ditto ditto ditto and bolection moulded on the other	ditto	0	5	7
Ditto ditto stop-chamfered one side and plain stops	ditto	0	5	3
Ditto ditto ditto two sides	ditto	0	5	9
Ditto ditto raised panel one side ...	ditto	0	5	6
Ditto ditto ditto two sides	ditto	0	6	3
Ditto ditto top panel out for glass, not including loose beads	ditto	0	5	0
Ditto ditto top panel sashed	ditto	0	5	6
Ditto ditto ditto in small squares ...	ditto	0	6	0
Ditto ditto add if hung folding	ditto	0	0	2
2in. ditto square framed	ditto	0	5	6
Ditto ditto bead butt	ditto	0	5	9
Ditto ditto ditto flush	ditto	0	5	11
Ditto ditto moulded one side	ditto	0	5	10
Ditto ditto ditto two sides	ditto	0	6	2
Ditto ditto ditto and bolection moulded the other	ditto	0	6	4
Ditto ditto top panel out for glass, not including loose beads	ditto	0	5	9
Ditto ditto top panel sashed	ditto	0	6	3
Ditto ditto in small squares	ditto	0	6	9
Ditto ditto stop-chamfered one side and plain stops	ditto	0	6	0
2in. two-panel, stop-chamfered two sides	per ft. sup.	0	6	6
Ditto ditto raised panels one side ...	ditto	0	6	3
Ditto ditto ditto two sides	ditto	0	7	0
Ditto ditto add if hung folding	ditto	0	0	2
2½in. ditto square framed	ditto	0	6	6
Ditto ditto bead butt	ditto	0	6	9
Ditto ditto ditto flush	ditto	0	6	11
Ditto ditto moulded one side	ditto	0	6	11
Ditto ditto ditto two sides	ditto	0	7	4
Ditto ditto ditto and one side bolection moulded	ditto	0	7	6
Ditto ditto top panel out for glass, not including loose beads	ditto	0	6	10
Ditto ditto top panel sashed	ditto	0	7	0
Ditto ditto in small squares	ditto	0	7	6
Ditto ditto stop-chamfered one side, including plain stops	ditto	0	7	3
Ditto ditto ditto two sides	ditto	0	8	0
Ditto ditto raised panels one side ...	ditto	0	7	6
Ditto ditto ditto two sides	ditto	0	8	6
Ditto ditto hung folding add	ditto	0	0	2
1¼in. four-panels, square framed	ditto	0	4	4
Ditto ditto bead butt	ditto	0	4	7
Ditto ditto ditto flush	ditto	0	4	9
Ditto ditto moulded one side	ditto	0	4	8
Ditto ditto ditto two sides	ditto	0	5	0
Ditto ditto ditto and bolection moulded the other	ditto	0	5	2
Ditto ditto top panels out for glass, not including loose beads	ditto	0	4	7
Ditto ditto top panels sashed	ditto	0	5	0
Ditto ditto ditto in small squares ...	ditto	0	5	6
Ditto ditto stop-chamfered one side, and plain stops	ditto	0	5	0
Ditto ditto ditto two sides	ditto	0	5	8
Ditto ditto raised panels one side ...	ditto	0	5	4
Ditto ditto ditto two sides	ditto	0	6	4
Ditto ditto hung folding add	ditto	0	0	1½
1½in. ditto square framed	ditto	0	4	9
Ditto ditto bead butt	ditto	0	5	0
Ditto ditto ditto flush	ditto	0	5	2
Ditto ditto moulded one side	ditto	0	5	1
Ditto ditto ditto two sides	ditto	0	5	5
Ditto ditto ditto and one side bolection moulded	ditto	0	5	7
Ditto ditto top panels out for glass, not including loose beads	ditto	0	5	0
Ditto ditto top panels sashed	ditto	0	5	6
Ditto ditto ditto in small squares ...	ditto	0	6	0
Ditto ditto stop-chamfered on one side, and plain stops	ditto	0	5	4
Ditto ditto ditto two sides	ditto	0	6	0
Ditto ditto raised panel one side	ditto	0	5	9
Ditto ditto ditto two sides	ditto	0	6	9
Ditto ditto hung folding extra	ditto	0	0	1½
2in. four panels, square framed	ditto	0	5	6
Ditto ditto bead butt and square ...	ditto	0	5	9
Ditto ditto ditto flush	ditto	0	5	11
Ditto ditto moulded on one side	ditto	0	5	10
Ditto ditto ditto two sides	ditto	0	6	2
Ditto ditto ditto and one side bolection moulded	ditto	0	6	4
Ditto ditto top panels out for glass, not including loose beads	ditto	0	5	9
Ditto ditto top panels sashed	ditto	0	6	3
Ditto ditto ditto in small squares ...	ditto	0	6	9
Ditto ditto stop-chamfered one side, including plain stops	ditto	0	6	2
Ditto ditto ditto two sides	ditto	0	6	10
Ditto ditto raised panels one side ...	ditto	0	6	6
Ditto ditto ditto two sides	ditto	0	7	6
Ditto ditto hung folding add	ditto	0	0	3
2½in. ditto square framed	ditto	0	6	6
Ditto ditto bead butt	ditto	0	6	9
Ditto ditto ditto flush	ditto	0	6	11
Ditto ditto moulded one side	ditto	0	6	10
Ditto ditto ditto two sides	ditto	0	7	2
Ditto ditto ditto and one side bolection moulded	ditto	0	7	4
Ditto ditto top panels out for glass, not including loose beads	ditto	0	6	9
Ditto ditto top panels sashed	ditto	0	7	6
Ditto ditto in small squares	ditto	0	8	0
Ditto ditto stop-chamfered one side and plain stops	ditto	0	7	3
Ditto ditto ditto two sides	ditto	0	8	0
Ditto ditto raised panels one side ...	ditto	0	7	6
Ditto ditto ditto two sides	ditto	0	8	6
Ditto ditto hung folding add	ditto	0	0	3
1½in. six panels, square framed	ditto	0	5	6
Ditto ditto bead butt	ditto	0	5	9
Ditto ditto ditto flush	ditto	0	5	11
Ditto ditto moulded one side	ditto	0	5	10
Ditto ditto ditto two sides	ditto	0	6	2
Ditto ditto ditto and one side bolection moulded	ditto	0	6	4
Ditto ditto top panels out for glass, not including loose beads	ditto	0	5	9
Ditto ditto top panels sashed	ditto	0	6	6
Ditto ditto ditto in small squares ...	ditto	0	7	0
Ditto ditto stop-chamfered one side, including plain stops	ditto	0	6	3
Ditto ditto ditto two sides	ditto	0	7	0
Ditto ditto raised panels one side...	ditto	0	6	6
Ditto ditto ditto two sides	ditto	0	7	6
Ditto ditto hung folding add	ditto	0	0	2
2in. ditto square framed	ditto	0	6	0
Ditto ditto bead butt	ditto	0	6	3
Ditto ditto ditto flush	ditto	0	6	5
Ditto ditto moulded one side	ditto	0	6	5
Ditto ditto ditto two sides	ditto	0	6	10
Ditto ditto ditto and one side bolection moulded	ditto	0	7	0
Ditto ditto top panels out for glass, not including loose beads	ditto	0	6	3
Ditto ditto top panels sashed	ditto	0	7	0
Ditto ditto ditto in small squares ...	ditto	0	7	6

BOYLE'S LATEST IMPROVED AIR-PUMP VENTILATOR.

Mr. Robert Boyle, Managing Director of Messrs. Robert Boyle and Son, Limited, Ventilating Engineers, London and Glasgow, has recently patented an important improvement which he has effected in the well-known air-pump ventilator, which adds considerably to its value as a foul-air exhaust, and Mr. Boyle believes that he has now brought this form of ventilator to the highest state of perfection that it is possible for an automatic ventilator to attain. The ventilator is free from down-draught and impervious to rain or snow, whilst the vibrating noise caused by the impact of the wind on the edges of the plates is, by the new arrangement, done away with. Auxiliary exhaust-chambers may also be fitted to the ventilator, increasing the extracting power 100 per cent., without enlarging the size of the ventilator. This is important where space is a consideration, such as where the ventilator has to be fitted into a flèche or turret. The improved ventilator is made, of an ornamental character, of the best rolled steel plates, galvanised, and painted with enamel paint, and is sold at 50 per cent. less in price than the earlier and inferior forms of the air-pump ventilator.



AN EXPLANATION OF THE LONDON WATER QUESTION.

Under the above title, an interesting paper was read before the Surveyors' Institution at the ordinary general meeting on Monday evening last, by Mr. J. W. Grover, C.E. (Associate). The author commenced by reminding his hearers that when in 1879 Lord Beaconsfield's Government attempted to grapple with this great question, it was to a surveyor, and a past-President of the Institution, that they resorted for advice and assistance in negotiating the purchase of the various companies' undertakings. The question had, he went on to say, been left too much in the past to experts, but now the time had come when, if anything were done, it must be done with the people's money, and it behoved the general public, therefore, to take an intelligent interest in the matter. The subject, vast and difficult as it at first appeared, could, as his experience of thirty years had taught him, be stripped of technicalities, and become simple and easily to be understood. He began by asking, "Why do the eight great water companies exist in London? Whence had they their origin if they do the work which the public bodies should have done?" Why, indeed, he asked, were private Acts of Parliament granted to companies to supply localities which, under the Public Health Act, ought to supply themselves? The answer was, that in every case great risk was in the first place involved, and not infrequently heavy loss resulted, and the ratepayers were, therefore, naturally anxious to shift that risk on to someone else's shoulders. For many generations the great New River Company was a dead loss to the shareholders, and in a lesser degree the same remark held good of the other London Water Companies. The companies had, undoubtedly, been public benefactors, and when the time for buying them out came they would have a fair claim, if on that ground alone, to be treated with justice. But—to state the case for the purchasers—it must be remembered that, in the first place, the companies had no monopoly—only a permission. Anyone could dig himself a well, and attempt, at least, to supply his own wants. Again, the Rivers Thames and Lea were undoubtedly public property, from which the companies are only permitted to draw on payment of some consideration. In 1884 Sir Joseph Bazalgette described London as containing four millions of people, and having a rateable value of twenty-eight millions a year, or £7 per head. The figures were now much higher; but these might be taken as a basis for rough calculation. According to the same authority, the water in 1884 cost each person 7s. per year on an average, which comes to exactly 5 per cent. of the rateable value. The number of houses was half a million, or eight persons to each house. Between 1855 and 1884 the rateable value had risen from £4 per head to £7 as stated, so that notwithstanding that the consumption was practically the same for each person, the fact of the companies charging on the rateable value had materially increased the actual price of the water, and with every valuation of the Metropolis the charge went on increasing. Thus, assuming an increase of one million a year in the value, the companies would, at the present rate of 5 per cent., charge annually £50,000 more for the same amount of water as now supplied. Then if they were to be bought up, this £50,000 at thirty years' purchase meant 1½ millions, which fact alone would prove that what was to be done in this direction must be decided without delay. But, the author asked, would it not involve the ratepayers in serious loss to purchase the companies' interests now? He thought not. The capital of the eight great water companies might be taken at 14½ millions at par, and its present market value at 33½ millions—i.e., ordinary capital 27¾ millions, and preference loans 5¾ millions. The gross revenue was not easy to ascertain, for the land income of the New River Company was an unknown quantity, and the increasing value of land from leases falling in was supposed to be very great. The gross revenue with the New River property was computed at £1,892,000, and the net revenue £1,217,000; but according to the report of Mr. Stoneham to the Local Government Board and the Report of the City Water Inquiry, the net revenue was £1,121,870. Now suppose the lot to be bought up at their present market value of, say, 33½ millions, it was quite certain that the London Water Trust or the County Council could raise money at 3 per cent., or even less. But to take 3 per cent. as a basis of calculation, this would involve a yearly interest of a little over one million. This, taken from the estimated revenue, left a balance of nearly a quarter of a million for a sinking fund, which would be rather more than sufficient to pay off the 33½ millions if allowed to accumulate at 3 per cent. interest for 60 years; but if, as in the case of the Sheffield Water Bill, the time for repayment were extended to 90 years, then a profit of some £140,000 per annum would be shown. Even taking the lowest estimate of the present revenue of the companies, the whole loan could be repaid in 90 years with a fair annual margin of profit. The centralisation of the water companies' work under one authority would, moreover, effect a great saving in the expenses of staff, directors' fees, shareholders' meetings, and in many other directions, and the convenience of being able to supply any part of the town irrespective of legal districts would be enormous. In the case of the annexation by the two great gas companies which supply London, of smaller companies, each step in the direction of unity had resulted in a lowering of prices to the consumer, and the same result would no doubt follow in the case of the water companies. The author, in passing, wished to point out what he could not but consider a popular error—viz., that the domestic supply of water would be better if paid for by meter. Only very expensive meters could be relied on to register small quantities of water, and if all London were to be supplied on this system, an additional three or four millions of capital would be required for meters. Again, on sanitary grounds, any inducement to the consumer to restrict the use of water would be very objectionable, while the poor man, who now, on his small rateable assessment, pays, on an average, something like 1s. per head in water rates, would be put on a level with the rich man, who, in a larger house, but with no larger family, pays, perhaps, £1 per head, to the manifest advantage of the poorer neighbourhood. The author next proceeded to deal with the present supply. Forty years ago the supply to London was 44 million gallons per day; now it was 167 millions, while in July, 1889, it was as much as 186 million gallons daily. Of the 167 millions per day, the Thames supplied one-half, or 85 millions; the Lea about one-half, or 58 millions; springs and wells, about 24 millions. Each year consumers increase at the enormous rate of 130,000 persons, the net water rentals by £36,722. The average number of persons supplied in each house averaged nearly 7½. The springs and wells situate in the valley of the Lea and in Kent could not be relied on for a much further increase of supply, nor could the River Lea itself, which was already too much drawn upon. The true source of the future supply must be the great basin of the Thames itself. The area drained by the Thames above Hampton was, said Mr. Grover, 3,465 square miles, the daily average discharge at Teddington being 1,100 million gallons, while dry-weather flow was rarely below 300 million gallons. On exceptionally low days the companies had occasionally drawn as much as one-fourth of the entire flow. They were allowed to take as much as 130 millions of gallons a day, although, as a fact, they did not draw more than 100 millions. The area of the valley of the Thames above the water companies' intake might be reckoned at 1½ million acres, every 1,000 acres yielding one million gallons per day, which, by means of wells and headings, might be made available. The chalk forming the Thames basin ought to be the reservoir, as yielding the purest and best water, freest from organic matter, and of the most equable temperature. The filtration was, as stated by Dr. Frankland in his report to the Local Government Board, infinitely superior to any which by an artificial process endeavoured to imitate the exhaustive filtration which deep-well water underwent. In 1901 it was probable that London would require some 45 millions of gallons per day more than the present supply could provide, and it was towards this supplemental supply that attention must be directed before the water question for the Metropolis could be considered anywhere near solution. The Lake of Bala and other Welsh sources had been suggested; but it was forgotten that the Welsh hills had to supply their own rivers, the Severn, the Dee, and the Wye, and the inhabitants would scarcely allow their own supply to be taken away without compensation, even if it could be done at all. As a principle, it might indeed be laid down that running streams could not be drawn on unless the district through which they flowed were compensated. After briefly explaining the geology of the strata immediately underlying London, Mr. Grover proceeded to show how, although it was quite possible, by going 200ft. or 300ft., to get water from a well on any part of the district, yet the supply was limited, and only in certain spots at all satisfactory; but all round London, where the chalk crops out or comes above the clay, wells might be sunk with the best results. The New River Company's spring at Amwell was an instance of this; but this great spring practically exhausted the valley, so that little more must be looked for from that district. But there were two districts, one the Leatherhead or Mole district, and the other the Rickmansworth or Colne district, which would yield a large immediate supplemental supply, both of which districts had been assigned to water companies by Parliamentary authority; but to each of them permission had been given to deal with the surplus water, so that the coming need of London could practically be met by supplies from these sources. Mr. Grover went into some detail to show how this could be done: he demonstrated how, taking the average rainfall, an ample supply would be forthcoming from the valleys drained by the streams of these areas, and, basing his figures on actual experience of wells already sunk there, contended that to these two districts we must, at all events in the near future, look for the supply which the growing necessities of London would demand.

A short discussion, in which Mr. A. M. Dunlop, Mr. F. K. Munton, and Mr. J. G. Rhodes, L.C.C., joined, then took place, and, on the motion of Mr. C. K. Bedells, was adjourned to the next meeting.

NOTES ON TERRACOTTA.*—VII.

SECTIONS.

When cellular terracotta is required with a moulded edge or face, it is first produced as a rectangular block, and the required section is then brought about by the removal of the surplus clay of the rectangular edge and portions of the adjacent faces. The block, or blocks, are placed on a firm bench 6ft. or 7ft. in length, having a true upper face and wrought edge at right angles, the outer edge of the blocks being placed parallel with the wrought edge of the bench. A plasterer's running mould of the required section is made, with a rebated shoe, or "horse," technically so called, to fit the edge of the bench, as at *a*, Fig. 1, the clay blocks being sufficiently removed to give the edge of the running mould a firm bearing on the bench, as at *b*, during the act of working the mould. The block of clay is then technically "run" until the required section is produced. Before working the moulding as above described, the blocks are cut to a certain length and width—say 12in. long with 4½in. bed, measured from the wall-line—and are then "run" in single blocks, or in a continuous line of six or seven blocks. Fig. 1 represents the method and working. The distance of the first line of perforations from the outer edge must, of course, be determined by the depth of the moulded member, or *vice versâ*. Several unsuccessful attempts have been made at different times to produce terracotta in the solid clay, some of which have come under the writer's personal observation, in the shape of massive bar tracery. In each case, the impracticability of the attempt became apparent in the drying process, owing to the solid block drying gradually from the outside faces in an inward direction, instead of simultaneously from the outside and the inside, as in the case o hollow blocks, and resulting in the developmen of cracks over the exposed faces. Even with the reduced conventional brick sizes of to-day, some of the very best bricks, in other respects, tha come into the market, notwithstanding th stereotyped expression to the contrary, ar difficult to obtain "true in shape and form";—a fact so well recognised by the building trade that a bricklayer has been defined as "one wh builds straight walls with crooked material." It is only reasonable to believe that the early clay workers of Egypt and of Rome attempted soli blocks of a size much larger than any of th existing types that have come down to us fro those nations, and that they failed in exactly th same way that we have failed; consequent upo the nature of the material in which they worked The same cannot be said of early terracott appearing in the forms of ancient pottery. Th British Museum is said to contain 5,000 Grecia and Etruscan vases; and public and privat collections are said to exceed 40,000 in al some of them little more than ⅛in. i thickness. These beautiful vases, chiefly mad up of the subtle curves of the conic sections—a characteristic of the Grecian mouldings—are not only true in form, but were made in many instances, exact in capacity, bearing o their painted and enamelled exteriors representations of the current and living thought of th best periods of Grecian art. Homer has celebrated the potter's art in one of his hymn addressed to the potters of the island of Samos and the Ancient Assyrians, to show their hig esteem of the art, deified it under the name o Nunurra, the god of pottery. Fig 2 shows return "run," worked in the same way a in Fig. 1. The angle of the return end of th bench must, of course, be the same as the ang required for the return—90° or otherwise. I circular work the moulding would be "run" o

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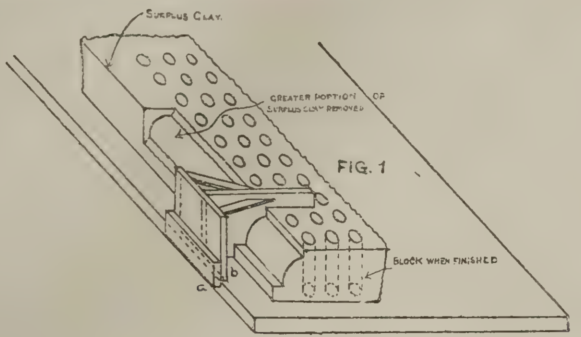


FIG. 1

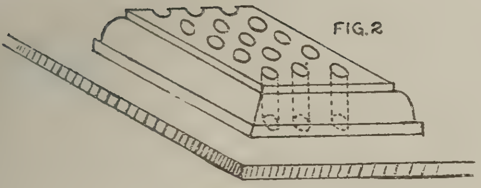


FIG. 2

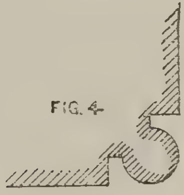


FIG. 4

worked by means of a trammel mould, as hown by Fig. 3, *a* being the centre of the ircle of which the required moulding is an arc. The centre *a* is built up, cone-shaped, in plaster f Paris, with a dovetailed wooden block bedded r fixed at the top to take a gimlet penetrating he radius rod *b*, at the opposite end of which s fixed the running mould *c*, showing a section f the Norman edge-roll or bowtell, which, next n order to the chamfer and the ovals of large ype, lends itself most readily to a true reproduction in terracotta, this member being divided rom the plain faces by shallow channels only— characteristic of the period to which it belongs —instead of being deeply incut, as shown by the adjoining Fig. 4, a section which should not be attempted in terracotta: the semi-cylindrical form of head is its proper substitute. An object-lesson illustrative of the preceding remarks may be seen at the "King's Weighhouse Congregational Chapel," Duke-street, London, W., a terracotta treatment of a design essentially Norman n character, the predominating features being the round edge-roll and a free use of isolated and engaged columns of small diameter—more properly called shafts—showing that the circular section, when of a uniform thickness throughout, s the most suitable of all sections in this material —so true are they in form and build. Columns of large diameter should be "broken up" by vertical as well as by cylindrical jointing.

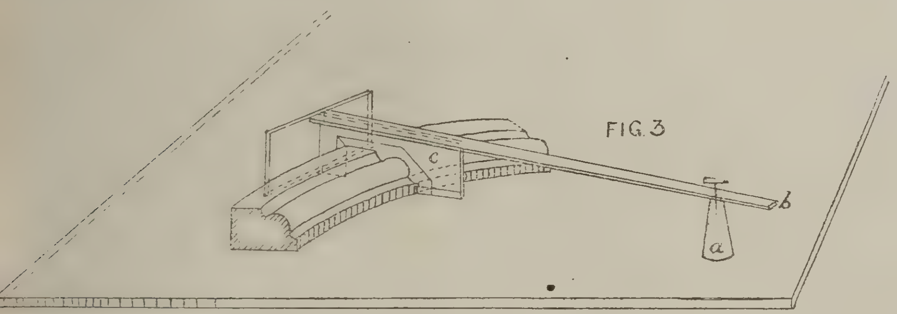


FIG. 3

MANUFACTURE.

In the nomenclature of the manufacturing process *moulded* work is understood to be that work produced by the filling in by hand of plaster of Paris piece moulds, which have been taken off the "original" or model, as already described; while *pressed* work is that produced by being forced through a "die," or otherwise brought by a single operation to the required finished form from the crude clay lump. In all cases, where practicable, the filling-in or open side of the mould, should represent the top bed of the block when *in situ* on the building. In this way the concrete filling-in will be made to take the weight of the superincumbent blocks when fixed; the two ends being formed with "chisel" or "chipping" joints (sometimes called panelled ends, described and illustrated in a previous article), to readily admit of the blocks being reduced in length, should they require it, as well as to afford a means of longitudinally dowelling the blocks by grouting. In the process of moulding, the block is built up by the clay being placed apron-like against each side of the mould in consecutive order until all the sides, and in some cases the bottom, are covered. Struts are then built across the mould and well kneaded into the clay lining the mould, forming in plan a kind of diaphragm. The number and disposition of the struts should be determined by the size and shape of the blocks. In a block forming a parallelogram the struts might be parallel where there are more than one; but in a square block they should be preferably at right angles with each other. In all cases the struts should be the same thickness as the sides of the blocks of which they form a part. They serve the double purpose of supporting the sides of the blocks while in the moulds and during the process of drying, as well as affording a build for the work where the blocks are used without being "loaded," i.e., filled in with cement concrete—a practice in all cases to be deprecated. The length of time that the clay shall remain in the mould must be determined by the nature of the work, and its capability of retaining its form minus the support of the mould. The great evil of using the mould too rapidly is that it becomes what the moulder calls "sweaty," that is to say, the moisture imbibed from the clay by the plaster of Paris mould is not allowed to evaporate before the mould is again filled in, and this process being repeated, the material of the mould becomes ultimately saturated; to obviate which the moulder has a fashion of dusting the mould to absorb the surplus moisture, for the purpose of turning out the work more rapidly than he otherwise could. The dust is obtained from the purest clay pulverised, and is placed in a piece of muslin or other loose fabric of an open mesh, through which it is sifted, as it were, on to the inside faces of the mould, forming a fine surface coating thereon. After a short time the mould is again filled in with clay, and it is found, when the mould is removed, that the fine dust has been transferred to the clay block. This has been fully described because the writer can in no other way account for the fact that blocks made from the very best, natural, unadulterated clays, and thoroughly fired, are found after a few years' exposure to have shed their fine surface coating, exposing to view a rough under-surface, such that might reasonably be expected to result from the dusting of the moulds, or otherwise from the practice of "dipping," as previously described.

CARPENTRY AND JOINERY.—XLII.

PEDIMENTS.

A PEDIMENT is the triangular panel (tympanum) resting upon the entablature, and includes also the cornice which surmounts it. This definition is brief, but comprehensive enough to introduce the remarks and illustrations which follow. It was stated in the previous article that entablatures were being treated as a step to pediments. It has been also stated that there are several other outlines of pediments besides the triangular, and that the various mouldings which form the cornice of the entablature, except the upper one, occupy the same position, even if a pediment surmounts it.

Fig. 279 shows the upper portion of an entablature—that is, its cornice, and also part of the pediment. The points stated are illustrated. Be it noted that in this case there does not occur what is commonly known as a *raking moulding*, and therefore no difficulty presents itself to the joiner in getting up such a pediment. The raking moulding would be the top member of the cornice along the slope of the pediment. The remaining portion would not be affected, seeing all the other members terminate on the entablature, and within its outer edge, each member receding further from the outer edge as the tympanum is encroached upon. In building up this pediment the joiner will proceed as for an entablature, except that the fascia, frieze, or backing-board shall include the tympanum—that is, the triangular portion, which serves to screw the mouldings to, and should reach up sufficiently far to take all these, and within ½in. of the outer limit of the *ogee*, or outer moulding of the cornice; this ½in. being allowed in order that the covering board may extend over it similar to that shown in Figs. 275 and 278 in the previous article. It is expected that the pediment has been drawn full-size upon a workshop drawing-board or panel, which includes that the mouldings shall have been drawn somewhat similarly to what is shown in Fig. 279, and this will enable the joiner to work every portion quite accurately, as he will thus be able to obtain all the measurements exactly. There are, properly speaking, two bevels only in this pediment, one being the *plumb cut*, which is the mitre or intersection of all the mouldings at the apex or top of the tympanum, and the other is a *level cut*, and forms a right angle with the plumb cut, and this is the ordinary rule in the case of all roofs, and is a point to be noted by carpenters, as when one cut is known the other is obtainable from it. It

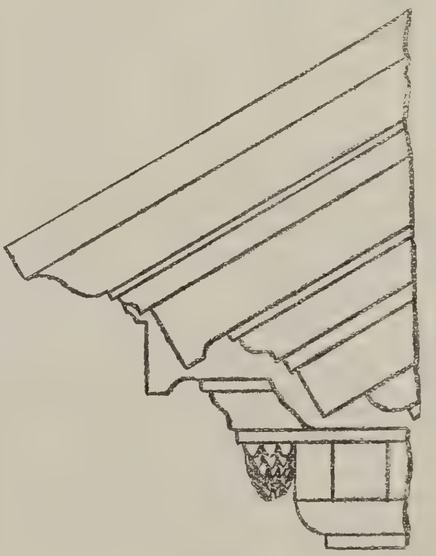


Fig. 279.

has been stated that no raking moulding occurs in this pediment, the reason being that all the mouldings intersect at the top, and all except the ogee terminate on the entablature with a level cut; the only place where any difficulty could present itself would be the ogee from the front returning along the end into the wall or back of the entablature and pediment. But the back of this moulding is shown to be at right angles or square off the raking or sloping line of the pediment, and therefore an ordinary mitre suits at the angle; and the return moulding is of the same section as that along the sloping line of the pediment. It may be here stated that of those pediments coming under the writer's notice, the greater number, triangular in outline, have the ogee returned in this way.

Anything that may give rise to objection in this is the square above the ogee. When seen from the front it overhangs a little, instead of being vertical.

Fig. 280 gives the two outlines of the mouldings according to the requirement. On the left hand a moulding is shown which would be similar in section throughout, for the returns as well along the raking or sloping line of the pediment. It is seen that all that is required is obtained by *canting* or tilting the moulding, so that its upper surface or edge is in the same line as the moulding along the pediment. In the case of the moulding on the right hand in the same figure, it will be readily seen the moulding is perpendicular—that is, the back is vertical where it lies against the pediment, as also the square in front; but the upper edge is bevelled to suit the rake of the pediment. Now, it is easily observable that anything gained is that the square of the moulding in the one case overhangs, whilst in the other it is vertical.

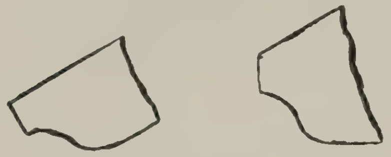


Fig. 280.

The difference in the ogee proper, apart from the square, would at the height be scarcely noticed by the most practised eye. There are other minor points in Classic architecture upon which authorities differ very widely; so whilst some assert this return moulding should be vertical, it is found that very generally in practice, as has been stated, it is *canted*. With reference to raking mouldings, a short cut the joiner may take in practice is, providing he has a piece of the ordinary moulding, the section of the raking moulding may be obtained by cutting the ordinary moulding at such an angle as will give the breadth required at the back—that is to say, your ordinary moulding is 3in. broad, and your raking moulding requires to be 4¼in., turn the back of the moulding and draw a line across the moulding at where 4¼in. intersects both edges, and by taking a shaving off the end to clean it and turning this cut up and laying it on a piece of paper or board you can trace it, and this is the required raking moulding.

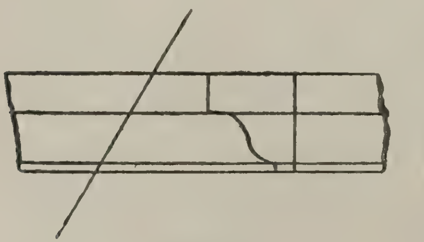


Fig. 281.

Fig. 281 gives the idea of what is intended, showing a section of the moulding, and a line drawn across and continued (imaginary) to make the matter clear. In extension, if the moulding is required to rake both ways, then simply put a level line on the top edge of the moulding, as well as on the back, and, with the saw, cut this, which will give, when cut, the required section. It will be seen that such a cut would be similar to the raking cut of a rafter, where it abuts against the *diagonal*.

It may be also observed that it is merely the facial, or front, outline of the moulding, which is specially intended, as the joiner will arrange for the top edge of the required moulding, according as it is bevelled, or square.

Fig. 282 gives the ordinary way of getting out a raking moulding; the exact principle of which would be to divide the line of the back of the moulding into a number of equal parts; or carry lines from the more conspicuous parts of the moulding, then carry these along till they meet a line drawn at the required angle, which is of the length sought. Square out from the inclined line those lines which were carried to meet it, or, more strictly speaking, from the point where the lines which were carried across meet the inclined line. Square out lines, and then take the different projections from the original moulding, and transfer them to their respective lines, measuring from the inclined line. Now trace the required raking moulding through these points. If, on the other hand, a less moulding is required, the process may be reversed. There are other methods of obtaining the required result; but if the joiner has thoroughly grasped the idea in this he will have no difficulty; and it will be very easy for him to learn another method if required; but the writer's experience has been that what one knows thoroughly, though it be a roundabout method, he will do it more quickly than a readier method which he is less sure of. In regard to the dentils of the pediment, they are placed perpendicularly, and at the apex the preferable and easier way is to have the space required between two dentils instead of putting a dentil there. The eye will mentally trace the lines to meet in the centre of the space that is the line of the bottom edge of the dentils on each side. This obviates a dentil made V-shaped (in and out) to fit the opposite sloping sides. It will be clear that to keep the dentils vertical in a pediment whose top slopes right and left, the dentils must be sloped at the top and bottom; this may be done by cutting them in a box having the required cuts to guide the saw, then the ends may be planed, or, with one of the modern *mitring* machines, the guides of which may be set to any angle, a shaving or so may be taken off each end, providing, of course, that in cutting with the saw, allowance was made for this by leaving on a little extra in length.

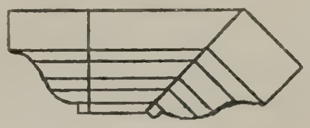


Fig. 282.

Fig. 283 gives a somewhat crude outline of half an *open* pediment.

It is seen that in the centre upon the top of the entablature, a pedestal serves to support a turned finial; sometimes instead the pedestal supports a bust or *heraldic* emblem. Sometimes the heraldic emblem is introduced in the tympanum. Again, the pediment may take the outline shown in Fig. 284, the working out of which is two circles as shown. These are usually carved in resemblance of a flower in full bloom or similar device: the kind of scroll starts away from this and terminates or rests upon the emblature. This scroll or outline is intended to represent rather the moulding which bounds the pediment; where it rests down upon the entablature the outer limit of the moulding will be just equal with the outer projection of the entablature. In working this it is customary to get out a pattern of the half-outline of the moulding, including, of course, the circle. Then cut out the timber to this, plane it up to the template; have a section of its required moulding, and also a section of its reverse, for if it has to be wrought by hand this must be applied, as the ends cannot well be marked. The joiner should put as many gauge-lines on as possible prior to commencing to work the moulding, so as to be well guided, and so as that the requisite tools under the workman's guidance will complete the work readily. It is of the utmost importance that for the proposed hand-worked moulding the workman should have gouges when required to the exact outline, as with these and the gauge-lines little difficulty will occur. The only drawback he will likely meet with in the direction of the tools will arise from the cost, as the market is fully supplied. To refer again to Mr. Greenslade's drawings of 23rd Oct., there occurs the segmental and triangular outline of pediments, also the triangular with a level piece at each side to flank the triangle; this last outline does away with a raking moulding. Then I have given two other outlines in Figs. 283 and 284. Let it be observed the return moulding, which occurs just opposite the finial, is a *raking* one. Now the above are the outlines usually met with in this department, some of which are deprecated. One eminent authority contends for simplicity as being most effective, and pleading rather for the triangular, with a rise or height equal to ⅕th the span.

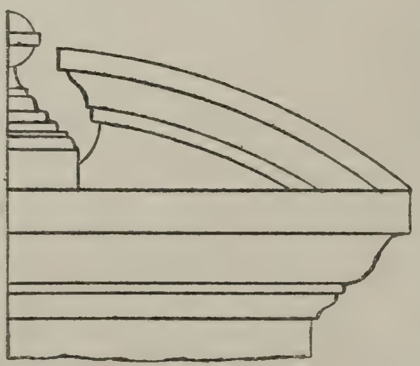


Fig. 283.

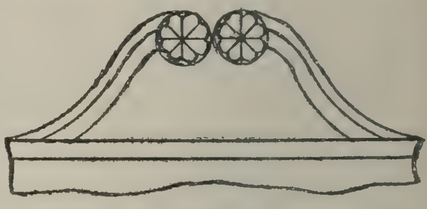


Fig. 284.

In conclusion, whilst as in other departments the writer pretends not to have exhausted the subject, but has tried to direct close attention to it, giving what is hoped may be considered good preliminary instruction, which it is wished will cause joiners to observe the specimens of this ornamentation which will come under their notice readily in insurance offices, chambers of commerce, banks, &c.

The writer will proceed next in order to deal with skirtings, plinths, &c.

A. C. Skilling.

* * *

CHIPS.

Mr. Bolton's Leaseholds Bill, which passed its second reading and through committee in the House of Commons this week, and is set down for third reading to-day (Friday), is chiefly intended to limit the arbitrary power at present possessed by ground landlords in cases of breach of covenant, with a view more especially to the protection of sub-lessees. The Bill passed the House of Commons last Session, but was stopped in the House of Lords, as the Government desired further time for the consideration of its provisions.

The London County Council at their meeting on Tuesday resolved to apply to the Board of Trade for the appointment of an arbitrator in regard to the purchase of the undertaking of the London Street Tramways Company.

Mr. Hans St. George Caulfeild, C.E., late the general manager and engineer to the Government Railways, Madras, died on Sunday at his residence in Chapel-road, Ealing, aged 54 years.

Among the adjudications in bankruptcy announced in Tuesday's *Gazette* the names occur of Richard Tipton, of Endel-street and Langley-street, Long Acre, and Little King-street, Camden Town, builder and contractor; and of Alfred Lonsdale, of Hull, builder.

The Polsham Board Schools, Somerset, are being warmed and ventilated throughout by means of Shorland's patent Manchester stoves, grates, and vertical inlet tubes, the same being supplied by Mr. E. H. Shorland, of Manchester.

CONTENTS.

Dangerous Structures 263
Other Methods of Removing Snow from Town Streets 263
Dudley Gallery Art Society 264
Domestic Work seen on Past A.A. Excursions 265
Prices.—XXX. 266
Boyle's Latest Improved Air-Pump Ventilator 267
An Explanation of the London Water Question... ... 267
Notes on Terracotta.—VII. 268
Carpentry and Joinery.—XLII. 269
The Building News Directory XIII
Building Intelligence XIV
Our Illustrations 271
Back-to-Back Houses 289
Architectural and Archæological Societies 289
Wayside Notes 290
Architecture at the Royal Scottish Academy 291
The Clerks of Works' Association 291
Competitions 292
Intercommunication 292
Legal 293
Legal Intelligence 293
Parliamentary Notes 294
Our Office Table 294
Meetings for the Ensuing Week 294
Trade News 295
Tenders 295

ILLUSTRATIONS.

ROYAL ACADEMY GOLD MEDAL DESIGNS FOR A TOWN HOUSE.—THE LADY-CHAPEL AND PRENTICE'S PILLAR AT ROSSLYN CHAPEL.—MURAL PAINTINGS FROM THE CHURCH OF THE HOLY CROSS, BERLIN.—THE "OSBORNE" WALL PAPER.—BACK-TO-BACK HOUSES AT BRADFORD.—A SACRISTY CUPBOARD.

Our Illustrations.

ROYAL ACADEMY GOLD MEDAL COMPETITION DESIGNS FOR A TOWN HOUSE.

This recent competition, held at Burlington House, is well illustrated by the three very differing designs which we publish to-day. A special feature to be observed in the planning of the building was to provide proper and convenient space in the living and reception rooms for the display of works of art and paintings of large size. The best design submitted, judged from an architectural point of view, was, no doubt, that by Mr. Alexander Mackintosh, of which we give the view and plans on the accompanying double-page plate. The provision of galleries specially devoted to the hanging of pictures and exhibition of sculpture was not intended in the conditions of the competition as herein adopted. The other two designs are very unlike this elevation, and contrast strikingly with each other. Mr. Herbert Baker's façade is severe and dignified in style, and a prominent feature is made of the entrance porch. Mr. Charles S. Spooner conceived the site of the intended house to be located on one side of an open square, and treated his front accordingly. We reviewed the designs briefly at the time the drawings were on view at the Royal Academy. The plans published with the several views will explain how the authors have worked out the problem, and we have nothing to add here. We shall, at an early day, give some details of Mr. Mackintosh's mansion.

ROSSLYN CHAPEL.

The chapel at Rosslyn, founded in the middle of the 15th century, was the work of the Earl of Orkney of the period. The chapel, reckoned in the money value of our day, cost four hundred thousand pounds. In the accounts for the chapel there appeared large sums for wood, whereas in the building itself there is not a scrap of wood except what has recently been introduced. The explanation was that William Lord Sinclair worked without plans, and that when a workman brought him a design, he was asked to furnish a full model of it in wood. Some features of the design remind one of Glasgow Cathedral, and which are so marked that they can scarcely have been accidental. The peculiarity of the barrel roof of the choir suggests the question as to whether this was the original intention to have that vault only, as all the collegiate churches known had a thick roof. The flying buttresses outside would also lead one to expect a groined roof. The explanation seems to be this. There were two periods of church-building in Scotland, separated by more than a century. The first, beginning about 1057 A.D, lasted two centuries. During that period Scottish architecture followed that of England. The second period, to which Rosslyn belonged, began in the 15th century, and continued till the Reformation. During the interval between the periods Scottish builders were principally engaged in erecting castles of a modified Norman type, and they might be said to have lost touch with Gothic architecture. When they came to take it up again, it was not surprising to find many features common in the castles, such as the barrel vault, introduced in the chapels. Another feature of the chapel which may also be ascribed to this cause is, the vaulting of the north and south aisles. These vaults sprang from stone lintels laid across the aisles from the outside wall to the top of the pillars in the nave arcade, and this was a style which was not to be expected. It was not to be presumed that the builders of Rosslyn were unacquainted with the groined roof, but they were simply following the examples of their own day. The wonderful richness of the colouring which age has given to the chapel, both within and without, is a great feature, enhancing the interest and beauty of the elaborate carvings which cover nearly every portion of its intricate design, combining as it does the solidity of the Norman with the decoration of the Latest phase of the Tudor period. The old story of the "Prentice's Pillar" is almost too familiar to repeat here. The master mason, being unable to satisfy himself as to the detail to be adopted for this part of the building, proceeded to the Continent to study some older example. While he was away his apprentice completed the shaft as we see it. The master, on his return, was so enraged with his pupil that he murdered him for his trouble by striking him over the head with a mallet. The interior of the chapel was illustrated from a sketch by Mr. J. B. Tyerman in the Building News for July 24, 1885, and from a drawing by Mr. John Begg in our issue of April 12, 1889.

MURAL PAINTINGS: CHURCH OF THE HOLY CROSS, BERLIN.

These decorations by Messrs. Ehrich and Doeringer have been executed, together with many others of like character, in the choir of the new church of the Holy Cross, Berlin, which was designed by Professor Johannes Otzen, architect, of Berlin. This building is erected in brick with glazed work freely introduced, and a considerable portion of its ornament is constructional. We have on former occasions alluded to the designs and executed works by this same distinguished architect, and to-day we draw attention to the folio publication illustrative of his buildings, which Herr von Ernst Wasmuth, of Berlin, is now bringing out in parts. The third folio is now before us, and those who are interested in the use of parti-coloured brick and tile or terracotta works will find this book useful and suggestive. The designs are chiefly of churches and their details.

"THE OSBORNE" WALL-PAPER DECORATION.

Messrs. Jeffrey and Co. have just issued their season's series of designs for wall and ceiling decoration, and we have to-day selected one of their new patterns for illustration among our lithographic plates. It has been designed by Mr. H. W. Batley, and in execution we need hardly say is rendered in an artistic way in many varied treatments of colouring. As a matter of fact our reproduction can only show the general forms of the composition: its tintings, often so delicate and harmonious, cannot be studied except in the actual examples. Thus "The Osborne" designs, with the foliations in three quiet soft peacock blues, stand out in a strikingly bold way on an old gold talc ground, giving just sufficient brightness without glare to enhance the richness of the pattern. In rich salmon-reds, with waterlinings of gold printed on a ribbed paper, the design looks quite another thing, and in warm yellows and creams, on a talc gold backing, it is equally handsome. The same designer has a kindred composition, called "The Balmoral," which goes well with the same frieze. In this pattern, however, there seems to be an even greater variety of colouring than in the other, ranging from the pale pink to deep reds and blues on a sprig-enlivened background. Our choice would be awarded to the prints in yellow, with primrose talc filling. The best paper, perhaps, of the whole series, judged from present fashion's phase, is Mr. Lewis F. Day's arrangement of poppies. The blue flower and pale-green treatment for the foliage is exceedingly effective and capitally drawn—much larger in scale and less liney than Mr. Day's designs frequently have been. The dividing string-course pattern between the paper and the frieze is large and effective, and the foliage of the frieze is well conventionalised, without loss of the natural growing forms of the plant adopted in the pattern. The yellow poppies on a dark sage ground form a happy and rich rendering. The Persian-like pattern, called "The Mecca," by the same hand, is well drawn, and adapted to staircases. Mr. Walter Crane's "Cockatoo" design, like all his work, is conspicuous for its originality, though we hardly think the design is up to his usual standard of excellence. The birds terminate in abrupt scrolls, which contrast strangely with the naturally-drawn cockatoos, and the composite fleur-de-lis below stands out rather too conspicuously in scale, if not in colour. In Mr. Crane's own colouring, the pattern is undoubtedly effective with the squirrels and the peacocks. By far the most commanding and grand in style is "The Genoese," a large, bold design copied from some rare old silk. This, in yellows and gold, or flock in claret on ribbed gold, is quite the handsomest paper we have seen this season. For big rooms, nothing could be better in the way of good wall-papers. The same firm's machine-printed papers deserve mention. Their Florentine embossed leather paper in gold, on a clear green ground, is simply superb. Its design is admirable.

SACRISTY CUPBOARD, SCHÖNFELD CHURCH, NEAR STENDAL.

In the illustration the background of the ornamentation might be carefully stained or coloured a rich subdued blue or dragon-blood red. The hinges, which are plain and substantial, are carried round the return ends and help to bind the work together. We are indebted to "Die Architektur der Hannoverschen Schule," by Gustav Schönermark, published by Herrn Manz and Lange, of Hanover, for the plate from which our drawing was made. This work is now being issued in parts, and contains much contemporary work of an interesting character.

CHIPS.

Messrs. R. Waygood and Co.—whose admirable exhibits, by the way, no one should miss at the Crystal Palace Electrical Exhibition just now—have just issued a handy and useful abridged catalogue of their lifts, cranes, hoists, iron doors, pumps, engines, mills, shafting, &c.

At the Bolton Town Hall on the 11th inst. Major-general Crozier, R.E., Local Government Board inspector, held an inquiry into an application by the Corporation for approval of the appropriation by them of corporate land for the purposes of a Public Library, and for sanction to borrow £1,000 for the erection of such public library. Mr. Murphy, the architect, was called, and explained his plans for the new building.

Mr. Justice Denman and a special jury tried an action on Saturday to recover damages brought by a Mr. Plato and his wife against Mr. Toye, landlord of some "model dwellings" in Mansford-street buildings, Old Bethnal Green-road, for losses sustained by the alleged insanitary state of a tenement occupied by them. Their four children died after being attacked with diphtheria, and Mr. and Mrs. Plato were also ill. The jury awarded the plaintiffs £77 10s.

A new Wesleyan chapel in Tollgavel, Beverley, was opened on Wednesday week. It is Italian in style, and has cost £4,000. Messrs. Morley and Woodhouse, of Bradford and Bolton, are the architects.

The estimates deposited for Parliamentary purposes in connection with the proposed extension of the Manchester, Sheffield, and Lincolnshire Railway to London, by Messrs. Liddell and Ross, the engineers to the company, show that the new works necessary for the undertaking include nearly 112 miles of railway, three furlongs of widenings of the present main line, and the laying out of seven new roads, and the total cost is set down at £6,573,729.

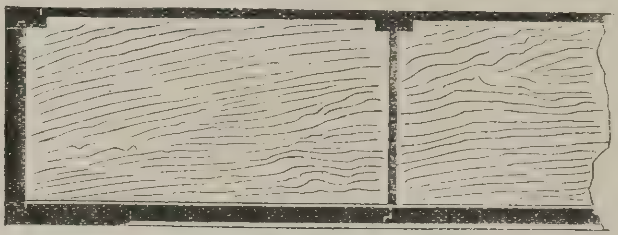
Good progress is being made with the erection of a suite of public rooms at Bodmin for a company. Messrs. Ralling and Tonar, of Exeter, are the architects, and Mr. Sampson Trehane, of Liskeard, is the contractor. The cost will be about £3,500.

It has been decided to restore and complete the parish church of Erdington, near Birmingham, in accordance with plans prepared by Mr. J. A. Chatwin, of the latter city. The work will include the reroofing of a portion of the chancel, the making of a central aisle in the nave, as well as aisles on the north and south side, and the reseating of the nave. This work is estimated to cost about £2,000.

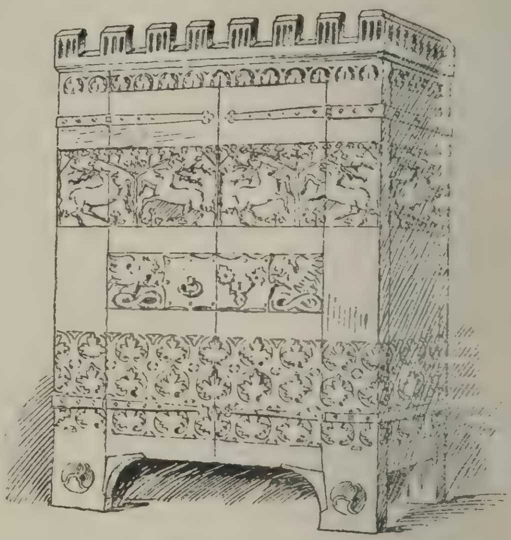
SACRISTY · CUPBOARD

SCHÖNFELD · CHURCH Nr STENDAL ·

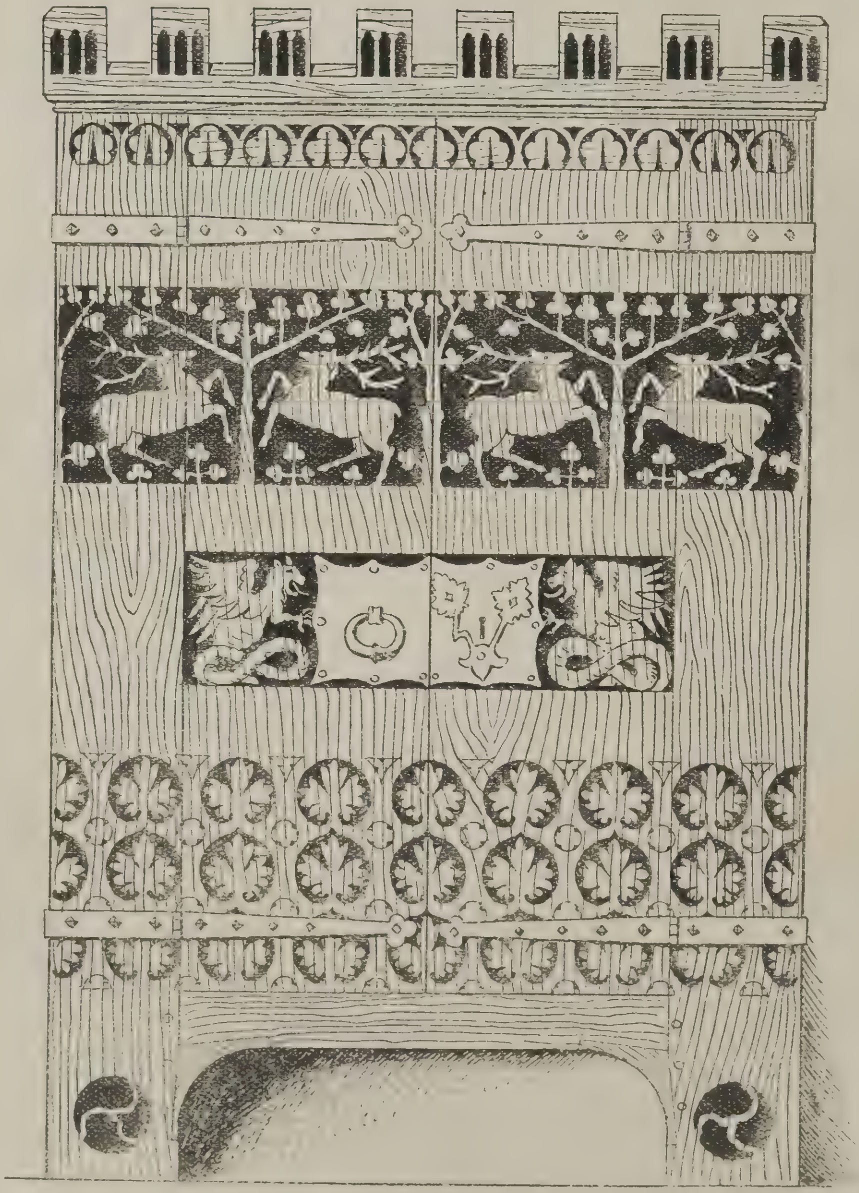
DESIGNED · BY · C.W. HASE ·



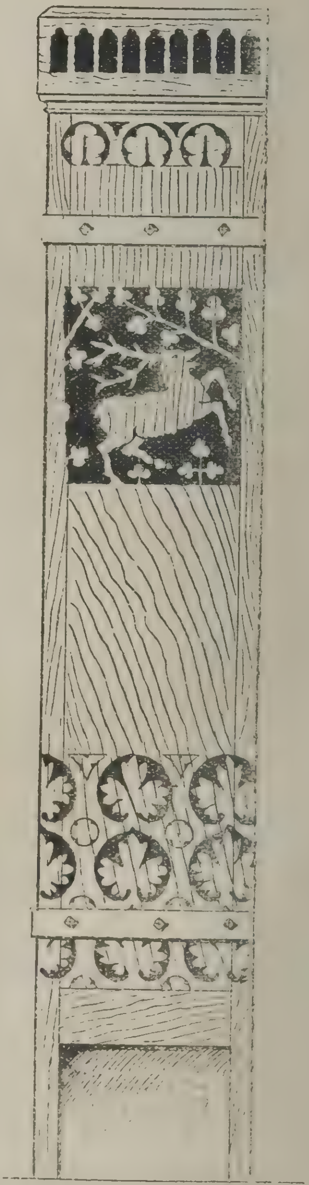
PLAN ·



PERSPECTIVE SKETCH ·



ELEVATION ·



SIDE

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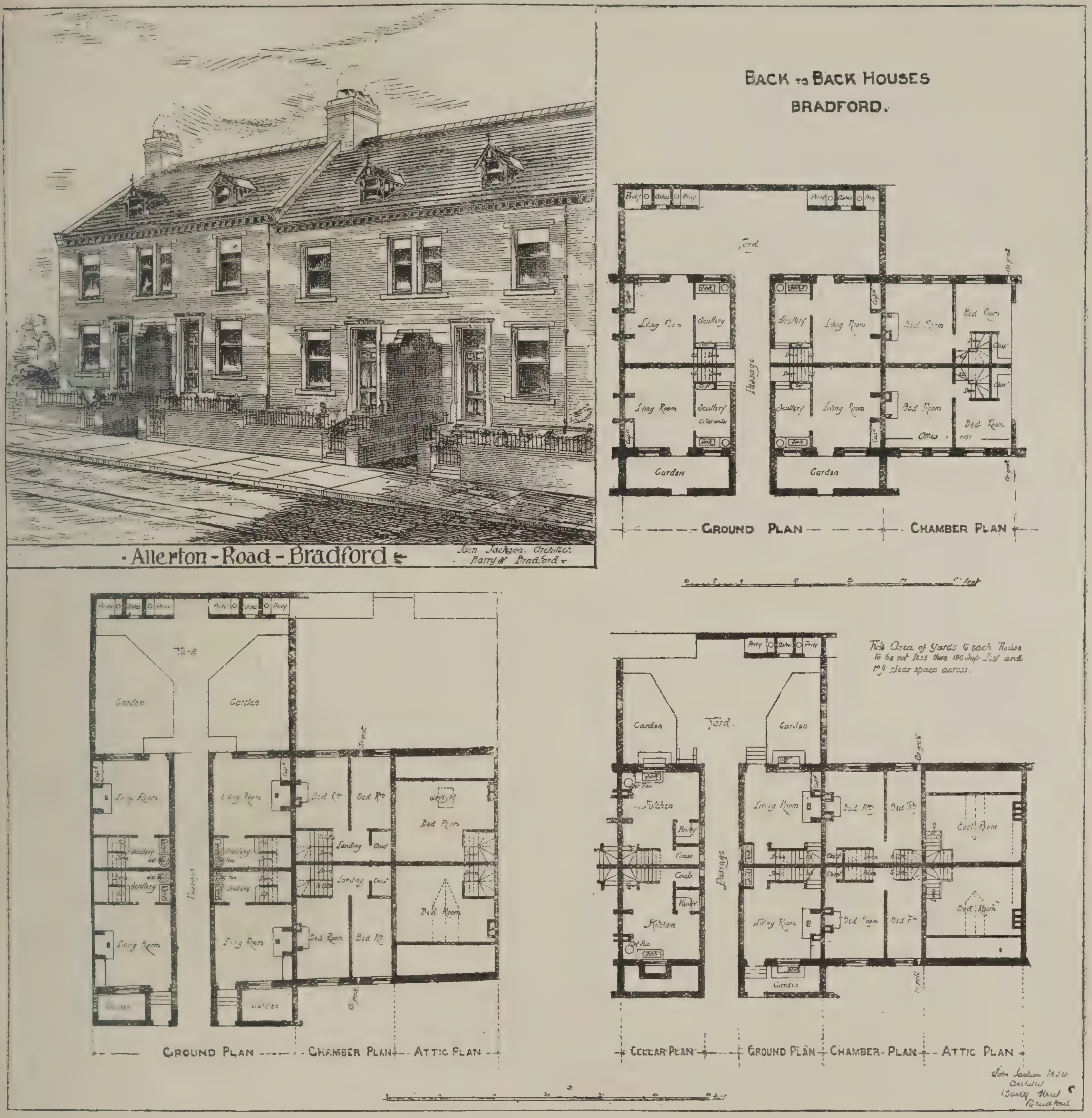
BACK TO BACK HOUSES
BRADFORD.
-Allerton-Road-Bradford
John Jackson. Architect. Parry St Bradford
Yard
Passage
Living Room
Scullery
Bed Room
Garden
Cellar
Offices
GROUND PLAN
CHAMBER PLAN
ATTIC PLAN
CELLAR PLAN
Kitchen
Pantry
Coals
Landing
Feet
The Area of Yards to each House to be not less than 150 Sup. Feet and 15 ft. clear space across.
John Jackson, M.S.A. Architect Parry Street Bradford

BACK-TO-BACK HOUSES.

THE question of the housing of the working classes is always more or less to the front, and latterly the erection of back-to-back houses has been more particularly under discussion. Bradford is notorious as one of the few large towns where back-to-back houses are still being built, and at the recent meeting of the Yorkshire Society of Medical Officers of Health in Bradford, Dr. J. H. Bell read a paper championing this style of dwelling, which has since excited much interest in sanitarian circles. Dr. Bell's contention was that the objection to back-to-back houses from a sanitary point of view was not founded on facts but on prejudice, and by carefully compiled statistics he made it clear that the death-rate in different classes of single dwellings in Bradford was 15·8, 16·6, and 17·0, as compared with 21·3, the mean yearly rate of the borough for the five years 1885-90, and he declared that on a consideration of the whole facts he did not think back-to-back houses could fairly be condemned. Medical men, on the other hand, say that this class of house is essentially insanitary, that every effort should be made to convert them into through houses, and their future erection prohibited. But if Bradford was to forbid back-to-back houses, newly-married persons or aged couples, who have small needs in the way of house room, would be unable to obtain a home with less than four rooms in it, and would probably live with someone else, thus minimising the home life on which moralists lay so much stress. Neither should it be forgotten that there are many towns where the housing question is yet more pressing than in Bradford. For example, in Glasgow it is estimated no less than 40,000 families occupy single rooms, though such rooms are arranged more conveniently for their purpose than a single room in a Yorkshire house, whilst in Continental cities the overcrowding is appalling. To decide between the claims of the present and the future, and between the demands of sanitation and the pocket, is no easy task; but, at the same time, architects might well devote a little ingenuity to the devising of houses which shall combine as far as may be the advantages of through ventilation with the essential condition of meeting the financial position of poor people. The examples of back-to-back houses which we to-day illustrate have been lately erected in Bradford, from the plans of Mr. John Jackson, architect.

◆

Mr. William Roper, builder, of Broomfield-road, Chelmsford, died on Wednesday week, aged 80 years.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

EDINBURGH ARCHITECTURAL ASSOCIATION.—This association met on Thursday, the 11th inst., in the hall, 42, George-street, Edinburgh, under the chairmanship of Mr. John Kinross. Sheriff Mackay read a paper on "The Architecture of Scottish Towns, as illustrating Scottish History." Taking the four periods of Scottish history—the Celtic-Roman, the Celtic-Saxon, the Scottish-Norman or Feudal, and the British or Modern—he described the known architecture characteristic of each.

◆

Miss Katherine Stewart Forbes, late of Chester House, Wimbledon, who died on December 28, has bequeathed two pictures—an "Italian Warrior," supposed to be by Tintoretto, and "Three Children," by Stothart—to the National Gallery.

At a meeting of the Dover town council on Friday, the mayor made an important announcement with reference to the new harbour at Dover. He stated that it was expected that at the April meeting of the Harbour Board the tender for the first part of the new work, the eastern arm, to the amount of £300,000, would be accepted, and the work would in all probability be commenced in May.

WAYSIDE NOTES.

EMULATING the Norwich fathers, the citizens of Rochester had a mind to convert the keep of their historic castle into a museum. The forbidding pile of ruins that overshadows the Medway is, however, to remain as of yore—at least for the present. According to the *Athenæum* the proposal to establish the museum in the old building has been definitely withdrawn, so far as concerns the immediate future.

Replying to a question respecting the progress made with the plans for the completion of the South Kensington Museum, the First Commissioner of Works stated on Tuesday evening that the successful competitor, Mr. Aston Webb, has been engaged in making the alterations to the plans suggested by the Science and Art Department and the Office of Works. Considering the time required to make these alterations, to clear the site, and to make temporary arrangements to enable the department to carry on its work during the erection of the new buildings, it is not proposed to do more during the present year than complete these preliminary arrangements. So, in effect, said Mr. Plunket. Seeing that we have only commenced the year—roughly speaking—the department are going to do things with "measured tread and slow." Ten and a half months, at least, for preliminary operations, before even a brick is laid, is a liberal allowance of time, and should justify our expectations of ultimately seeing some very wonderful work indeed.

The First Commissioner of Works has also made a statement with regard to Mr. Henry Tate's offer in the matter of the erection of a gallery for British pictures. The Government are very anxiously considering the offer. Further information may be forthcoming if Mr. Whitmore repeats his question next week. It seems about time to hear of something definite. Cynical people say the Government is going out presently, and prefers to leave the task of providing these little luxuries to its successor.

That good old "hardy annual," the question of "Fogs in the Metropolis," occupied the attention of the House of Lords during the whole of their Friday's sitting. Viscount Midleton asked whether the Government were prepared to appoint a Royal Commission to inquire into the causes of the prevalence of fogs in London; to ascertain how far, and by what means, they were preventible; and to make such recommendations as, after inquiry, they might deem advisable. Fogs were on the increase. There were 1,500,000 private chimneys within the Metropolitan area; 480 tons of sulphur were daily admitted into the atmosphere. It had been shown by the Meteorological Society that the domestic chimney was responsible for nineteen-twentieths of all that portion of the London fog which consisted of smoke particles. The remedies suggested had been the use of anthracite coal, the adoption of smoke-consuming grates, and the introduction of some chemical apparatus into the chimney for the purpose of consuming the smoke.

The common-sense, practical tenor of Lord Salisbury's reply to Viscount Midleton will have struck many readers of Parliamentary reports. There could be little doubt that the fogs which arose from the Essex marshes came from the sea. The worst fog Lord Salisbury remembered was one of about four years ago at a sea-coast town, where a man could not see his own boots as he walked along the parade. The compulsory consumption of anthracite coal, as suggested by Professor Frankland, would be a remedy for the colouring of the mist-fog by the unconsumed carbon discharged from chimneys; but in this event the price of this class of coal would be enormously increased, the whole of the population would have to give up open grates, and it was doubtful if the people of London would condemn themselves and their children to sit by a flameless fire. Such a remedy would require a gigantic system of inspection. The burden thus entailed would be worse than any London fog. Lord Salisbury concluded by saying that the Government did not think it advisable to appoint a Royal Commission on the subject; but would heartily support the appointment of a committee.

No one wants to retain the London fog; but it is not difficult to see that time and efforts may be wasted on worse than futile attempts to remedy what is irremediable. Whatever is done with the smoke, fog, more or less dense, must remain. Whilst London stands in its present position—in a basin, adjoining extensive, damp marshes, and connected with a not-distant sea by a broad river—sea-fog and marsh-fog, or mist, must come. The chief benefit that would accrue from the absence of smoke would be that we should find our chests, throats, and noses more comfortable in a fog than when smarting with the irritation that, presumably, the carbon occasions. Though perhaps no less dense so far as seeing is concerned, benefit would certainly accrue from the easier transmission of light. The Egyptian darkness that now periodically overtakes us, even on a June day, would perhaps disappear. This would be a great gain. As to the actual presence of 480 tons of sulphur, &c., I always regard these materials as excellent deodorisers and antiseptics. Were there no vast clouds of floating particles of carbon occasionally passing over the Metropolis, we might find that our municipally-provided scent bottles—otherwise the street sewer-ventilating gratings—would be more than ever in evidence. I have a mind that the carbon in the London atmosphere does a deal of good work.

On Saturday we managed to get as far as Sydenham to see the electric show, and were highly pleased with the same. With a clear recollection of former exhibitions, the advances made since that day, in almost every department of electrical engineering, are very striking. Perhaps nothing is more noticeable and gratifying than the steadiness of the arc light. Whereas the older lamps twinkled like stars in the firmament, the glimpse of the many pendent lights ranged along the lengths of the Palace "nave" gave the effect of so many calm, placid moons, or the sort of night effect that might be imagined to reign on some remote planet even more lavishly provided with satellites than any of which we know. Certainly, to miss going to the Crystal Palace during the time of the electrical display should be culpable on the part of the architect. It is most instructive—when you can find the exhibitors ready and willing to instruct you.

Seeing the rapid studies made in the matter of electrical supply and the extensive operations of lighting companies about which you wrote last week, I suppose that architects have taken all necessary steps to inform themselves with regard to electric lighting, so far as it affects the specification and bill of quantities. Many who may have neglected the subject have an opportunity this evening of getting a fund of information in a short space of time. Mr. Max Clarke reads a paper at the Asssociation which I doubt not will contain abundant hints in artistic and practical matters connected with the electric-lighting of houses.

"Come to Venice!" said a friend. The thermometer was somewhere about freezing-point, while a blizzard raged in the streets, and I thought I would go to Venice, if possible as likely to prove a paradise by contrast. When I found that he meant "Venice at Olympia," I had to think twice, having heard about the chilly sea-breezes that blow over the lagoon; but then remembering reading something to the effect that the management had taken steps to warm the atmosphere, I consented to go direct by rail to the "Bride of the Sea," induced, I must say, chiefly by your recent notice of the glass-blowing at Dr. Salviati's furnaces. As it occurs in the "Ingoldsby Legends," "I would not have missed such a sight for a pound." I advise no one to miss it for the sixpence charged. The deftness of these true artists, the beauty of their work, and the picturesqueness of the whole scene are really, as the custodian at the entrance continually announces, "very interesting and well worth seeing." As for the rest of the show, "the town" is a pretty fancy; and, by the bye, I should advise you, Mr. Editor, to be cautious in accepting any "sketches of Venice" offered, unless the sketches be guaranteed by respectable parties, and holds a certificate from some authority at real Venice, stating that the sketches were made on the spot. Otherwise you may be deceived with sketches from Olympian Venice. I did see one young man sketching there, and kept sharply on the look-out for any members of the Association who might be making measured drawings with that frantic industry so noticeable at Saturday afternoon visits and summer excursions. Some people have complained of the lack of effect in the gondolas; but it seems to me that it is just in the graceful action of the gallant gondoliers that we get a true touch of the real Venice. The spectacular display is scrumptious, and not too much of it.

GOTH.

CHIPS.

On Saturday the Bishop of Southwell (Dr. Riddings) opened and dedicated the new mission church of St. Anne at Ambergate, near Belper, Derbyshire. The church, which is built of Ambergate stone, is in the Early English style, and is capable of seating upwards of 200 persons.

The concluding lecture of the very successful series organised in connection with the Glasgow Corporation Art Galleries was given on Saturday night to a crowded audience, by Mr. James Paterson, R.S.W., on the subject "A Talk about Landscape." Mr. Paterson said it had always been a cause of wonder to him that there had been such a terrible descent in the quality of British art in the period following Constable, Turner, and Thomson of Duddingston. He expressed belief, however, that landscape in this country had recently taken a most decided turn for the better, and that the outlook was certainly very bright.

A National Museum of Commerce and Industry is about to be created in Paris, and it is estimated that it will cost £80,000. The Paris Chamber of Commerce has agreed to supply half that sum, and the Minister of Commerce has undertaken to ask Parliament to furnish the remainder.

The contract for the construction of the new railway from Wrexham to Ellesmere to connect the Cambrian and the Wrexham and Connah's Quay and Manchester, Sheffield, and Lincolnshire, and the Cheshire Lines system, has been let to Messrs. Davies Bros., of Wrexham, the amount of whose tender was £90,000. There now remains one link to complete the chain of railways giving an alternative route from South Wales to Liverpool, Manchester, and the North—namely, from Hawarden-bridge to Mersey Tunnel. The work on the Wrexham and Ellesmere section is to be commenced almost immediately.

The college of Redruth has just been opened. It has been built from designs by Mr. James Hicks, of that town, the contractor being Mr. Arthur Carkeek, of the same place.

A memorial stained-glass window has been placed in the parish church of Largs, N.B. It is of four lights, and is occupied by subjects taken from the "Te Deum." Messrs. Stephen Adam and Co., St. Vincent-street, Glasgow, are the artists.

The Directors of the Manchester Royal Exchange have under consideration the question of the enlargement of the Exchange by removing the portico and extending the main floor as far as Cross-street, and have instructed their architect, Mr. Murgatroyd, of that city, to prepare plans and a specification, which will be laid before the proprietors at the annual meeting next month.

The gallery in Grafton-street, Euston-road, which threatens to become a formidable rival to the New Gallery, is making progress. Messrs. Wimperis and Arber are the architects.

A stained-glass window, the work of Messrs. Cottier and Co., of London, has been placed in the south transept of Holy Trinity Church, Leamington. The subject is "The Virtuous Woman."

The Midland Railway Company proposes to expend upon the construction of new lines and works, under powers sought this session, £1,275,649. This includes £418,932 which, it is computed, will be the cost of the proposed extensions of the Chapeltown branch from Ecclesfield *viâ* Wombwell and Ardsley, and from Wombwell to a junction with the line from Derby to Leeds. The length of these extensions is a little over ten miles, and the average cost per mile is about £39,000.

A memorial reredos has just been placed in Montgomery Church, from designs by Messrs. Carpenter and Ingelow, of London. The work, together with wings, new steps, and floor of marble and tiles, has been executed by Mr. Bowdler, of Shrewsbury. Mr. Earp, of London, carried out the carving.

The trustees of the National Gallery have accepted the bequest, by the late Mr. John Jame Lowndes, of Chelsea Embankment, of the rec chalk drawing made by Rossetti in 1871 for hi picture called "Rosa Triplex."

At a recent meeting of archdeacons and rura deans in the cathedral vestry, Newcastle, Mr Arthur B. Plummer (of the firm of Plummer an Burrell, architects, Newcastle) was appointed diocesan surveyor for Northumberland (Lindisfarne archdeaconry).

ARCHITECTURE AT THE ROYAL SCOTTISH ACADEMY.

THE architectural section of the exhibition is comprised in twenty-seven subjects, and does not bulk so largely as in former times. They are arranged in the south room, and mostly in good position; but two of their number have been crowded out, and are awkwardly placed in the passage between the rooms, to make way for oil-paintings, the pressure for the accommodation of the latter having not been less than in preceding years. There are several very fine examples of etching, which has of late become more popular, and evidence of this is naturally to be expected in the exhibition. 585, "How the Gossip Grew," is a humorous picture after F. D. Millet, etched by F. Heath. 596 is another etching, by W. Hole, R.S.A., after the same master, "La Bergère gardant son troupeau." Street architecture and mansion-houses make up the most interesting architectural examples. 481 is a good perspective drawing of a large and lofty tenement now being erected at the corner of the High-street and Cockburn-street by the National Bank. Mr. McLachlan, the architect, has made a most effective corner, which exhibits the characteristic features of the old Scotch style, with considerable variety of ornamental features in the proportions of the windows, and some Jacobean Classic details, giving it more architectural importance. The portion on the ground floor adapted for the business of the bank is easily picked out by the range of large and lofty windows. The entrance door is in the angle, and the difficulties of such a doorway have been successfully grappled with. At the eaves, the characteristic dormer gables, with an angular touch, have a good effect, and the whole is one of the best, as it is the most architectural, of any of the recent additions to the High-street. 527 is a beautifully executed drawing in line, like an engraving, of the entrance to the Caledonian Railway Station. This is now being erected, and the drawing is the geometric elevation merely. Messrs. Kinnear and Peddie, the architects, have provided a very handsome frontage of much dignity, and showing nice proportion in details of the three archways. The whole design is, indeed, too grand and massive for a mere verandah; but there may be some idea of preparing for future contingencies, when the sense of proportionate magnitude will be better satisfied. The roof of the entrance front is a very steep Mansard, and has an overpowering magnitude in the elevation, which, however, will disappear in the perspective. 543, "New Premises, Princes-street," for Redfern and Son, is a very elaborate design in the way of street architecture, by Mr. G. W. Browne, architect of the Free Library. Mr. Browne has to contend with the difficulties of a very narrow and lofty frontage, not to speak of the provoking contrast in proportions and details of the adjacent buildings. The drawing is a vigorous one, clearly exhibiting, to a pretty large scale, the details of the ornament, which are of a mixed character. The shop front has one large window and the doorway, the window formed by a low centred archivolt. There is much ingenuity in combining the modern style of decorative detail with samples of the Continental Flamboyant Gothic and the whole has a striking appearance and provides a very marked contrast to any of the alterations hitherto made upon the ever-changing aspect of the street. 406, "Design for Edinburgh Public Library," by J. G. Fairley, shows the George IV. Bridge, or principal frontage, elevation. The building is brought entirely forward to the street line, and so has the advantage over others which, to get more light below, made a part more or less deeply recessed. The drawing is well delineated, and exhibits a fair Classical frontage with symmetry of arrangement and well-proportioned windows and other features of the style. But the whole is overburdened with pilasters and pediment ornamentation too closely crowded together, and the frontage would have had a more pleasing appearance if this exuberance of detail could have been dispensed with. Mr. Fairley, in 493, sends a very fine water-colour sketch of "Additions to Kirkbrae House, Dean Bridge." The house is located at the south end of the bridge, and, as improved, will be a good addition to the picturesque locality. 541, "Brechin Free Public Library"—a selected design, by J. McLellan Fairley—is a modest building, without any very noticeable architectural detail. 537, "Students' Mission and Settlement Buildings," is a piece of street architecture in one of the poorish districts of the city. Mr. Kerr, the architect, has given the somewhat squalid neighbourhood a building of some dignity, and without any extravagance in ornamental details. The tenement is a lofty one, with some Gothic detail. It is finished at top with barge-boards and timber work; but the edifice, perhaps, is rather lofty for that cottage style, and the ordinary Scotch Gothic dormer would have looked as well, and more substantial. 540, "New Orphanage for Girls at Whiteinch, Glasgow," is a stately and substantial piece of architecture in the ordinary domestic style, by S. Henbest Capper. 492, "Competitive Design for Ayr Library," by G. W. Browne, is s street architecture front, with two very large oriel windows, but otherwise without architectural detail of noticeable mark. 502, "Duntreath Castle, Stirlingshire," by Messrs. Mitchell and Wilson, is a large picture of a subject illustrated from another point of view in the exhibition of last year. The castle is a very large one, and apparently covers a great extent of ground. The main characteristic of the design from this point of view of the picture is the grouping of the lower portions with two of much greater altitude, a somewhat formal arrangement, but securing the most picturesque effect with such an extended frontage. The building, though comparatively plain, has a fair display of the characteristic features of the Scotch style. 404, "Ferguslie Park, Paisley," is another very large mansion, designed by Mr. H. J. Blanc, of which some interior views were given in last year's exhibition. It is a compact design of many and lofty floors, in what may be called the ordinary domestic style of the best class, of cheerful aspect, with large and varied windows, and ornamental timber-work in the gables. 488, "Blair, Ayrshire," is an excellent etching in Prout's brown of one of the oldest inhabited houses in Scotland, with some alterations made recently by Mr. T. Leadbetter, architect. The oldest portion, as stated in the drawing, is the centre portion, and successive additions have been made by extending this frontage at each side, so that the aspect of the whole is now that of a very long and probably narrow edifice, without anything of the picturesque variety of projection often found in these old houses. The older and more modern portions exhibit the usual details of the Jacobean period, without any traces of machicolation in the ornamental detail of the upper stories. 517, "Fyvie Castle, Aberdeenshire," is a large and very beautiful water-colour drawing of one of the most peculiar specimens of the ancient Scottish Baronial castles. An addition has been recently made to the work by Messrs. D. and J. Bryce, and apparently without detriment to the character of the whole. One of the most important and interesting of the architectural exhibits is the interior view of the Parliament Hall, Edinburgh Castle (530), showing the dais, but giving at the same time a very good idea of the restoration. Mr. Blanc, the architect, sends also another interior sketch, to show the screen, in water-colour (542). Both are most elaborate drawings, and indeed the subjects require it for illustration. The chimney-piece is a massive structure, richly carved, and stands out in good relief from the lofty panelling, which is carried round the walls. The massive timbers of the roof and accessories are very well delineated. These show an amount of attention to minute details which will make this long-neglected interior one of the most interesting relics of the past, and an architectural masterpiece as well. The screen is still more highly elaborate in its construction, being in Decorated Gothic work. All the accessories of the interior have been studied to give the antique character essential to its restoration The hall, it is understood, will be used as an armoury, or other useful purpose, until Professor Blackie's Home Rule Parliament is summoned to meet within its walls. The churches of the collection are few. Mr. Blanc, in 482, sends a view of St. Matthew's Church, built two years ago for Morningside, as it will be when completed, by addition of its spire and chancel. 483 is a small drawing, rather too faint and far away from the eye to see any detail, but enough to indicate that it is one of the cheaper galleried churches. 490 is a more ambitious effort, by F. W. Simon—"Design for a Gothic Church of the Lancet Period." There is no novelty in the design, which appears to be that of an interior with nave and narrow passage aisles and transept, the tower and spire at one side of front gable, and staircase at the other. The point of view from which the picture is taken has been rather near, producing an unpleasant sharpness of the angle nearest the eye, and not doing justice to the range of lancet windows. The surface arcading is too continuous, and would have told better had there been rather less of it. Otherwise the design is in all respects a very well-proportioned study in this style. In 545, Mr. Simon gives a sketch of a new church at Manchester, erected in brick and terracotta. It is a piece of street architecture, and, no doubt, harmonises well with its surroundings. The details are all of simple character. 544 is a new Free Church erecting at Moffat, by D. B. Burnie. The etching shows the edifice in a very commanding position, open on every side, with much ornamental surface work, in doors and windows arcading. The principal front is flanked by a spire of moderate height on one side, and the usual gallery staircase at the other. It is plainly a galleried church, with double row of windows at the side, and a very shallow transeptal projection. The spire rises from a low tower, having the angles truncated for pinnacles on its upper stage, and the somewhat dropsical proportions of the body of the building are masked in front by the usual expedient. It will be observed that the collection above is by no means what it ought to be as representative of the architecture of the day. Were it not for a few constant contributors from Edinburgh itself, the exhibition would be nowhere. The new Council of the Academy may turn over a new leaf.

THE CLERKS OF WORKS' ASSOCIATION.

THE ninth annual dinner of this association was held at the Holborn Restaurant on Monday night, Mr. Aston Webb, F.R.I.B.A., in the chair. The toast of "The Architects and Surveyors" was proposed in a humorous strain by Mr. G. Dalton, who gave some reminiscences of his experience as a clerk of works. To this toast Mr. G. Stanley Peach, F.R.I.B.A., and Mr. Stanley Clarke responded. The chairman gave the toast of the evening, "The Clerks of Works' Association," mentioning that the association now numbered 130 members, being an increase of ten during the twelvemonth. He thought that something ought to be done in the shape of establishing a benevolent society, seeing the misfortunes and uncertainties which must necessarily attach to members following such a calling. Mr. Brady, the President of the Association, responded to the toast, and expressed himself highly gratified with the status of the association. Referring to the suggestion made by the chairman, he said the association was established as a purely professional and independent society, without the necessity for creating an insurance fund. Mr. F. Dashwood, secretary, proposed "The Worshipful Company of Carpenters," cordially thanking that guild for the assistance they had rendered the association. Professor Banister Fletcher responded. "The Health of the Hon. Treasurer" (Mr. J. Oldrid Scott) was heartily drunk, after which "The Visitors" was given, to which Mr. F. T. Baggallay responded. The toast of "The Chairman" was proposed by Mr. T. Edmond.

A monument has been erected by the Baroness Burdett-Coutts over the grave, in Brompton Cemetery, of the late Rev. Henry White, Chaplain of the Savoy. A marble bust of Mr. White, executed for the memorial committee by Mr. T. R. Essex, has recently been placed in the Art Gallery of the Corporation of London, at Guildhall.

Messrs. Ross and Son, the contractors for the Black Isle Railway, are making rapid progress with the work of construction, and the directors of the Highland Railway have now accepted tenders for the erection of the necessary station offices and other buildings at Redcastle, Allangrange, Munlochy, Avoch, and Fortrose.

Plans have been prepared by Mr. A. J. Sturges, architect, 4, High-street, Guildford, for a steam laundry at Guildford, for the Guildford Steam Laundry Company, Limited. The building will be situated close to the town, and will be fitted up with the latest appliances. Messrs. E. and A. Miles are the contractors. The works will commence next week. The main building measures 100ft. by 45ft.

COMPETITIONS.

Coxlodge Asylum Extension, Newcastle-on-Tyne.—The Asylum Committee of the Newcastle City Council met on Wednesday afternoon to receive the report of the assessor, Mr. George T. Hine, F.R.I.B.A, of Nottingham, as to the competitive designs for this important extension, which will provide 350 extra beds, a lecture-hall, chapel, resident officers' house and lodge, and is estimated to cost from £70,000 to £80,000. The competition was one under motto, and was confined to architects carrying on their profession in Newcastle, the architect awarded the first prize to have the commission for carrying out the work; the second plan, £150; the third, £100; and the fourth, £50. Mr. Hine stated in his report that 18 sets—with four alternative plans—making 22 in all—had been sent in, every one of which was highly creditable to the architectural abilities of the competitors. These plans had cost him—owing to their general excellence—a great deal of time and very much anxiety before he had been able to decide on the first four. Not one of them had fulfilled all the requirements of the Lunacy Commissioners, and the successful plan would require to have some little modification made in it. Several were out of court in consequence of the cost; but not one of these would have been in the competition independently of that fact. The successful competitors were, in his opinion, to be placed in the following order:—1st, Motto, "Norstan," Mr. J. W. Dyson, 18 Grainger-street; 2nd, "Compact," Messrs. Montgomery and Carr, 42, Grainger-street; 3rd, "Order," Mr. W. L. Newcombe, Pilgrim-street; 4th, "Northumbria" (second plan), Messrs. R. Knill Freeman and S. R. Robbins, Grainger-street. The committee did not come to any decision on the matter, but are to meet again shortly to further consider the assessor's report.

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CHIPS.

The Parliamentary estimates for the construction of the proposed underground railway from Waterloo Station to Mansion House-street have been deposited by the engineers, Messrs. Galbraith and Church and J. H. Greathead. The length of the line is 1 mile 4 furlongs 6·80 chains, and the total cost of construction is estimated at £499,769, or at the rate of about £333,178 per mile.

The Anstruther Harbour Commissioners provisionally adopted a plan submitted by Messrs. Stevenson, C.E., Edinburgh, extending the harbour 12½ acres by building extra piers to the south-west, and giving a depth of water of from 6ft. to 10ft. at low water, the sheltered deep-water area being 2½ acres, and the estimated cost £35,000.

A County Council inquiry, which took place at Mortlake on Monday and Tuesday in last week with respect to the application for the conversion of the Richmond rural sanitary district into an urban sanitary district, aroused much interest in the parishes affected. Though the total population of the district is only 18,864, there are at present in the four parishes—Barnes, Mortlake, Kew, and Petersham—three distinct authorities, and representatives of these bodies objected to the present scheme, but admitted that they aspired to some other form of local self-government than that at present possessed by them.

The picturesque old stone bridge spanning the river Beauly, in the Highlands, was washed away on Friday afternoon, being the third of the bridges designed by Telford, the celebrated engineer, which have been destroyed by the recent floods. Shortly before 5 o'clock it was inspected by the Messrs. Ross, contractors for the Aviemore and Black Isle railways, but in less than a quarter of an hour the two centre piers gave way, the width between each being 60ft. In consequence no road traffic can now be carried on between Inverness and Beauly.

The Emperor Frederick's sarcophagus, by the sculptor Begas, was placed over the vault in the mausoleum at Potsdam on Friday. It is of white marble, and weighs about 10 tons. The late Emperor is represented as clothed in a field marshal's uniform, and lying on the sarcophagus wrapped in his cloak, his hands holding his sword on his breast. The sides of the sarcophagus are adorned with reliefs.

Mr. John Price, of Grappenhall, superintendent engineer on the Manchester Ship Canal works, is about to sever his connection with that undertaking, having been appointed to the position of superintending the construction of the proposed new Lancashire, Derbyshire, and East Coast Railway.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. Passmore Edwards.

TERMS OF SUBSCRIPTION.

One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 0d. (or 6dols. 30c. gold). To France or Belgium, £1 6s. 0d. (or 33fr. 30c.) To India, £1 6s. 0d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front Page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No front page or paragraph Advertisement inserted for less than 5s.

Situations.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is One Shilling for Twenty-four Words, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., L., LI., LIII., LIV., LVIII., LIX., and LX. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

Received.—G. R. F.—M. and L. Co.—Frank.—M. W.—S. E. P. Co.—J. L. (Wimbledon).—Veritas.

"BUILDING NEWS" DESIGNING CLUB.

Drawings Received.—"Sector," "Alpal," "Isabel," "Pastime," "Peterborough" (no name and address), "Old Postage Stamp," "Athenian."

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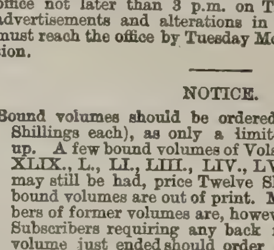
Intercommunication.

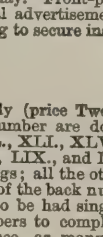
QUESTIONS.

[10720.]—**Quantity Surveying.**—Will some obliging quantity surveyor kindly say whether it is usual to take rough cut squint quoin lineal, in addition to rough cut raking face superficial, to splayed jambs of door or window openings?—Espere.

[10721.]—**Elliptical Arch.**—I intend to build an elliptical arch (in special blue brick with cement); at the centre of each crown there will be a principal weighing (with slates) five tons. Will any reader kindly inform me if this arch will be strong enough, giving formula for working out strength of same?—Carey.



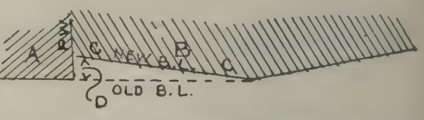
Elevation.



Section.

[10722.]—**Who is Responsible?**—A buys land and builds a house, his architect having drawn up the usual conditions of contract and agreement, making the builder responsible for any damages he may occasion to B's property adjoining. Who should B. sue or apply to in case such damages, if occasioned, are not rectified? Should it not be A, the owner, or could the architect have inserted a clause virtually conveying the land to the builder during erection of building, thus clearing the owner, and making the builder the owner for the time being? If this latter is the case, would it not necessitate a stamp being put on the agreement at the usual conveyancing rate of 10s. per cent.?—Lex.

[10723.]—**Party-Wall.**—A and B are separate properties with party-wall between; B pulls down his shop and re-erects his premises; the authorities require him to set back to line C C. Query: Has B sacrificed all his right to portion of ground that the party-wall stands on D, also right of usage of wall from ground upwards, as formerly occupied by his old buildings?—Twenty Years' Subscriber.



[10724.]—**Quantities.**—What is the professional charge for quantities when exceeding the 2½ per cent. rate? Who established the rate?—Surveyor.

[10725.]—**Church Planning.**—1. What is the cause of the chancels of so many old churches not being in the same line as the nave, but run off a little to one side—is it the fault of the setting out, or symbolical of the Crucifixion? 2. Can any of your readers tell me what was the old rule in setting out the fall of the nave floor? In one church I find it falls a few inches towards the chancel, in another a fall of 18in. towards the west door; again, the chancel one step down from the nave. What books will give me the information I require?—Edward Swales.

[10726.]—**Woodwork Interiors.**—Would some of your readers recommend a good work on the treatment of woodwork for interiors, suitable for study by a young draughtsman at present in the country.—Earnest.

[10727.]—**Portland Stone.**—Would any kind correspondent, with experience and knowledge of Portland stone, kindly inform a reader of many years which bed of Portland is intended by term in specification "the best brown Portland stone," evidently copied from an older specification? On looking up my Rivington's on Material, I find no Portland stone classed as brown.—Petro.

REPLIES.

[10715.]—**Technical Schools.**—There are technical schools in Marylebone, which may be seen at any time by applying to the attendant at the entrance, 64, High-street, Marylebone. They were completed last year, Mr. Thos. Harris being the architect.—Geo. F. Adam.

[10672 and 10719.]—**Salisbury Cathedral.**—The vaulting of the nave and aisles is thus described by Price, whose opportunities for examining the building were exceptional, while his observations are critical and exact: "The groins and principal ribs are of Chilmark stone, but the shell or vaulting between them is of hewn stone and chalk mixed, on top of which is laid a coat of mortar and rubble of a consistency probably ground in a kind of mill, and poured on hot while the lime was bubbling, because by this the whole is so cemented together as to become all of one entire substance." In another place he describes the vaulting as being 18in. thick; that of the Lady-chapel is of the same description. The slenderness of the Purbeck shafts in this chapel has often excited surprise and wonder at the architect's boldness. The dimensions of the east window quoted from Rosengarten are entirely erroneous. The east windows of the Lady-chapel consist of a central lancet of three lights, the middle one higher than the sides, and a single lancet to each aisle. The stonework of the spire is 2ft. thick at the bottom, diminishing to 8in. near the top. I regret that I can give no information as to the jointing of it.—J. H.

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The ventilation of Westmill parish church, Buntingford, has been intrusted to Messrs. Baird, Thompson and Co., ventilating engineers, London and Glasgow, who have introduced their "Æolus" invisible or concealed self-acting roof ventilators for the extraction of the vitiated air, and their "Æolus" improved waterproof air-inlet ventilators for the admission of a pure supply of fresh air.

The work of building new quarters for married troops stationed at Devonport has been commenced by local contractors, and about 100 men will be employed for nearly a year. Fifty-four houses are to be built accommodating a similar number of families, and the cost has been estimated at £5,500.

A company has been formed at Ashford in Kent for the purpose of establishing a bacon factory there. Mr. Henry J. Jeffery, M.S.A., architect, of that town, has been engaged to prepare the necessary plans and superintend the erection of the new buildings. The engineering portion of the work is intrusted to Mr. Edward W. Maundrell, engineer, of Calne, Wiltshire.

A social gathering of the members of the Leeds and Yorkshire Architectural Society was held last Monday evening at the Law Institute, Albion-place. Those who attended were invited to inspect a collection of drawings and sketches of architectural subjects. Mr. Frank Bedford showed a collection of sketches of Italian and Spanish architecture, Mr. E. J. Dodshun some pen-and-ink sketches of Domestic work in Shropshire and Northamptonshire, and other sketches of interest were shown by Mr. W. J. Mettam and Mr. Carby Hall, hon. sec. The members were further interested in some ingenious specimens of wood and ivory turning exhibited by Mr. H. B. Buckley.

A theatre, which has been erected in Upper High-street, Wednesbury, from designs prepared by Messrs. Joynson Brothers, at a cost of £5,000, was opened on Monday week. The building is seated for upwards of one thousand persons.

Legal.

THE RATING OF HOUSE OWNERS.

IT is often important that those who have to deal with small properties should advise their clients clearly and certainly upon questions of rating. Of course, the general rule is for the occupier to pay the rates; and when the owner does pay he reckons it in the rent. But there are cases in which an owner must either enter into an agreement with the overseers to pay the rates, or find that he has himself been rated by them without any such arrangement. There are so many statutes affecting all these questions of rating, some of which are wholly, and some only partially, repealed, that it is very satisfactory to find a Divisional Court deciding as it did in the recent case of the overseers of West Ham (*Times*, 8th February), that this rating of owners of houses instead of occupiers is now regulated by one statute only. This is the Small Tenements Acts 1869 (32 and 33 Vic. c. 41), and this alone need now be considered. The overseers had tried to assess the owners in question under some earlier Act which gave them greater powers and better terms, but the Court held they were wrong, and distinctly laid it down that this Act alone now governs all these matters.

The statute applies to all property in England and Wales. It affects the owners of property of the rateable value of not exceeding £20 in the Metropolis, or £12 in Liverpool, or £10 in Manchester or Birmingham, or £8 elsewhere. These limits varying with the localities are fixed to include the same average class of property throughout the country. In order to protect the parishes from the loss of rates if they were bound to assess the occupiers only, the statute gives two methods by which owners may be made liable. One is by agreement between owners and overseers. It is provided that owners of such properties may arrange with the vestry to be rated to the poor, instead of the occupiers; and in this case the overseers are to allow the owners a discount or deduction not exceeding 25 per cent. of the rateable value. Such agreements are very common, and the allowance varies with the circumstances. To protect parishes where owners will not so agree, the vestry are enabled in regard to these small properties to order that the owners shall be rated to the poor instead of the occupiers. But if they do so they must allow the owner a deduction of 15 per cent. in his favour upon the rateable value of the property. These rules are now declared to be the only ones applicable to the rating of owners, and under these it is generally found that an owner can get better terms by agreeing with the vestry than by waiting to be rated by their order.

FRED. WETHERFIELD, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

NOTE.—All questions for reply in this column must be headed "BUILDING NEWS," and must reach my offices, as above, by *Tuesday* morning, to insure answer same week.

X.Y.—BUILDER.—REPAIRS.—FIRE.—In the absence of any agreement, the builder doing repairs which are destroyed or damaged by fire will have to do them over again; and so, if careful, he should insure against this risk. Both owner and builder run a risk in repairs to buildings, and they should always arrange about the insurance.

S. S.—CONTRACT.—EXTRAS.—ARBITRATION.—If the contract is clearly drawn up and your certificate made final, there should be no power to arbitrate, as there could be no dispute; at all events, until after the certificate is given. You should therefore refuse a certificate until the defects are made good, and deny that there is any dispute upon which to arbitrate. I do not then see how the contractor can do anything.

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The Royal Edinburgh hospital for sick children is about to be pulled down and rebuilt on its present site. The new building will contain 100 beds, and has been designed by Mr. G. Washington Browne, of Edinburgh.

Two life-sized studies of lions made by Sir Edwin Landseer for the bronze statues at the base of the Nelson Column will shortly be placed in the British section of the National Gallery. They are the gifts to the nation of Mr. Hills, Landseer's old friend and business manager, whose death was recorded some little time ago.

WATER SUPPLY AND SANITARY MATTERS.

HAUXLEY AND TOGSTON.—After many preliminary investigations, including a Local Government Board inquiry held by Colonel Hasted, R.E., last August, the necessary works for the new water supply for the five pit villages of Radcliffe Terrace, Hauxley, Link Houses, Togston Village, and Togston Terrace have at length been commenced under the auspices of the Alnwick Rural Sanitary Authority. The scheme consists of the conveyance of spring water from Sturton Grange, that has hitherto been allowed to run to waste into the nearest burn, to the villages mentioned, where it will supply a population of about 1,600 persons, who have hitherto been without any adequate supply. Over eight miles of 4in. and 3in. cast-iron socket-pipes are being laid down between the source and the houses to be supplied, including the lengths of the various branches from the trunk main. The principal spring yields 21 gallons per minute in all seasons. Mr. John Carrick, of Durham, is the contractor, and the plans and working details have been prepared by Mr. M. Temple Wilson, the surveyor.

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LEGAL INTELLIGENCE.

THE FATAL FIRE AT BATTERSEA.—The inquest in this case, which has dragged through eight wearisome sittings, reached its last stage yesterday (Thursday). The coroner, Mr. Braxton Hicks, in summing up, defended his action in making so searching an inquiry, remarking that there were many points to be settled, amongst which were the delay in getting water, the construction of the building, and the rapid collapse of the building after the place was once on fire. As to the first point, he had, with the jury, tested the pressure of the water without giving the company notice, and found that there was sufficient force to send a jet over the chimneys of a house. The reason of the delay in obtaining water was found to be that a split wooden plug had got jammed. Since the fire occurred better provision of hydrants had been made in the district. Looking at the way in which the windows were dressed, and the construction of the building, the coroner thought it was a "piece of great callousness, or want of forethought or care" on the part of Mr. Minnis that he should allow naked gas lights to be used. Passing on to explain the construction, the coroner pointed out that the Metropolitan Building Act appeared to be very faulty. He was surprised to find how few the real offences against the Building Act were. The only offences that the experts referred to which the district surveyor could have taken cognisance of were the omission of a post under the bressummer, and the cutting away of the chimney breasts. The use of matchboarding when it reached the ceiling, and also when it was used on ceilings, was strongly to be condemned. Ironwork, also, ought not to be cased in matchboarding, but in some fire-resisting material. The Building Act provided for that in the case of public buildings and theatres, but not in private houses. The district surveyor would have no power to interfere until the work was finished, unless it came within the powers of the Building Act. Then a magistrate had to be asked to condemn the building as dangerous; but it was very seldom they did so. It was no offence against the Building Act for a builder not to give notice of alterations or send in plans; but he (the coroner) suggested that it ought to be made penal if a builder failed to do so. The inquest was still proceeding when we went to press.

IN RE G. POTTER.—The first meeting of the creditors of George Potter, of East Bond-street, Liecester, builder and carpenter, was called on Friday. The liabilities amounted to £213 0s. 11d., and the assets to £68, leaving a deficiency of £145 0s. 11d. The debtor said his failure was caused by loss by a contract to build two houses at Enderby, illness, and being out of employment. The Official Receiver reported that debtor was adjudged bankrupt on a creditor's petition on the 27th day of November, 1889, and had not received his discharge in that case. Since the date of the first petition the debtor has undergone a term of ten months' imprisonment for offences under the Debtors Act, 1869, upon the expiration of which he went into business again as a builder.

IN RE R. T. HOOKWAY, OF BIDEFORD.—A bankruptcy motion in the matter of Robert Taylor Hookway came before Judge Paterson at the Barnstaple County Court, on Friday, the debtor applying for his discharge. The bankrupt, an architect and builder of Bideford, according to the report of the Official Receiver, had the receiving order made on his own petition in June, 1891. The debtor estimated his liabilities at £1,531 11s.; but such liabilities actually amounted to £4,040 8s. 1d. The assets, which had been estimated by the debtor to realise £5,057 14s. 10d., were expected to realise only £659 10s. 1d. The debtor commenced business thirty-one years ago with a capital of £200. He was the owner of a large number of houses, many of which he had himself built. These were mortgaged to the amount of over £16,000. The value set upon them was over £20,000. It was also alleged that he had contracted debts without any reasonable hope of being able to pay them, and that he had engaged in hazardous building speculations. His Honour gave the debtor his immediate discharge, with the order that he pays to his creditors a sum of £200. This was agreed to.

APPEALS AGAINST COMPENSATION AWARDS.—EX PARTE STEVENSON.—In the Queen's Bench Division on Monday, Lord Coleridge and Mr. Justice Cave heard an application as to whether there is an appeal from an order of a Judge at Chambers refusing or allowing an appeal against an award of compensation to owners of house property under the Housing of the Working Classes Act of 1890. That Act makes provision for the ascertainment of the amount of compensation by award or certificate, and then it is provided that there may be an appeal on three classes of cases, the first of which is where the party named in any certificate of the amount of compensation ascertained by any award under the Act is dissatisfied with the amount and it exceeds £1,000. The party dissatisfied it is provided may, upon obtaining leave of the High Court, submit the question of the proper amount of compensation to a jury. In the present case, in which the owners of some house property in Manchester dealt with under the Act had obtained an award of £3,800 for compensation and were dissatisfied with the amount, and had applied to Judge at Chambers for leave to appeal and the leave had been refused, they desired to appeal against that refusal. The Court unanimously came to the conclusion that no such appeal lay, and the appeal was accordingly dismissed with costs.

COMPENSATION FOR INSANITARY PROPERTY.—GOUGH V. THE MAYOR AND CORPORATION OF LIVERPOOL.—Lords Justices Lindley and Kay, on Saturday, resumed the hearing of the appeal of the claimant in this case, from the order of the Divisional Court of the 22nd January last, dismissing his application to refer back the arbitrator's award, made upon the question of the compensation to be paid in respect of labourers' dwellings condemned as unfit for human habitation. The matter had once before gone back to the arbitrator, Mr. Hunter Rodwell (since deceased), after decisions of a Divisional Court and the Court of Appeal, and as the arbitrator had died since making his amended award it was admitted that if the Lords Justices now allowed the appeal they would have no alternative but to set aside the award. The case was reported in our issue of Jan. 29 last, p. 193. In the special case stated by the arbitrator in his first award he mentioned that the claimant put the value of the property at £728, while the respondents' witnesses, valuing it with regard to the presentment of the grand jury that it was unfit for habitation, estimated it at £283 and £247, but admitted that if the property was to be valued as fit for habitation and not in a condition prejudicial to health the compensation should be £667. Taking the view that he was bound to value the houses as condemned, he took into account the value of this land as vacant, and the value of the bricks and mortar, and awarded £300. The Divisional Court, however, thought the amount should be £667, and gave judgment for that amount; but there was an appeal from that decision, with the result that the Lords Justices sent the matter back to the arbitrator with directions as to the principles on which he ought to proceed. With that guidance he made an amended award of £468, which the claimant now desired to have reviewed on the ground that, having regard to the estimate of the witnesses for the corporation, the arbitrator must have taken an erroneous view of the principles on which he ought to have proceeded. The appeal was dismissed with costs.

IMPORTANT RIVERS POLLUTION CASE.—KIRKHEATON LOCAL BOARD V. AINLEY.—In Queen's Bench Division on the 11th inst., Mr. Justice Lawrance and Mr. Justice Wright heard a case of importance, deciding that a person permitting the drains of his premises to drain into a natural watercourse, which has become a sewer under the Public Health Act and which sewer pollutes a stream, is not to be deemed to be a person polluting the stream within the Rivers Pollution Prevention Act. It was an appeal from the order of the County Court Judge of Yorkshire, sitting at Huddersfield, directing the defendants to stop the flow of sewage from their works. The plaintiffs are the Local Board for Kirkheaton, and the defendants Messrs. Ainley and Co., of Shop-lane Mills, manufacturers. The plaintiffs took proceedings against the defendants in the County Court under the Rivers Pollution Act, claiming an order on the defendants to abstain from committing an offence. The ground of appeal was that if any sewage matter did flow into the stream it was carried along a channel used for the purposes of a sewer; that any sewage matter passing into the said stream from the defendants' premises so passed with the sanction of the plaintiffs. The following cases were referred to:—"Eden *v.* Levy," "R. *v.* Staines Local Board," "Ogilvie *v.* Blything Sanitary Authority," "Ainley *v.* Kirkheaton Local Board," "Glossip *v.* Isleworth Local Board," "Provost of Portobello *v.* Edinburgh." Mr. Justice Lawrance, in giving judgment, said the County Court Judge was wrong. The facts were shortly these—that many water-closets on the premises of the defendants communicated with two sewers, originally natural watercourses. The defendants, acting within their rights, drained into these sewers, which fell into the stream. The County Court Judge held that under Section 3 of the Rivers Pollution Prevention Act, 1876, the defendants were guilty. In that he was wrong. The defendants were not the persons who came within the section as the offending parties. Mr. Justice Wright concurred.

Covenants as to Height of Buildings.—Cooke v. Gilbert.—Mr. Justice North heard, last week, a motion to restrain the defendants from erecting on the Cathedral site, Ashley-gardens, Westminster, any building (other than an ecclesiastical building) of a greater height than 75ft., in breach of a covenant by Cardinal Manning, the defendant the Very Rev. Daniel Gilbert, and the defendant the Very Rev. James Bamber. The plaintiffs were the owners of certain houses, part of Ashley-gardens, and the occupier of one of them. The site in question was conveyed in fee in the year 1884 to Cardinal Manning and the two first-named defendants. By that deed the grantees covenanted that (if they should not require the site for a cathedral) neither they, their heirs, nor assigns would erect thereon any building of a greater height than 75ft. measured up to the ridge of the roof. In October last Cardinal Manning and his co-owners agreed with certain people, now represented by the Victoria Panorama Company, to allow them the use of the land for 3¼ years, for the purpose of a panorama. It was then stipulated that the occupiers should not erect any building of a greater height than 75ft. on the site. The company had commenced to set up a large polygonal building with sides 55ft. high, and a roof sloping back at a low angle to a "ring" about 83ft. from the floor. On this ring it was intended to erect a cupola. The sides had already been put up, and a greater portion of the framework of the roof, and some of the innermost principals, intended to support the ring with the cupola at the top of it. The company were now willing to give an undertaking not to put on the cupola pending the trial of the action, if they were allowed to complete the building up to the ring. His lordship said he should allow them to go on putting the covering to the skeleton roof up to the iron ring, but, of course, without prejudice.

Building on the Wrong Site.—Martin v. Booth and Another.—Mr. Justice Vaughan Williams and a jury had, on Tuesday, an action brought by Mr. Arthur Martin, of High-street, Battersea, a builder, against "General" Booth, of the Salvation Army, and an architect, Mr. W. Gilbee Scott, for damages. A year ago the Salvation Army were desirous of erecting a citadel at Tottenham. The plaintiff's tender for the building was accepted and a contract entered into. When the plaintiff commenced to mark out the ground for the building he discovered that the block plan was not accurate, and accordingly he saw a Mr. Gordon, who, the plaintiff alleged, was authorised to act on behalf of the defendants. Mr. Gordon told the plaintiff to go on with the work; but on March 25 the work was stopped, as it was discovered that the building was being erected in the wrong place, and partly on land not belonging to the Salvation Army. The plaintiff then refused to erect the building in the correct position as pointed out by the architect unless he was first paid for the work which he had done in error. Accordingly the Salvation Army employed another builder to erect the citadel, and the plaintiff commenced this action for damages for not allowing him to proceed with the building as shown in the block plan. The plaintiff having been called, at the suggestion of the learned Judge, the parties conferred, and by consent judgment was given for the defendants without costs, General Booth agreeing to pay £100 to the plaintiff in full satisfaction of all claims between the parties arising out of this action or otherwise.

PARLIAMENTARY NOTES.

South Kensington Museum Exterior.—In answer to Mr. Bartley, on Tuesday, Mr. Plunket said: During the autumn Mr. Aston Webb, the successful architect, has been at work on the plans, making such alterations in the details of arrangements as have been suggested by the Science and Art Department and H.M. Office of Works. Some time will be required for completion of working drawings, and for certain preliminary works necessary to clear the site, and to provide for the work of the Science and Art Department proceeding without interruption during the progress of the works; and in these circumstances it is not proposed to do more this year than carry out these preliminary works.

* * *

Sir John Coode is one of the three members elected this year by the Athenæum Club in recognition of their "distinguished eminence in public services."

Our Office Table.

The London County Council have before them two alternative schemes for improved communication between Holborn to the Strand. The scheme adopted by the Improvements Committee, on the recommendation of the late and the present engineer to the Council, is for the formation of a new street 90ft. wide from the Holborn end of Little Queen-street, passing between the Freemasons' Tavern and the Sardinian-street electric-lighting station, intersecting Great Wild, Vere, and Stanhope streets, to the point where Drury-lane is crossed by White Hart-street and Blackmore-street, and then proceeding in a south-west direction to the Strand, which it reaches at the east end of Catherine-street. The alternative scheme, brought forward by Mr. Maule, is for a street from Theobald's-road and Holborn, with a bifurcated entrance to the Strand, the new thoroughfare being λ-shaped on plan and possessing the merit of utilising the west side of Lincoln's Inn-fields. This project begins at Vernon-place, Bloomsbury, where it opens in Theobald's-road, and takes a course through Kingsgate-street, across Holborn, and then through New Turnstile into Lincoln's Inn-fields. At the south-western corner of the Fields a western spur is cut in a direct line to the junction of the Strand with Catherine-street, and an eastern spur passes along Clement's Inn to the Strand at the west end of the Law Courts.

The annual exhibition of the Manchester Academy of Fine Arts was opened on Wednesday. The selection is a smaller one than in most recent years, only covering the walls of three of the first-floor rooms at the City Art Gallery, but is thoroughly representative of the Manchester school. The place of honour in the first gallery is given to F. W. Jackson's fishing scene, "Ready to Haul." Among the best works are Joseph Knight's "Cotter's Field," and Mary Breakell's "Little Nell"; while in the water-colour room good works are the Venetian scene by W. H. Littlewood, "On the Grand Canal," and the study of a birch-tree, entitled "The Queen of the Common," by Byrom Cooper. The best portrait is the presentation one of Alderman Hinchcliffe by W. H. Johnston.

The bill which Mr. Lees Knowles has introduced for the registration of plumbers proposes that the work of examination and registration shall be in the hands of, first, a Grand Central Council; secondly, the Plumbers' Company; and thirdly, of local councils. The actual work of examination would be undertaken by the Plumbers' Company, but the Central Council would have important duties, and would be a body of very strong *personnel*, consisting of representatives of employers and workmen, of the Plumbers' Company, of different medical and sanitary authorities, and of the Institution of Civil Engineers, and of the Royal Institute of British Architects. The Bill does not affect the rights of non-registered plumbers, but it prohibits such plumbers from representing themselves to be registered.

Mr. Alexander W. Conquest, borough surveyor of Folkestone, died last week from blood-poisoning following influenza, after submitting to the operation of amputation of the lower part of the right leg. He was formerly borough surveyor of Ramsgate, and relinquished that post in March, 1880, on being appointed to a similar position at Folkestone from a list of 175 applicants. He was a pupil of the late Sir Joseph Bazalgette, and had just completed his 43rd year. He leaves a widow and five children.

Mr. M. H. Blanchard, formerly of 74, Blackfriars-road, London, terracotta manufacturer, died Feb. 1st, 1892, at his residence, Bishops Waltham, Hants, after three days' illness of influenza. He was one of the earliest revivalists of terracotta, and obtained the prize medal at the 1851 Exhibition for material and workmanship in terracotta. He carried out some most extensive terracotta works throughout the country, amongst them the South Kensington Museum, the Horticultural Gardens, &c., and was well patronised by the nobility and gentry. Mr. M. H. Blanchard's last improvement was a terracotta staircase and floor, and the same was tested by fire on Dec. 17, 1891. He was born Nov. 9, 1816, and buried Feb. 5, 1892, at Norwood cemetery. Mr. M. H. Blanchard was a member of the Society of Arts, having been elected Jan. 28 1863, also a member of the National Conservative Club, Pall Mall, W.

MEETINGS FOR THE ENSUING WEEK.

Monday.—Royal Institute of British Architects. Papers on "Stained Glass," by R. H. Carpenter, J. Powell, N. H. J. Westlake, and C. Heaton. 8 p.m.

Tuesday.—Society of Architects. "Are Amendments in the London Building Laws Desirable?" by Ellis Marsland, St. James's Hall, Piccadilly. 8 p.m.

Society of Arts. "Artistic Treatment of Jewelry," by J. W. Tonks. 8 p.m.

Institution of Civil Engineers. "Bishop Rock Lighthouse," by W. T. Douglass; and "Gas Illumination at Tory Island Lighthouse," by D. C. Salmond. 8 p.m.

Wednesday.—Society of Arts. "Ancient and Modern Art Pottery of Japan," by Ernest Hart. 8 p.m.

Friday.—A.A. Lyric Club. Fifth Concert at the Mona Hotel, Henrietta-street, W.C.

Royal Institution. "Optical Projection," by Sir David Salomons. 9 p.m.

CHIPS.

Among the adjudications in bankruptcy in Friday's *Gazette* the name appears of Henry Stopes, of Queen-street, Cheapside, late of the Hop Exchange, Southwark, brewers' architect and engineer.

The members of the West Suffolk County Council have decided to commission Professor Herkomer, R.A., to paint a subscription portrait of Col. Barnardiston, their chairman for the three years of existence just completed, to be hung in the Shire-hall at Bury St. Edmund's.

"Tewkesbury and its Abbey" formed the subject of a lecture delivered on Thursday night in last week by Mr. J. Godwin Perry, before the members of the York Architectural Association, Mr. Arthur Pollard, the president, presiding. The lecture was illustrated by lantern views.

At the last meeting of the town council of Ipswich, a committee reported that the Mayor (Mr. D. Ford Goddard) had offered to provide at his own expense a shelter for cabmen at the Cornhill. The designs and plans had been prepared by Mr. J. Shewell Corder, architect, of that town, and reproduced the old Market Cross demolished in 1812. The plan, site, and design were approved of, and the proffered gift was accepted with thanks.

As a nucleus of a suggested museum for Rochdale, Mr. James Ogden, of that town, has offered to give the whole of his curiosities, *bric-à brac*, and pictures, with a house in Kilmerdeyne-terrace as a curator's residence, and the sum of £1,000 towards the maintenance of the institution.

Mr. Henry Davis died at his residence, Billetfield, Taunton, on Monday week, at the age of 80. Mr. Davis had in his day been a church builder of high reputation, but he retired from business some years ago on account of old age. Among the works which he carried out were the rebuilding of the tower of St. Mary Magdalene, Taunton, the erection of St. John's Church, Taunton, and of the church of Buckland St. Mary, which has been described as a miniature cathedral. He also constructed a number of houses in the town of Taunton and neighbourhood. He leaves a widow, five sons, and two daughters.

Mr. Thomas Ingram, of 10, Staddon-terrace, Plymouth, celebrated his 100th birthday on Friday. Born in the city of Ely on February 10, 1792, he entered H.M. Board of Works Department, Whitehall and Somerset House, as a civil engineer in 1813, remaining until 1846, when he was transferred to Plymouth. He retired from the service in 1859.

A new reredos has been placed in St. Clement's Church, Salford, as a monument. The central feature is the Crucifixion, and the work has been carried out by Messrs. Doulton, of Lambeth.

The new church at Heap Bridge, near Bury, Lancashire, will be consecrated on March 2 by the Bishop of Manchester. The structure is a one-aisle church, and has been erected at a cost of about £2,000. It is in the Late Decorated style, and is built on an eminence in the midst of the village. It is fitted up with pitch-pine seats, and will find accommodation for about 350 persons. Mr. John Lowe, of Manchester, is the architect.

Wycliffe Congregational Chapel, Stoke-next-Devonport, was reopened the other day, after renovation, at a cost of £800. The building is Gothic in style, and was built in 1856.

The contractors for the river Cart improvements have lodged a claim for £25,000 against the Paisley Cart Trustees for work done beyond that contracted for.

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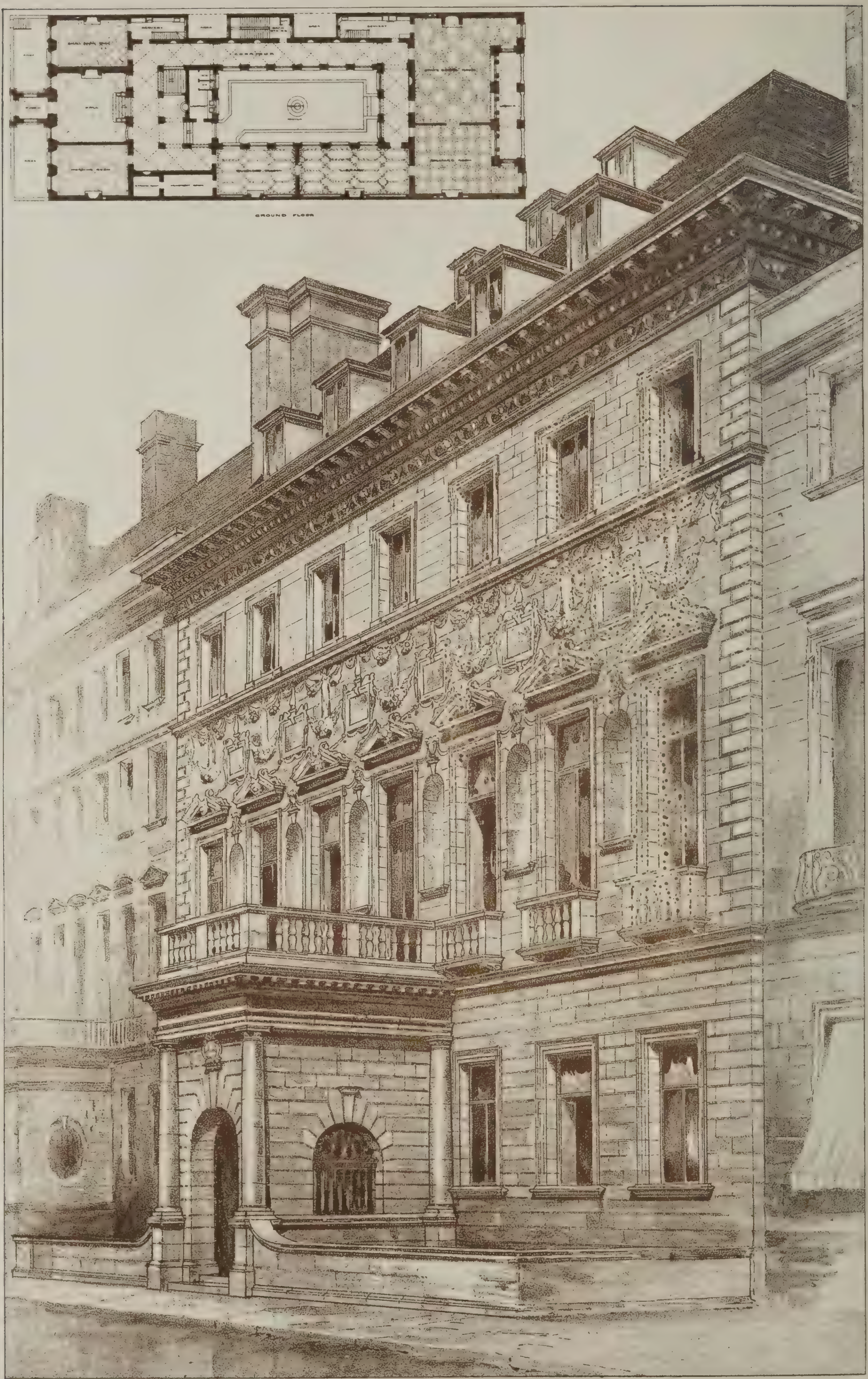

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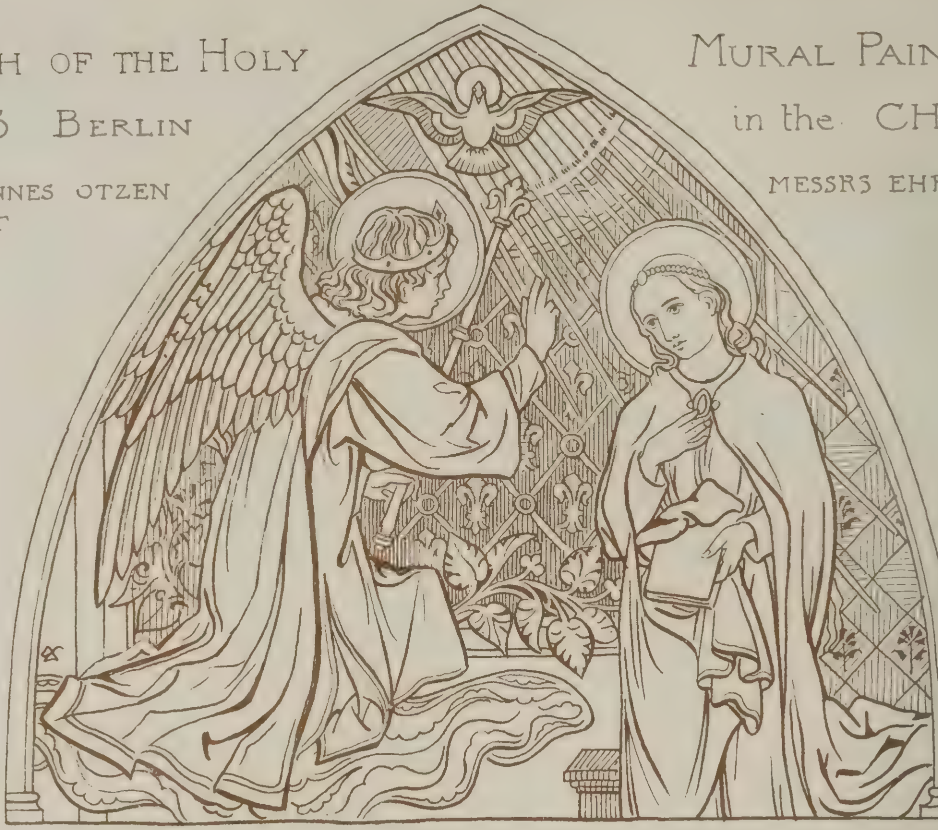
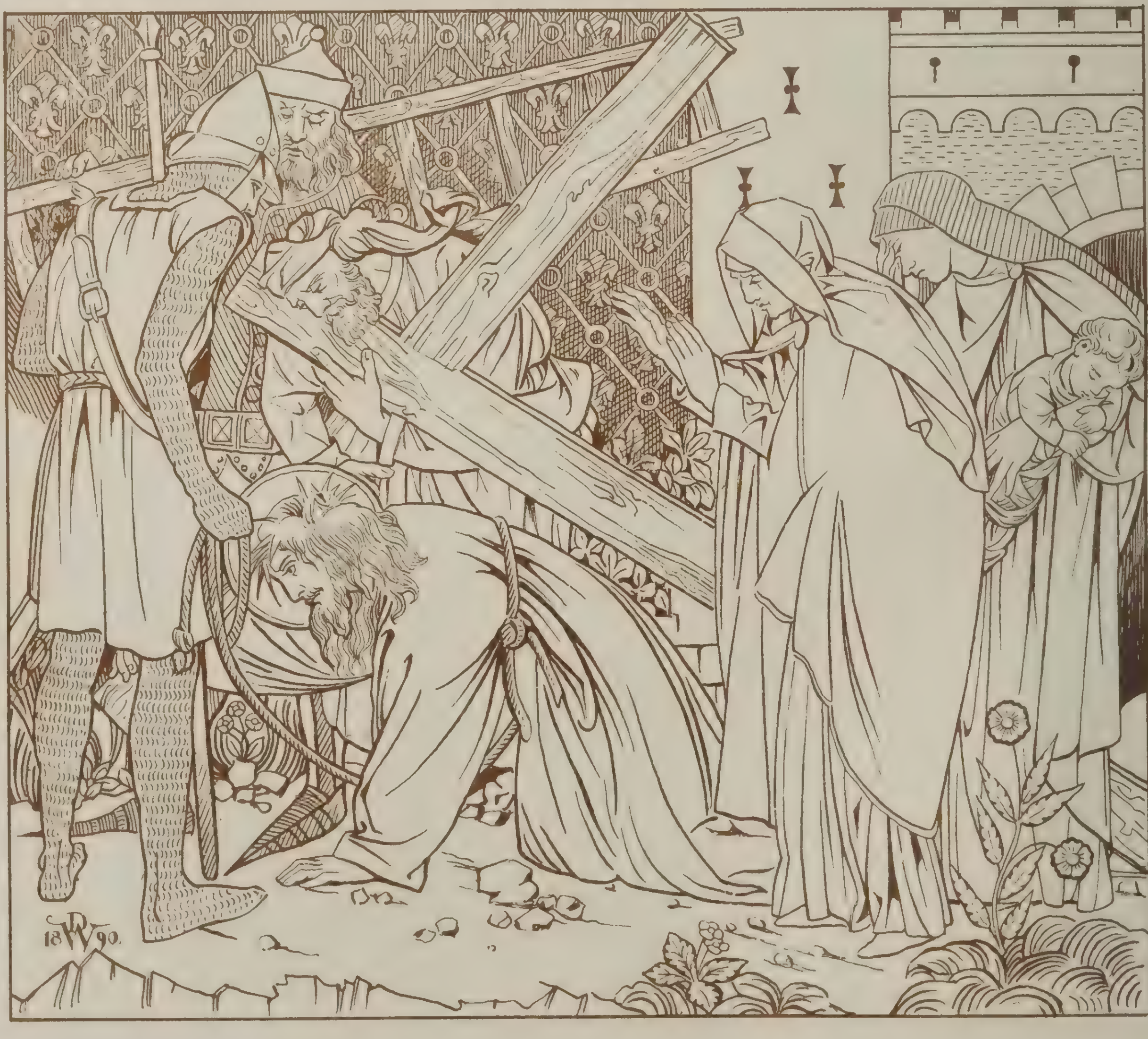
CHURCH OF THE HOLY CROSS BERLIN

PROF JOHANNES OTZEN
ARCHITECT

MURAL PAINTINGS in the CHOIR by

MESSRS EHRICH AND DOERINGER





MAURICE B. ADAMS DELT

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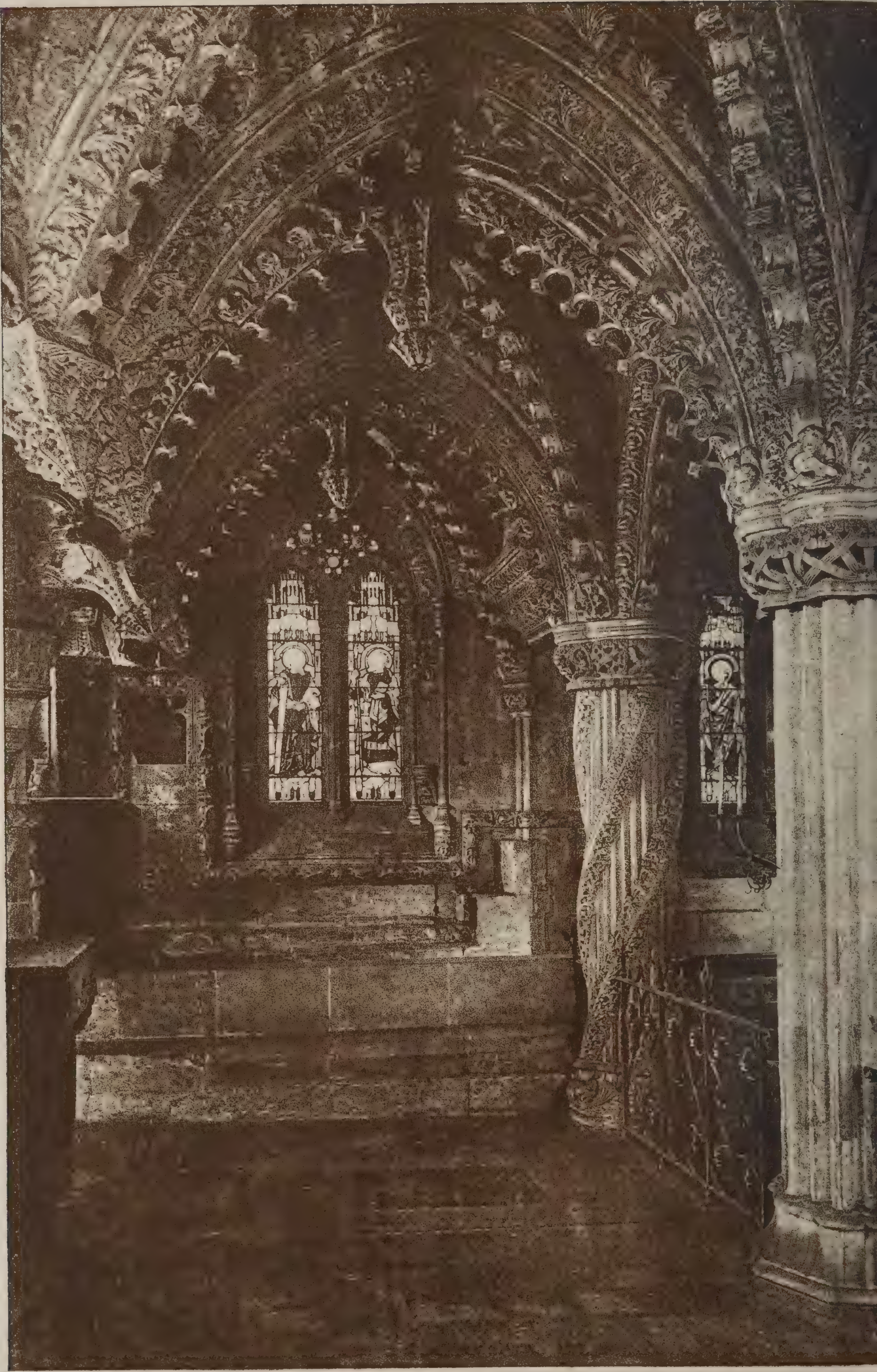

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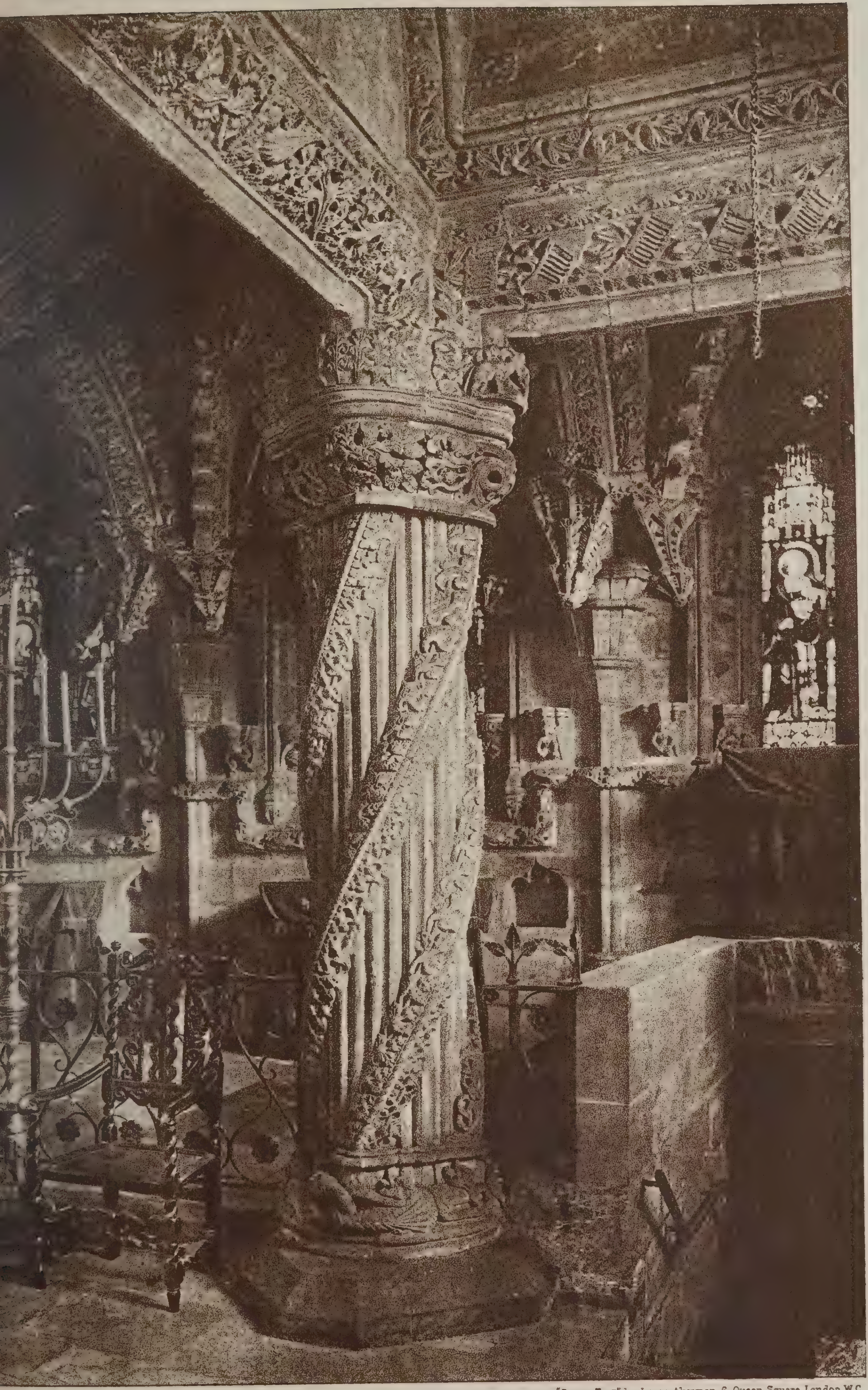

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THE · PRENTICE · PILLAR ·

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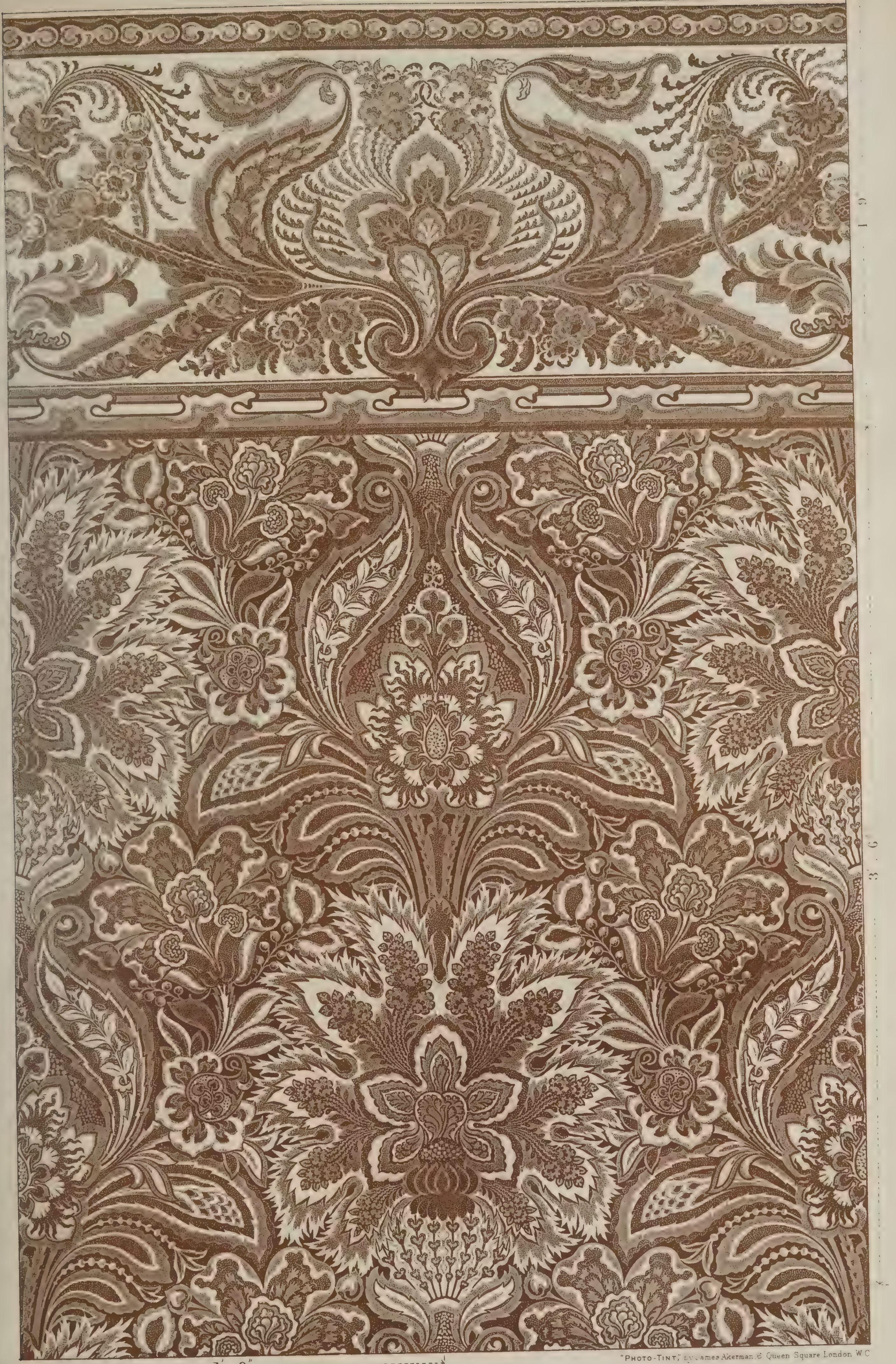

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"THE OSBORNE."
DESIGNED BY H.W. BATLEY FOR JEFFREY & C°

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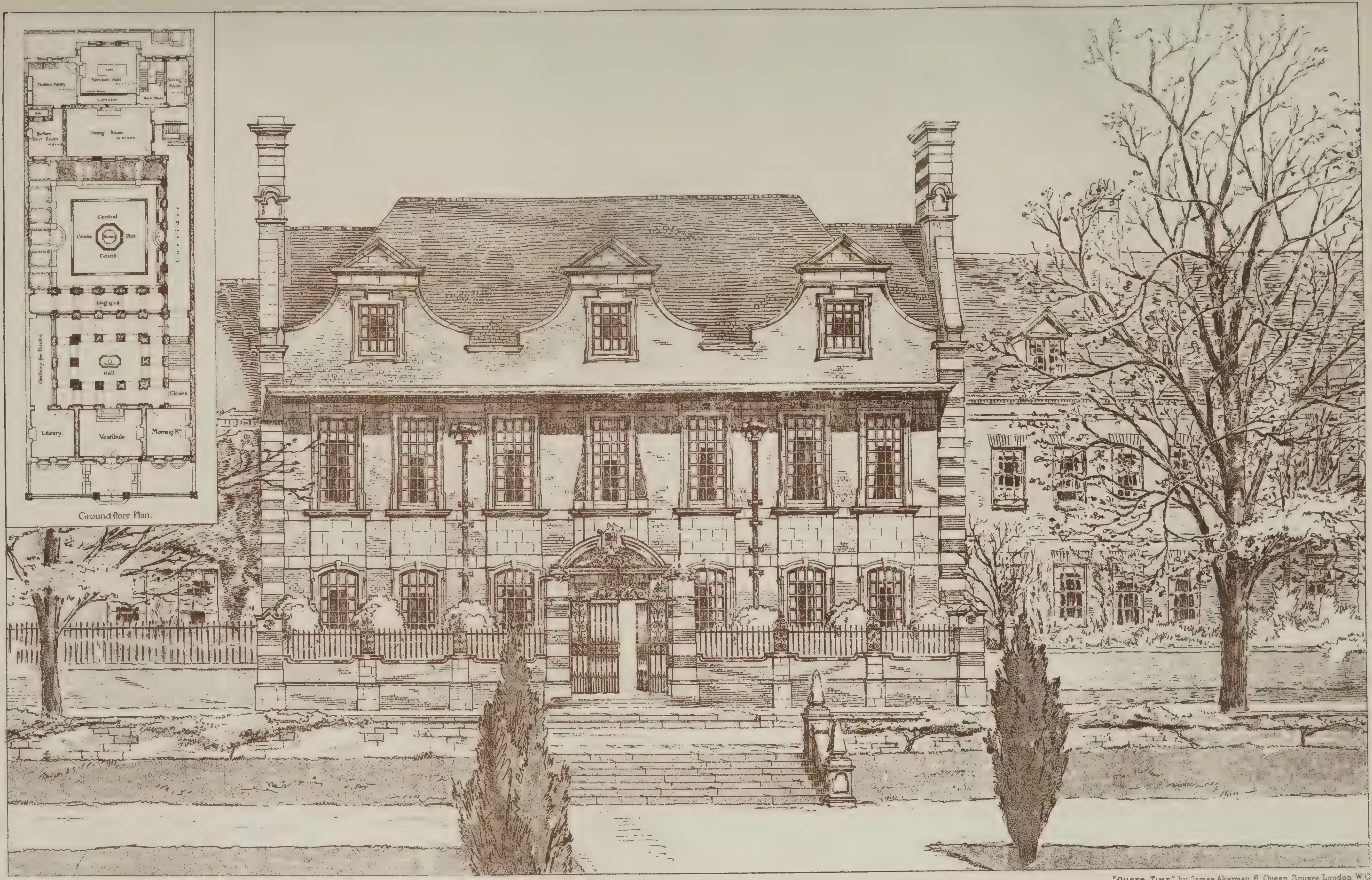

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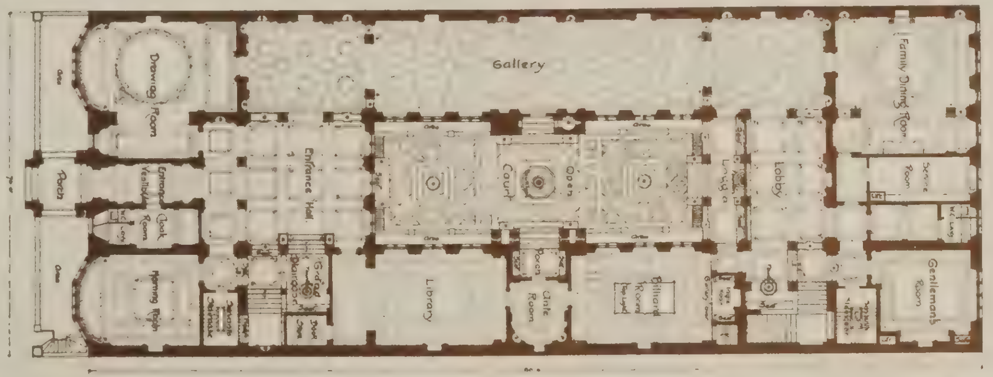
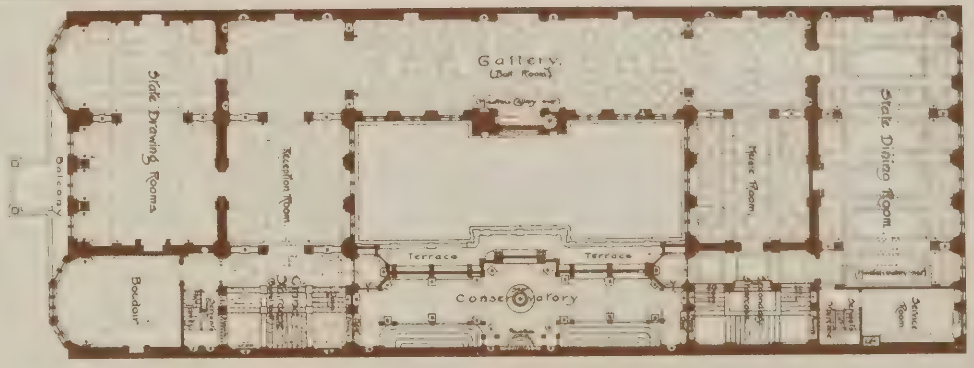
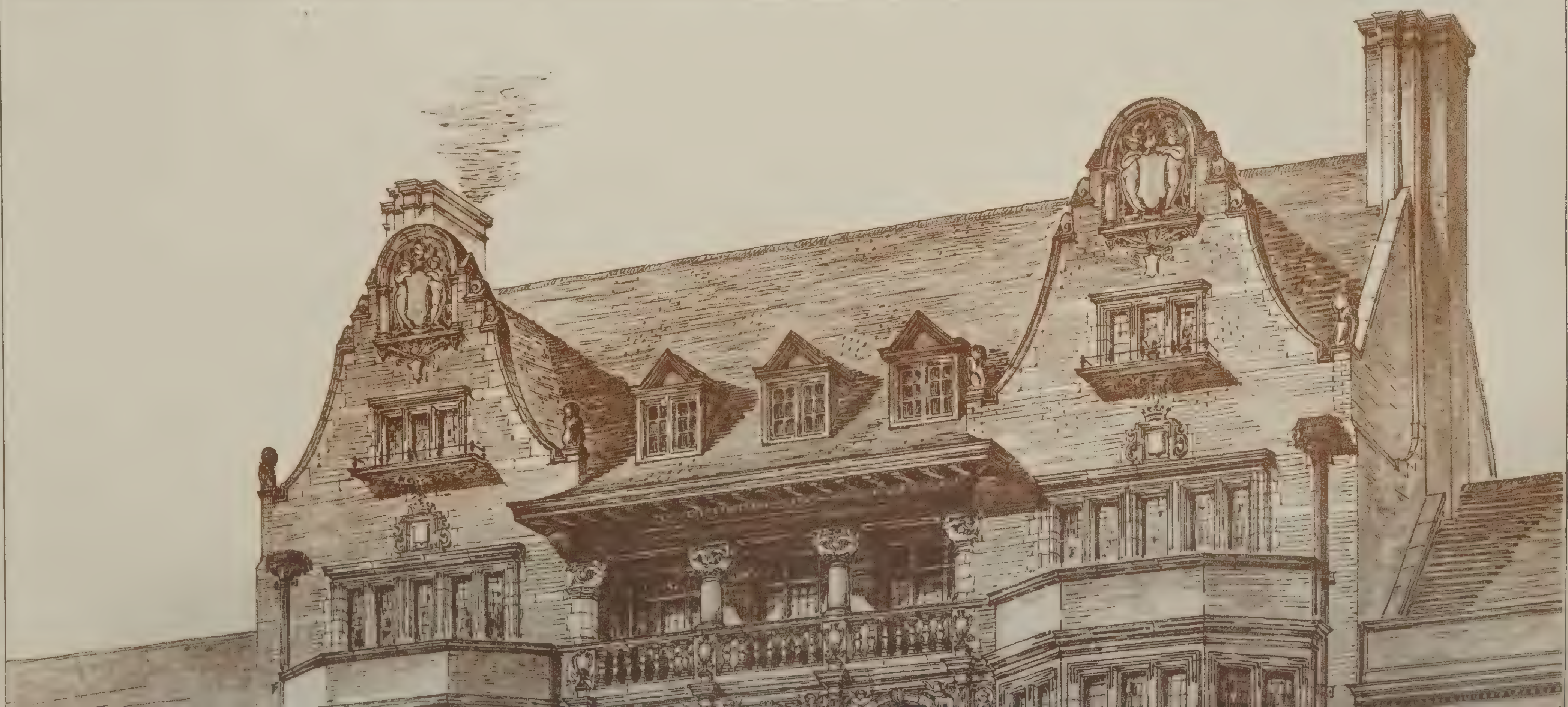
DESIGN·BY·CHARLES·S·SPOONER·

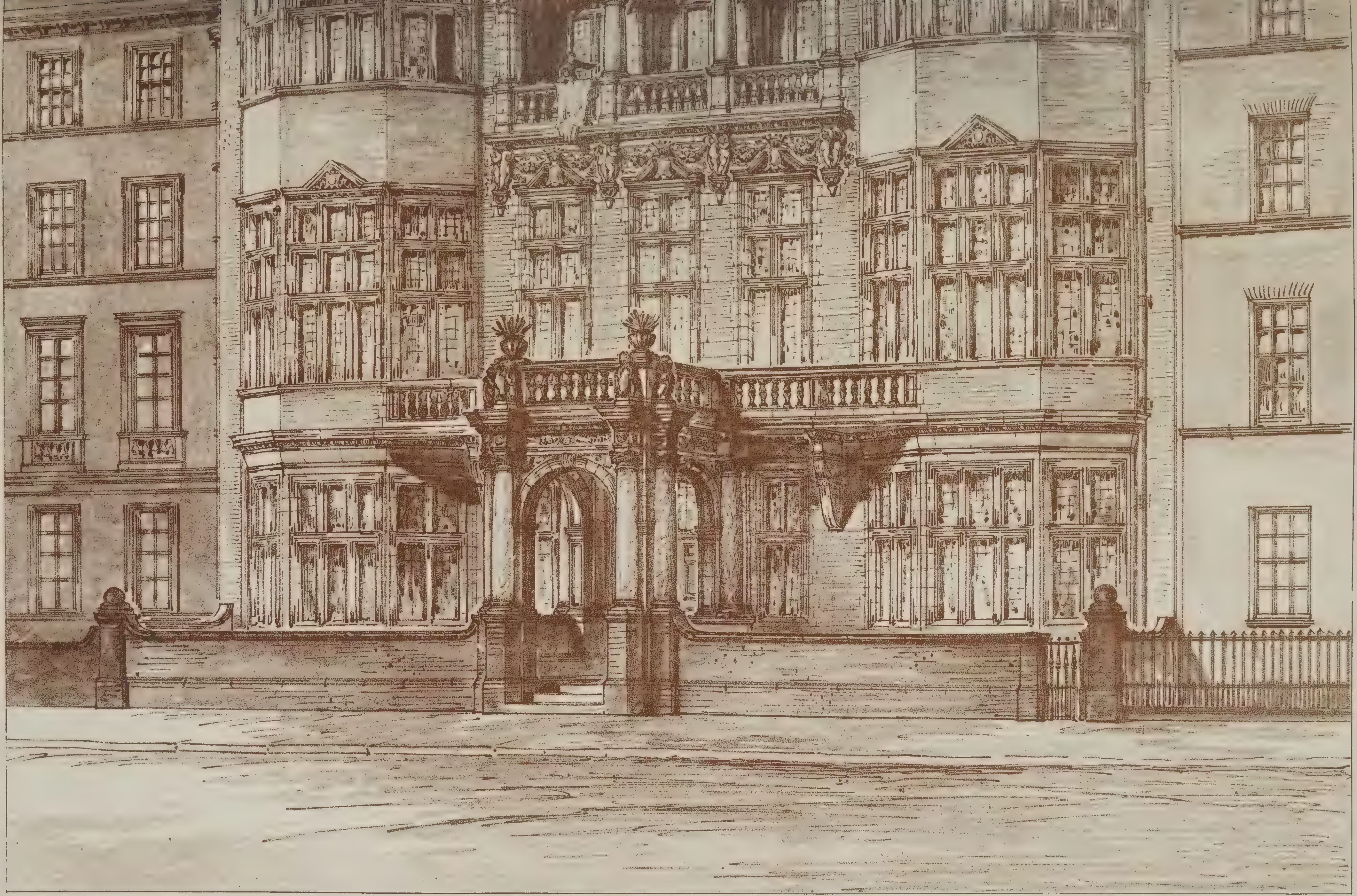


PLAN OF THE GROUND FLOOR.
(Family Apartments)



PLAN OF THE FIRST FLOOR.
(State Apartments)





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THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXII.—No. 1938.
FRIDAY, FEBRUARY 26, 1892.

WHAT IS "SUPERINTENDENCE"?

WHEN one man agrees to sell, and another to buy, some particular thing—no matter whether the thing be materials, labour, or professional skill—it is of the utmost importance that both should agree clearly as to what it is that is being bought and sold. If the seller is intending to supply one kind of thing, and if the buyer is expecting to get a different kind, there is every prospect of an ultimate dispute; and this being the case, the only wonder is that architects are not perpetually involved in disputes with their clients. For when an architect undertakes to superintend a building, and his client undertakes to pay him for so doing, it commonly happens that they use the word "superintendence" in two entirely different senses.

No client would say in so many words that he expected his architect to be omniscient and omnipresent. But this, in many cases, is what it practically comes to, and some recent cases in the Law Courts show that juries are disposed to be equally exacting. A builder, for instance, on his own responsibility, omits something in the contract which he considers needless. In course of time the architect discovers the omission. It would then be difficult to insert the work, and, thinking that its absence will do little harm, he contents himself with deducting the value when the accounts are made up. Now, if the building had failed, partially or entirely, because of this omission, it is reasonable that the owner should hold his architect responsible. But when no failure had occurred, and no injury was shown, it is rather hard that he should be able to recover substantial damages from him. If an architect is to have no power of modifying his work as it proceeds, he is reduced to the level of a clerk of works. It is of no use for him to watch it as it grows up; if it promises at some point to be too weak, he must not strengthen it, and if at another point it proves needlessly costly, he must not save the unnecessary expense. And it may prove either the one or the other without the slightest reason for blaming his original scheme. Nobody can tell, for instance, how every bit of a foundation will turn out before the trenches are excavated. Prudence may originally have dictated the provision of a solid bed of concrete below all the footings. But, suppose the excavation proves that the greater part of them will rest on a thick, iron-bound bed of gravel? Must the architect still dig this away in order to insert, at heavy expense, a stratum of concrete no stronger than the gravel itself? Some recent cases seem to show that he must. For if he tries to avoid this absurd waste of money, and so to benefit the building owner to the extent of scores or hundreds of pounds, that person (we cannot say that gentleman) may turn round on him at the close, and recover an additional sum from him as a punishment for having secured him a very considerable saving.

In much smaller matters again, the architect's and the client's ideas of superintendence differ. If the walls are specified to be of the best stock bricks, the client thinks that his architect must so look after the building that there shall not be a single place brick worked in, even in the centre of the thickest mass of brickwork. If the cement is to be of a certain weight and strength, he thinks the architect must take care that not a trowelful is anywhere used which is weaker or lighter. If the timber is to be free from dead knots, there must not be a dead knot discoverable anywhere from ground to ridge-piece; and so with other things. No doubt the architect will do his best to attain such a result. But if he could attain it by his own unaided efforts no clerk of works would ever be required. And general experience shows that in buildings of any magnitude, the services of a clerk of works are indispensable. If they were not—if it were really practicable for an architect to exercise the minute and microscopic superintendence which many people expect from him—is it likely that those very people would be ready to pay three or four guineas per week for supplementary inspection?

The sort of universal oversight which many persons look for from their architect could only be given if he were at the building and the builder's workshops from the first thing in the morning to the last thing at night. He must only have one building in hand at once, and he must give his whole time to it. This, no doubt, is what many of us would like very well, if the building were only large enough. But experience shows that the most exacting clients are nearly always those who put up the smallest buildings. If an architect carries out a £20,000 church or a £50,000 town hall, everybody, as a rule, is pleased; but let him have a £500 villa to erect, and the case will be very different. The owner who will pay him in all £25 for commission, thinks or acts as if he thought that for this £25 he ought to have the architect's entire services as long as the building is in hand. The drawings must be made in a week, and other clients, who are going to spend thousands instead of hundreds, must wait till they *are* made. The tenders must be received in open competition, so that the villa-owner may get the very lowest one possible. When they come in, the very lowest is what he accepts, no matter how doubtful the reputation or how embarassing the circumstances of the man who sends it. "I take what tender I please," he says, "and it is my architect's business to see that the work is done properly." Yet the man who says this would not buy for his carriage a jibber or a buck-jumper or a broken-down screw, and then say "I buy what horses I please, and it is my coachman's business to see that they go properly." He knows more about driving than he does about building, and he knows, too, that his coachman will not put up with too much nonsense.

The sum of the matter seems to be—that both the architect and the client should interpret their mutual agreement in a reasonable way. The architect should do his best to have the building contract honestly carried out in every respect. And he should so draw up the conditions of the contract that the builder shall be liable to make good departures from it at whatever period they may be discovered—no matter whether a final certificate has or has not been given. Further than this, it should be provided that if any departure from the contract should be of a kind which is practically beyond remedy, the difference between the actual value of the building so erected and that which the contractor undertook to erect, shall be ascertained and deducted from his balance or recovered from him. The faults in question originate with the builder, and the builder, who alone profits by them, should certainly be the man to pay for them. It is hardly necessary to say that the faults here spoken of do not include unavoidable errors, into which a builder may fall if the architect neglects to supply him with proper drawings and directions. Here, no doubt, the architect would be to blame. But to hold the architect responsible for a bit of scamped work and to let the builder go harmless, is like prosecuting a policeman for not preventing a burglary, and discharging the burglar on the ground that the policeman ought to have stopped him. Policemen are paid to prevent burglaries, it is true, and architects are partly paid to prevent the scamping of work—and both should do their best. But neither the architect nor the policeman can be everywhere at once, and the first people to come down upon are plainly the burglar and the scamper.

But if the law in its wisdom, and the juryman with his native intelligence, do not take this view, it is quite time that architects, for their own preservation, should make it clear that it is the view they hold; and more than that, the condition on which their services are given. Their fatal weakness in our day, and for some generations past, has been that of attempting too much and promising too much. A painstaking architect and a reasonable client will work satisfactorily together, even as it is. But to protect architects against clients who are not reasonable, and not less, to protect clients against architects who are not painstaking, there should certainly be issued by authority a clear and definite statement of what architectural superintendence really ought to be. We commend the matter to the attention of the societies which represent the profession.

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INTERIORS.

THE general verdict of the public on entering many of our great public buildings is one of disappointment. Either an excess of lavish ornament on the exterior, or of magnificent proportions and features, produces a sense of disappointment directly we enter. The expectation has been unduly raised by the façade or by the external features, and at once suffers a defeat on a view of the interior. That this is bad architectural generalship is not to be denied, for the aim of all art is to reveal unexpected pleasure, to lead up to a climax. But, we suppose, in architecture, as in all other things, immediate impressions are desirable; that there is a kind of good advertisement in a grand or imposing exterior, and even if it does not lead to something imposing internally, it is better than a poor impression on the outside beholder. A *coup de main* on the public eye at first sight is of more value than a surprise to the few who enter the building. We cannot wonder, then, if architects have been more partial to external displays, if, in spite of all moralising about clap-trap and outside show, there is a natural desire to captivate by those strokes of art which appeal to the greater number.

It may be of service if we point out a few of the causes which operate to diminish the effect of interiors and produce a sense of disappointment or disagreeable surprise. We all can appreciate a well-planned and executed action in a drama or in a musical composition, and we expect to see the same evidence in a building. Instead of which, if we find the interior is destitute of orderly arrangement, the entrances to chief apartments are placed in out-of-the-way and awkward corners, the corridors badly lighted and bewildering, our expectations receive a shock. We look forward and anticipate some grand hall, instead of which we enter a meagre corridor; there is nothing to carry on the imagination or the scale of the exterior. The *dénouement* disappoints.

An invertebrate plan without axial distribution is one of the most destructive of the elements we meet with when we enter a building in which there seems to be no centre. The rooms and corridors are arranged without any reference to the main entrance. Again, the smallness of the apartments spoils the impression: a large building with a number of little rooms destroys the appearance of consistent design and scale.

Quite as necessary in the design of interiors is it to preserve proper proportions of the several rooms and halls. In floor area of necessity each room must vary according to the accommodation. A committee-room may not be so large as a council chamber, the sizes of offices must be different; a class-room is necessarily smaller than a lecture theatre or a central hall; but if the floor areas must vary, so ought the third dimension, or height. It is the element of this third dimension which constitutes one of the chief problems in the interior design of our public buildings. The architect has to consider his structure, composed of variously sized solids or rectangular prisms or cubes—in other words, rooms, and the skilled in his profession takes great pains to give each of these prisms its due proportion. But let us look at the method pursued by many modern architects. The building, say, is one of two or more stories, the rooms vary in floor area, but they are all cut off to the same level by the ceiling above. The designer has only one idea of making the most of his space, and that is to divide the stories by level floors, the consequence of which is that a small office of, say, 18ft. by 15ft. is made the same height as a large committee-room or sessions court. The small room looks ridiculously high, the large room depressingly low. Everyone who enters the building is at once struck with the extreme disproportion of the rooms, a strange inconsistency, as anyone may who has gone over the Home and Foreign Offices at Whitehall. Several inconvenient results follow from this division, the windows of the small offices are too low, and a great space of dead wall is above them, or they are too high to be pleasing, just as the lines of fenestration are arranged. A large number of our modern municipal buildings, vestry halls, and polytechnics are spoiled by the level floor; the small, high rooms are cold and uncomfortable owing to the quantity of cold air above which has to be warmed; artistically the rooms are utterly ruined for any decoration, as they are so ridiculously out of proportion. Of course the "pitch" or height of each story has to be regulated by the requirements of the larger rooms if we adopt this system of design.

To avoid the disadvantages of the level floor, one or other of three distinct methods can be adopted, whichever appears to be desirable. For buildings of only one story, or composed of large apartments, like a public library or a polytechnic institute, where a public lecture hall or concert rooms are required, every main apartment may have its own independent roof, which can be constructed at a proper height, and the two-storied blocks be relegated to the ordinary rooms and offices. The Houses of Parliament and the Courts of Justice are examples. Several recent public buildings, like those of the Sheffield and Bury Municipal Offices, are designed upon this principle, the roofs being of varying heights. The proposed Museum Extension design for South Kensington adopts the same plan, each great court being independently roofed. But while many of our large public buildings are so treated, the architect cannot always resort to this method. He cannot do so when the site is small, and many stories are necessary. There are two other plans open to him. The method which experienced architects adopt to reduce the height of the smaller apartments is to introduce the entresol arrangement—a plan which insures all that the most exacting architectural conditions can require. It is undoubtedly the most sensible and artistic mode of getting over the difficulty of inequality, and producing an interior worthy of the architect. Here an intermediate or mezzanine story is introduced over the smaller apartments, which answers admirably for a third or smaller series of rooms, as we find has been introduced in many of the larger hotels and club-houses in Northumberland-avenue. A good recent example of the mezzanine treatment is to be seen in the National Liberal Club, by Mr. Waterhouse, R.A. The smoking-room on the basement floor, with its canted ends, bay windows, fireplace recess, and detached columns, is a pleasing architectural room, 100ft. by 35ft., and 23ft. high. This room was the regulating datum as to height. An intermediate floor for various rooms is introduced over all other portions of the basement, and is called the lower ground floor, occupied by reception and dressing-rooms, &c., for members. Three large apartments—dining, reading, and grill room—occupy the next floor, and preserve an equality of height, except a small portion at the back, which has a mezzanine for lavatories, &c. This arrangement of mezzanine rooms for serving and retiring rooms is carried up; but the principle of classification is apparent—that is, the large and important apartments are on one floor and the smaller rooms and bedrooms occupy the upper stories, which are lower. The profession would do well to bear this principle in mind, to arrange their large apartments in a single story, and to subdivide a portion for the smaller rooms or plan them in stories of less height.

The third method is to adopt expedients for reducing the apparent height of the smaller apartments by means of coves, domed ceilings, and vaults of plaster, instead of allowing the bare walls to rise to the full height of the story. Much more art can be expended in this way if architects studied more the interior of their buildings, and many old edifices show a skilful arrangement of ceilings to meet the variety of size and form of the rooms. In the *Transactions* of the Edinburgh Architectural Association, Mr. Thomas Bonnar, in describing Drum House, points to the interest of the interior, especially the hand-wrought plaster decoration of its walls and ceilings, and the refined details, and the internal proportions of the rooms. He observes: "Taking the series of rooms of different sizes on one floor where the height is the same throughout, by the introduction of deep covings or domed ceilings, their height is thereby apparently reduced to suit the proportions of the smaller rooms, and so securing pleasing proportion, and giving variety of treatment to the rooms throughout." Many other old examples of interiors may be seen where a coved or domed ceiling, by reducing the apparent height of the room, brings it into agreeable proportion to the rest of the apartments. By the use of fibrous plaster we have a convenient materal for this last-named method. Other means of accentuating or disguising height by the use of detached columns, pilasters, or deep friezes and wall decorations which draw the attention to vertical or horizontal lines are at the service of the artist. The methods we have discussed are those which belong to the design, and as such demand the attention of the architect of every interior who desires to bring it into an agreeable harmony.

"BUILDING NEWS" DESIGNING CLUB

A PARISH HALL.

"NIL NISI BONUM" is accorded the first place, "Smilash the Goth" takes the second, and "Vulcan" the third place in this competition. The following were the conditions issued for the instruction of the competitors:—"A parish hall for a site in the middle of the roadway of a village street, with a trough for horses and a drinking fountain attached. The land available for building is a triangular piece 90ft. long, 30ft. wide at east end, and 55ft. wide at west end. Roadway both sides, north and south, running east and west. The main entrance to be at the east end. The fountain to be in the wall at the west end. The accommodation to comprise a hall for entertainments and parish meetings, with a small recessed stage at one end; a small retiring-room available for committee meetings, a w.c. and small lavatory, and a gallery is to be provided at the entrance end of the hall. Style suitable for stone walling, and stone slab slated roof; scale, 8ft. to the inch. Plans, three elevations, and a section with perspective view."

We publish illustrations of the two leading designs, which, though the best, are not so good in detail as we could have wished. This probably must ever be the case, and with students' work it is only fair to make allowances, particularly when architects of experience and practical builders often commit foolish mistakes. The author of the first design makes his stage none too large, and the planning of the accommodation behind is crudely put together without much regard to the best use of the space available. It is, however, more spacious and workable than in the second plan. At any rate, actors can get round at the back of the stage, though they would have to beware of the doors in doing so, for they hang inconveniently. Two staircases at the other end to the little gallery seem hardly necessary, and there is no ticket or porter's office to govern the entrance. The design externally speaks for itself, and calls for little comment. The tall, unbroken gables at each end give solidity and dignity to the proportions, and without approving of the design of the windows, which we hardly like, the general character of the building seems effective and fairly suitable. "Smilash the Goth" is more original in his notions, with a fancy for conceits. His plan, too, has some good points about it, with sliding doors, for example, at the entrance; good window to the stairs; and a pay-office. He also remembers "Parish Councils" and the forthcoming election, and provides a "speech gallery" from whence the "free and independent" may be enlightened, and votes secured. These are points indicative of thoughtfulness, and his elevations show a love of the picturesque ambitiously aimed at, not always with a sober regard to economy or utility. For instance, the solid turret excrescences flanking side gables are a trifle meaningless. "Vulcan" marks his building by a Scotch-like tower at the entrance end, which has much to commend it. The hall behind the tower, however, has such a squat flat-pitched roof that we cannot entirely appreciate the designer's ideas of proportion. The absence of a cross section prevents us from learning how this roof is really constructed. The stage in this plan is too confined, and has only one doorway leading on to it, and this by way of an awkward dark staircase nearly all winders. Otherwise the retiring-room arrangement is above the average, with the w.c. nicely screened for privacy. "Fire Fly" sends a design of much merit suitably treated in a quiet style in harmony with village surroundings, with perhaps too great a resemblance to a parochial school-house. A kitchen is provided for the requirements of soup making and for public gatherings of a social character; but the stage is not very well adapted for theatrical entertainments, for the same objections noted in "Vulcan's" plan. "Unitate Fortior" covers the entire building with lead. This would make a good job, of course, but the price would in an ordinary case make the provision impossible. We specified stone slab slates. Externally the design has an individuality of style; but the big "Late and flat" windows are much too low down, so that every street urchin could look in or break the glass in passing. The entrance is very cramped, and the staircase to the gallery is too confined. "Ilex" spoils his building by the queer additions at the entrance end, which seem stuck on to the hall. The main structure is, however, suitable, well-proportioned, and nicely drawn. We cannot praise the plan. "Q. E. F." gives a capital platform, though the lobby behind would be dark. The large gables flanking the hall enable the author to bring his eaves low down; but they tend to make the building resemble a board school. The end elevations are poor in treatment. "Red Lion" carries his roof principals on piers, and puts dormer gables, with big windows, in between; thus his roof lines are very long, without economy or effectiveness, for the dormers give a crowded appearance, while the space between would be expensive to cover in. A circular staircase leads to the gallery at the entrance end, and over the porch is a balcony. "Sniktaw" puts a range of squat windows under the eaves of his hall, and breaks the length of the return façades by a bold chimney. This keeps the lights out of harm's way, and gives a quaint effect; but the plan in its details is very crude and wanting in study. "Horseshoe" draws in outline, so that his drawings look thin and wanting in colour. The bald tower at the entrance end does not grow out of the plan naturally, but in itself the outline is pleasing, because so plain. The oriel adjoining does not harmonise with the rest, and the door is shockingly ugly. Nothing of special merit can be pointed out in the plan. "Pastime" has not realised the sort of thing intended, and his plan is ill-contrived and cramped to a degree; but we place him here by reason of his aim at the picturesque, supported by industry. Work continued in this spirit must lead to improvement, if not to success. "North Pole," too, has made an honest endeavour with simple methods and neat drawings. His canopied drinking-fountain is an exception which we cannot admire, and it is quite too important for the use contemplated. "Tyro" marks his stair turret by a spirelet over a squat tower, and his style is mixed, especially the entrance-door under a very pointed arch. The amended scheme for the position of the fountain we have duly noted without admiration for either. "Sunset" wants spirit and colour in his design; everything looks so tame and ineffective, save the clouds in the perspective, which prefigure a deluge. "Excelsior" groups his drawings all ways on the sheet like a puzzle, and makes his plan by the rules of contradiction, narrower at the wide end of the site than at the other. His stage is perfectly unsuited for theatrical performances, and his oriel off the gallery is useless. "Flint" tapers his building to make it exactly follow the lines of the site, so that the roofs, being all one height and pitch, would have a wide gutter on the top. Internally, the plan would be convenient, so far as the hall is concerned, and the drawings indicate that the author ought to do better things than this. Of "Black Prince" we expected more, but he continues to shake our faith in him. His plan shows care, and his stage would do, but all the parts lack finish. His perspective does him no credit. "Reo" draws in an inky style, and designs in a curious manner. The gallery end is marked by two squat towers, and the design is much too full of features. "Sweet Auburn" comes next, but we cannot praise him, though we have carefully examined his drawings. "Jap," if not quaint, is nothing, with ingenious bits dodged together, and a wonderful pent over the drinking fountain. "Triangle" adopts a Scotch style, and spans his entry with a sprawling arch against a circular tower with a conical roof over it. A similar turret on the other side of the plan is cut short under a pent. The design would look better in execution, but apparently the roof would not stand if carried out. "Westward Ho" puts his hall in a line with one side of the site, and so gets his stage on a skew at the rear. "Wit" inserts a traceried window at the back of his stage, and we take the suggestion as a joke. The building is covered with an iron roof. "Sphinx" comes next with a very long hall, and then "Symbol" with a quiet-looking building and fairly good stage. The staircase cramps the dual entrance by bringing the people all together at its foot. "Baluster" makes an endeavour at an Old English type of hall, and is one of the few who have given an admirable stage at once roomy and spacious. "Jocelin" sends a plan like a church, transepts and all. "Graham" adds a tower at one end, which does not harmonise with the rest of his design. The remainder of the designs rank as follows: "Sanitas," "Sector," "Excelsior," "Norman," "Hardwick," "Orient," "Student Rick," "Filiolus," "Phœnix," "Forward," "Compass Box," "Glencoe," "Kiki," "Mica," "Q. E. D.," "Rosinante," "Yorkshire Tradition" (an oval hall done by a man who ought to do better), "In Haste," "Gargoyle," "Peterborough," "Love's Labour?" (no name and address), "Old Postage Stamp," "Amor Patriæ," "Jamrach," "Ich Dien," "La Cigale," "Mars," and "Joiner."

STAINED-GLASS ARTISTS AND ARCHITECTS.

A SERIES of four papers on "Stained Glass" was read at the meeting of the Royal Institute of British Architects held on Monday evening. The President, Mr. MacVicar Anderson, occupied the chair, and there was a large attendance of members. The walls of the room and the screens were hung with cartoons and reproductions in colour of painted windows, while on the lecture table were shown leaded lights and specimen frames of enamel and pot metal glass.

Mr. R. Herbert Carpenter, F.S.A., F.R.I.B.A., in an introductory paper, remarked that although the architect should be responsible for the whole internal effects of his design, it was not necessary to determine exactly how far the stained-glass decoration should be under his control. He should, however, be able, without vexatious interference, so to direct those working with him that the painted glass should in style and treatment harmonise with the architectural design of the building, and with its decorative treatment. Through successive centuries the relationship between architecture and glass-painting had been very intimate. In early Christian times the intense sunlight streaming through small window openings filled with gem-like glass afforded a striking and brilliant contrast to the large wall-spaces. As architecture travelled westward and northwards into less sunny regions, in the 11th and 12th centuries, windows necessarily became larger, but the "mosaic" glass, with its Byzantine ornamentation, was still used, the gorgeous and jewel-like effect of colour being emphasised and intensified by lines and points of white glass, and the bold black geometrical forms of the frame-work. In the 13th century not only the gem-like glass, but silvery and brilliant pattern-glass, of white with a bluish tinge in it, was used, together with rich bands of pictorial figure-subjects, on a white ground. In the 14th century the mosaic glass, as such, went out of use in the great mullioned windows, but its rich colours were retained, in combination with a lemon-yellow strain. The window tracery of this period was designed to frame the translucent pictures, though as years went on, and the masonry became more studied in design, the glass had to adapt itself to the masonry, rather than the masonry to the glass. As large windows multiplied and the area of glass increased, a larger proportion of white or greenish-white quarry-glass was employed, as was seen at Exeter Cathedral, an example which modern glass-workers would do well to follow. By gradual changes the most characteristic and beautiful English glass, that of the 15th and the early part of the 16th centuries, grew up, acquiring greater breadth than the gorgeously-tinted earlier glass, and infinite delicacy of drawing and tone, and combining with it especially painting on white glass with enamel colours and stains. At this time one mind and one idea seemed to inspire the designers both of the buildings and of their glass. After animadverting on Professor Moore's statement that nowhere, save in France, was there in glass-painting an actual spirit of original invention, the author spoke of the crude and incongruous designs or imitations of Mediæval work in memorial windows erected in the last half-century. The principle of the memorial window was of inestimable value, not only artistically and historically, but as a link of the present with the past. Symbolism in stained glass should be neither too patent nor yet too recondite. With reference to modern painted glass he laid down the following postulates:—1. That the glass be brilliant, translucent, and jewel-like. 2. That the colours be, to a great extent, of pot-metal, of unequal tone and thickness. 3. That in each building its due proportion of white glass be fixed and adhered to throughout. 4. That the ironwork should be carefully considered in designing the glass, and that no sound ancient ironwork should be removed. 5. That the leading be an essential part of the design, to be shown on the glass-painter's sketch drawings. 6. That each window should form part of a complete scheme previously determined by the architect with the authorities of the church, and it is desirable that all should be executed by the same hand. 7. That the representation of sacred subjects should not be pictorial or realistic or sentimental, but should be treated in an architecturesque and conventional manner. 8. That a carefully thought out system of symbolism should be adopted. 9. That pictorial subjects extending over more than one light should only be selected where they lent themselves to arrangement in divisions. 10. That the series of figures or subjects be selected in proper doctrinal and historical gradation from W. to E. of the church. 11. That in memorial windows the kneeling figure should be introduced in the "predella" with a legible inscription on the glass. 12. That heraldry should be an essential part of the design, especially in memorial windows. 13. That in ancient windows of varying date, the glass should be assimilated in each case to the designs of the masonry. In conclusion, as in architecture, so in the art of painted glass, history and archæology should not be disregarded, and there should be no spasmodic attempts at originality.

SOME DETAILS AND TECHNICALITIES OF THE GLASS-PAINTER'S ART.

Mr. James Powell read a paper descriptive of the process of making a painted window. The first process is, he explained, to prepare a small coloured sketch of the design, usually to a scale of one inch to a foot. On this drawing should be shown the ironwork. The sketch having been approved, full-sized cartoons are prepared. For these, studies from the life are required, the hands and feet especially needing careful study. White subjects surrounded by dark colour should be drawn smaller than when against a white or pale background. On these cartoons the ironwork and lead lines should be definitely shown, and upon the latter great pains should be bestowed, the lead lines being more conspicuous than the folds of the drapery. From the finished cartoon a tracing, called the "cutline," is made on calico of all the lead lines, and from this the cutter cuts the glass in corresponding lines. When the glass is cut it is taken to the painting room, and all the leading lines of the cartoon, and also the ornamental patterns of draperies or diapers of backgrounds, are shown with enamel pigment. The glass, after having been fired in the kiln, is then fixed with wax to a frame of plate-glass, so that it can be placed against the light on an easel. The paint (water-colour process) is then applied to the glass with a large flat brush, and worked flat or rough, according to requirements. The high lights are then removed with scrubs, and in the half-tones the pigment is reduced in density, and the shadows deepened by laying on another mat of colour. The glass is then again fired, and the above process repeated until the required strength is obtained, great care being taken to keep the shadows luminous. When the painting is finished, the silver stain is added, where required, to such parts as hair, embroidery of draperies, or foliage. The glass is next laid on its "cutline" on the glazier's bench, and the leading is put in. The lead should be from $\frac{1}{4}$in. to $\frac{3}{8}$in. in width. After the window is soldered on both sides the leads are raised, and a cement of oil, lead, &c., is rubbed well in on both sides. The copper ties are then soldered on, and after a few days the cement has hardened, and all is ready for fixing. Coloured glass is obtained by melting certain metallic oxides with the raw material or base. A good workman can so handle the melted glass as to produce variations of thickness, from which, of course, result varied tints of the same colour in one sheet. In some recent experiments the traditional charcoal yellow had been hit upon, and it had been found to be almost identical with the straw-yellow of the 13th century. Glasses made as above described are known as pot-metal colours. Flushed or cased glass is used chiefly for ruby glass, the colouring matter of which is so dense that it is blown on a base of white glass; beautiful shades are also procured by casing the ruby with a blue or yellow glass. One great advantage of the cased glass is that you can protect portions of the design with Brunswick black, and with hydroic fluoride remove the unprotected parts of the coloured film, and thus expose the base colour underneath. This is especially useful in heraldic designs or the patterning of robes. The enamel used by the glass-painter for shading and outlines is a fusible glass containing a sufficient quantity of an infusible powder to produce the effect of opacity. The window may be painted entirely in water-colour, or it may be traced in oil-colour and matted in water-colour. The leads used in old windows were usually very narrow—about $\frac{3}{16}$in.—and were cast in their full length. A great deal of the old work had been re-leaded with wider lead than that originally used. The leading of the 13th and 14th centuries was mostly designed in diagonal lines, and this diamond form gave a perfect drain for the water. For a window designed in a strong key of colour as much lead as possible should be used: in the whiter windows less lead is required. To the ironwork the artist should pay special attention. Saddle-bars should not be more than 12in. apart. The most useful arrangement for modern work, except in very narrow windows, is to have a double stanchion, with saddle-bars at distances varying from 10in. to 12in., according to the width of the lead. If the architect wishes for outside iron as well, the glass-painter need not grumble, for it enhances his work. Wire-guards are an abomination to the glass-painter and a detriment to the architect, and sheets of plate-glass outside look worse still. A lead across a broken pane is preferable to a wire-guard. White glass should predominate, though an east window requires more colour than a side window. Too many different colours should not be used in one window. The best decorative effects are produced with a simple scheme of colour. There should be harmony between the glass and its frame. This harmony is never wanting in the old work of the best period, and hence it may be supposed that the architect must have had considerable supervision of the glass. Windows should not be crowded with too many figures. A better decorative effect and greater repose might be produced by using more ornament and fewer figures. The scale of the figures used requires careful study, and as to this the architect should assist. Arms and legs should not be thrown behind mullions; large compositions of figures and canopies running across several lights should also be avoided. Lastly, a scheme should be carefully prepared for the subject of the window, and the glass-painter should work in harmony with the architect.

THE PAINTED WINDOWS AT FAIRFORD, WINCHESTER, AND KING'S COLLEGE, CAMBRIDGE, AS MODELS FOR MODERN WORK.

A paper on this subject, written by Mr. N. H. J. Westlake, F.S.A., was read, in the author's absence, by Mr. H. D. Caröe, one of the hon. secretaries of the Art Standing Committee. Mr. Westlake pointed out that the considerations in studying old work were—(1) The appropriateness of glass in the church so far as light is concerned; (2) the scale of the details in proportion to the building; and (3) the composition and colour value—the last being the most important in an artistic sense. At Fairford and at King's College, although the edifices were completely filled with painted glass, there was plenty of light. At Fairford the openings were moderately large, the glass fairly but not densely covered, and there was a great area of white in the canopies and draperies. At King's College the openings were large and numerous, there was less white, and the paintings were more dense. Chartres was an instance of a dark church—the darkness not resulting from the amount of shadowing pigment on the glass, but from the smallness of the details, which involved so much lead and iron that a great area was rendered opaque. The proper character and quality of the painting on the glass, the quantity of pigment to be used, the amount of obscurity in painting on white and on colour, had been but slowly learnt by the artists in different countries. The earliest work was similar wherever found; but in the early years of the 16th century the northern countries used less pigment than the southern. English work of the best periods was as delicate and translucent as any: let them compare Fairford, King's College, and Winchester with the German and Flemish glass of St. Mary's, Shrewsbury, and Lichfield Cathedral. The painting at Fairford was often unequal in tone, the inequality being in most instances intentional—*e.g.*, the west window had more pigment than the aisle windows; but the diversity in covering the glass at Fairford was not so apparent, nor so necessary, as in a large edifice like Winchester Cathedral. In King's College the difference between the chapel glass and that in the large windows afforded an excellent comparison by which to acquire a knowledge of the painting of the glass under different conditions. Many of these windows, however, had been badly overpainted in restoration.

THE RENAISSANCE PERIOD AND THE USE OF ENAMEL.

Mr. Clement Heaton, in his paper, remarked that glass painting originated from enamelled metal-work, and in its early form was an assemblage of small pieces of glass, heavy in texture and strong in colour. As years went on it became lighter and lighter in general tone, the glass itself becoming thinner in substance, and the colour less intense, while in all ways there was a progression towards lightness. A style of work was arrived at late in the 15th century containing principles which could not be departed from without loss of effect, and which he considered was in England more successful than in France. Admirable as this work was, it was not the highest development of glass painting. There was a limitation of design and conception, power of colour and drawing, compared with both earlier and later work. The earliest glass was Geometrical in character, and the later Gothic purely architectural. The canopy work based on architectural models was monotonous through its endless repetition. In the 16th century, when new ideas came into France from Flanders and Italy, glass painting was thriving as regards technique, and the Renaissance was really in design alone; motifs of ornament from Flemish and Italian Renaissance were adapted and expressed in Gothic technique. It was to the breadth of study then in vogue that Mr. Heaton attributed the power of the work done from 1520 to 1550. The works of the Middle Renaissance showed a wondrous combination; the true principles of glass painting—glorious colour, refinement, grace and power of drawing, vigour of design, and individuality of conception—all might be found united in the same work, and that work such as only artists who knew all the technique of glass painting could produce. After 1550 the glass painter aimed less at producing a beautiful glass painting than a picture full of strong contrasts in light and shade; the technique was interfered with to obtain such contrasts, and so the grace and the silveriness of the glass was lost and the colouration sacrificed. There were, therefore, three distinct phases of work to consider: (1) Where sound principles and traditions were worked upon, but with limited artistic powers; (2) where these same principles were used, combined with great artistic power; and (3) where this power was misdirected and crippled by the abandonment of the true principles. Study of the second phase—the most notable—showed that certain principles must be adhered to, and that mere use of them, without individuality of conception and personal care, would only lead to monotony. The breadth of study among the artists of the Renaissance was well worthy of attention. Mr. Heaton then proceeded to mention the introductions in technique of the Renaissance. The pot-metal colours had been much extended in range, which was due to the system of plating; the silver plating was made to produce not only yellows, but orange and red; the brown painting colour was supplemented by a flesh red; and, finally, transparent enamels were introduced about 1540. In the MS. of Theophilus—12th to 13th century—instructions were given for "placing gems on glass," and a description was added of how small pieces of glass were to be cut out, put on white glass, and melted on to it. Various examples of this process were known, but the method was unsatisfactory, being both laborious and uncertain in effect; the use of fluoric acid had done away with the necessity of grinding the glass, but the use of transparent enamels best got over the difficulty of which all glass painters had been sensible. It was probable that the application of transparent enamels arose through the use of enamel in goldsmith's work. Whether the idea came direct from Italy, or the French themselves adapted the enamel to glass from the enamelled jewelry and pottery, it was difficult to say. At Rouen there were several examples of the use of enamel in conjunction with pot-metal glass, and enamel colour alone was used in the 16th century for panels and medallions. It was also used in Florence about 1560, and in England in the time of Elizabeth. Although so extensively used it had sometimes been urged that its use was illegitimate, but properly worked it was very reliable, for enamels done in 1540 were sound at the present day. As to the artistic use of enamel, any attempt to use enamel colour in large quantities and in rivalry to pot-metal glass the author condemned. In conjunction with pot-metal glass, it might, however, be of great value. For domestic use it could be a means of rendering colour in a fine way in harmony with modern interiors, which leaded colour was certainly not.

Mr. Alma-Tadema, R.A., proposed a vote of thanks to the authors of these papers, reminding those present that stained glass had exercised a great influence on art and architecture, and that the mind of Viollet-le-Duc was directed to the study of the history of art by examining the stained glass in the windows of Notre Dame at Paris. The authors of the papers dwelt on the religious aspect of the subject almost exclusively, and had scarcely touched on the use of stained glass as an ornamental or architectural subject. In towns, where windows often looked on to blank walls, the use of stained glass was very desirable. Mr. John Lafarge, of New York, had made a new departure in stained glass by the introduction of thickened portions, and he has the possession of one of his works which when the sun shone though it looked as if it were studded with old jewels. He would ask how old was the use of coloured glass? He believed that it was used by the old Romans, for in a house at Pompeii he found let into a wall some beautiful purple glass, and in a fountain in another house in that city he saw fragments of glass of different colours dabbed into the cement of a fountain.

The Bishop of Ely (Lord Alwyne Compton), in seconding the vote of thanks, expressed his delight at hearing Mr. Powell condemn the use of wire guards to windows. Certainly with old windows there was the excuse that the work could not be replaced, but why anyone should so protect a modern window he could not understand. There were some modern windows he should be glad to see broken. One point was often forgotten in arranging a scheme of stained glass, and that was the requirements for plenty of light in certain parts of the church, as at the east end. The usual plan was to begin with the chancel and work down with memorial windows towards the west end, so that while the work was in progress—and it was usually spread over many years—most churches appeared increasingly dark as viewed from the west end. He would suggest that plenty of white glass be let in the eastern windows, although he was not fond of the latest style in windows, which was to have them almost all white, for although beautiful in drawing they were unsatisfactory in effect. In one of the recipes of Theophilus we are told to use old sapphires for blue glass, and he believed that these "sapphires" were not actual precious stones, but old Roman glass such as Mr. Alma-Tadema had referred to.

Mr. T. G. Jackson, A.R.A., who was heartily greeted on rising, observed that such opportunities as that meeting afforded to artists and architects to meet together and discuss their craft was likely to advance their art. Stained-glass workers seemed to be beset by the peril and danger which threatened all in that room of lapsing from their art into archæology. They had in the study of stained glass any amount of material to select from, and the artist must make up his mind what he would reject and what he would develop. Thanks to the advance of modern chemistry, it need no longer be said that it was impossible to imitate the colours of ancient glass. The most noteworthy work for our purpose was, he thought, the later glass, which presented gorgeous effects of colour; but abundance of light was most desirable. Some people carried the love of colour too far, and were not satisfied unless every window was filled with stained glass; but a man who would put cathedral glass into every window of a church was capable of doing anything. He very much regretted that the clerestory windows of Westminster Abbey had been filled with stained glass, as we had lost the play of light we used to enjoy in the Abbey. In town churches stained glass had its uses in shutting out uncongenial prospects, but in the country the glass needed to be very good to compensate for the loss of blue sky and green trees. In the two great churches at Nuremberg, the lower parts of the windows were filled with stained glass, but the upper parts above the mullions were left clear, and a similar treatment was followed at Wadham College, Oxford, the treatment being the original one of 1622.

Mr. Henry Holiday urged that archæology was not art; that no great artist of the past ever succeeded in producing good work by imitating what had preceded his own art, but by developing that which he found. Anything was better than servile imitation of the past, and an artist had better commit a few technical blunders than make a lifeless reproduction of a past style merely that his work should agree with the masonry around it. He defended the introduction of a certain amount of realism in stained glass, while recognising its limitations and keeping as far as possible from mere pictorialism. M. Lafarge was a genuine artist, and gained fresh effects at a slight expenditure of labour in manufacture; much depended on accident in his mixing of the various kinds of glass, the only hand labour being the painting of faces, hands, and feet, and as a whole Lafarge's work was more suited for ornamental than monumental purposes.

Mr. C. W. Wall and Lewis F. Day having spoken, the vote of thanks was carried by acclamation.

THE SOCIETY OF ARCHITECTS.

A MEETING of this society was held on Tuesday evening at St. James's Hall, Piccadilly, the President, Mr. W. H. Seth-Smith, F.R.I.B.A., in the chair.

The following paper was read by Mr. Ellis Marsland, Member of Council and District Surveyor for Camberwell, entitled

ARE ANY AMENDMENTS DESIRABLE IN THE PRESENT LAW RELATING TO BUILDING IN LONDON?

The present law relating to building in the metropolitan area is contained in something like eight Acts of Parliament, dating from 1844 to 1891; it is, therefore, a somewhat complicated task for those interested in building operations within this area to make themselves acquainted with the provisions of these statutes, especially as in some of them other matter not connected with building is incorporated. It is proposed by the President of the Local Government Board to consolidate all these enactments, or so much of them as relates to building operations; and for this purpose he has prepared a Draft Consolidation Bill, in which the Building Act and its various amendments are brought together. Mr. Ritchie is open to receive and to consider any amendments of a minor and non-contentious character, which experience has shown are desirable. It is therefore necessary that those who wish any alteration, or who have any suggestions for amendment, should, as early as possible, formulate their views and forward them to the right quarter. This is being done by the London County Council, the Royal Institute of British Architects, the Surveyors' Institution, the District Surveyors' Association, and by a body of delegates representing the various local vestries and district boards. There is a good deal of difference of opinion as to whether any alteration is desirable in the existing law; and also, if any be necessary, of what it shall consist. It is therefore the duty of this Society, if it is thought any improvement can be effected, to send up its views to the Local Government Board as early as possible. For whatever is done now will in all probability remain as the London Building Law for some years to come. Let us, therefore, in discussing this question of Building Law, ascertain—I. What are the conditions necessary (as far as building operations are concerned) to life in a large town? II. How far the present Building Act and its amendments meet these conditions? III. If these conditions are not met, what is further required? I. The conditions necessary (as far as building operations are concerned) to life in a large town are briefly these:—(*a*) Safety from spread of fire. (*b*) Protection from one's neighbour. (*c*) A healthy house. (*d*) A stable house. (*e*) Reasonable facilities whereby old buildings can be rebuilt. I propose, therefore, to briefly review the various clauses of the Act under these several heads, pointing out what could be usefully suggested as amendments. (*a*) Safety from fire.—Under this head the protection afforded by the existing Act consists of rules, whereby buildings are to be inclosed with walls of incombustible material, and separated by party-walls, such party-walls being carried 15in. above the roof. This provision, however, in cases of warehouse walls is insufficient, and might with advantage be increased to 3ft. Limit of size of openings in party-walls and provision for iron doors on each side of same. But there is no limit as to their number, a regulation for which would be an advantage. Limit as to the amount of openings in external walls. Rules for chimney openings, backs, flues, hearths, shafts, and flue pipes, all of which appear to be sufficient with the exception of the chimney backs to kitcheners, as the maximum thickness of 9in., where the chimney breasts are not back to back has been found insufficient, and fires have occurred by the overheating of the chimney-back, where the string of the stairs of the adjoining house has passed across it. Rules as to timbers in party-walls and in and about flues. Rules as to covering roofs with incombustible materials, and eaves and all projections to be of fireproof material. Under this head we also have rules as to stairs, corridors, passages, and landings of public buildings being of stone or other fireproof material. Stone is, however, perhaps one of the worst materials of which such portions could be constructed, as under the influence of heat it flies, and is more a source of danger than safety. In buildings of more than 125,000c.ft., and used as a dwelling-house for separate families, the same rule applies, and in sets of chambers or rooms tenanted by different persons in a building exceeding 3,600sq.ft. in area, each suite is to be divided from its neighbour, above or below, by party-arches or fireproof floors, or at the side by party-walls. There is a good deal of vagueness about these two sections, and as the class of building known as "flats" was scarcely known when the present Building Act was framed, some amendment is necessary to meet such erections. There is also a limit to the size of warehouses—viz., 216,000c.ft., and this is only to be exceeded on certain conditions, and in no case to be above 450,000. Also a limited angle at which warehouse roofs may incline. (*b*) Protection from one's neighbour.—Under this head may be classed rules as to the limit of height of buildings, which now is 90ft. (exclusive of two stories in the roof and of ornamental towers, turrets, or other architectural features or decorations), without the consent of the County Council. This limit is too high, and might be reduced to 75ft. with good effect. There is also another rule affecting the heights of buildings, but it is contained in the Metropolis Local Management Amendment Act, 1862, and limits the height in new streets of a less width than 50ft. to the distance from the external wall or front of such building to the opposite side of such street, except with the consent of the London County Council. The Dangerous Structure clauses of the Act may also be considered under this head, whereby buildings that have become dangerous to the public may be promptly dealt with, and summarily taken down if the owners after due notice neglect to do so. These provisions seem to work very satisfactorily, and the only complaint I have heard is that from the owners, who have to pay the costs incurred by the proceedings. Another very useful section is that dealing with dilapidated or neglected structures. It is very deleterious to surrounding properties to have in their midst premises that are uncared for, whose windows are broken, and whose doors are open to all who choose to enter. These premises can be promptly dealt with, and the owners either made to take down, repair, or rebuild such premises, or otherwise to put the same or any part thereof into a state of repair and good condition. Dangerous or noxious businesses are not to be carried on within 50ft. of any building, and no person is to erect a building nearer than 50ft. to a building where a dangerous business is carried on, or a dwelling-house nearer than 50ft. to a building where a noxious business exists. It would, perhaps, be an advantage to increase the distance in the case of noxious businesses; but the Public Health Act could, in all probability, deal with any nuisance that might arise from the close proximity of such buildings. (*c*) A healthy house.—The Building Act of 1855 did not deal to any great extent with the sanitary conditions of houses, and the only sections dealing with matters of health are those making the minimum height of habitable rooms 7ft., and for a room in the roof a minimum height of 7ft. throughout, not less than one half the area of such a room. In the opinion of some this should be increased to 8ft., but others think that the height should be in proportion to the dimensions. Another section deals with the provision of an open space in the rear or at the side of a dwelling house of at least 100sq.ft., unless all the rooms can be lighted and ventilated from a street or alley adjoining. Subsequent amendments and by-laws have enlarged the scope of the laws dealing with matters under this head, and now the site of every building has to be covered with 6in. of good concrete. A damp-course has to be inserted in all walls. The walls and cellars and underground rooms, where they abut against the earth, have to be protected by materials impervious to moisture. The tops of parapets have to be finished with bricks on edge set in cement, or by a coping of any other waterproof or fire-resisting material. Soft bricks are excluded from external walls and from internal walls below the damp-course and from the parts of walls above the roof, including chimney stacks. The amount of open space has also been increased, and is at present in proportion to the frontage. But there is still room for amendment here, and there should be at least a space of 10ft. from the back wall of any house or building to the boundary in rear, or, if the house has a projecting addition, then the same distance from the back wall of such addition. This would be a simple way of securing a much needed addition to the amount of open space, but the London County Council proposes that the open space should be determined by the height of the building, and that an angle of 45° should be drawn from the extreme boundary of the site in rear and that no buildings should be erected outside the line made by such an angle. This, however, does not meet the difficulty so easily or so simply as that now suggested. Plastering, now, can no longer be composed of any rubbish, but must be made of lime and clean, sharp sand, with a proper proportion of hair. It may, perhaps, at first sight appear to be nothing but a natural sequence that the same individual who looks after the building of the house should at the same time superintend the drainage. This is at present supervised by the sanitary authority of the district. But I think, on reflection, the dual control is not a bad one. If this portion of the house were placed under the authority of the district surveyor, it would necessitate the employment by him of inspectors, as it would be impossible for him to supervise the entire drainage of his district, as, besides that of new buildings, all reconstruction, alteration, or stoppage of drainage would come under his control, and there would be considerable overlapping with nuisance inspectors and officers under the Public Health Act. The only objection urged against the present system is that of having to give notice when building operations are commenced to two authorities; but surely this cannot be considered a hardship, any more than having to go to two or three different firms to procure the materials with which to build the house. (*d*) A stable house.—The regulations under the head of stability provide that concrete 9in. thick, and projecting 4in. beyond the bottom course of footings, shall be placed under all walls. This, of course, is little enough in many cases, but it is a matter of considerable difficulty to frame general regulations that will meet every case. On the whole, however, the class of buildings principally aimed at in these regulations is fairly met, and the proportion of lime—viz., 5 to 1—is sufficient for ordinary purposes, except where burnt ballast only is used, in which case very poor concrete is the result. This could be met by altering the regulation, and stipulating that burnt ballast should not be wholly used as the aggregate, but that only half this quantity should be allowed, and substituting gravel or Thames ballast for the other half of the proportion. There are regulations as to the composition of mortar, and it is now no longer possible that road-scrapings, garden mould, dust-bin siftings, and other deleterious matter should be used in place of clean sharp sand or grit. Walls must have proper footings, which are to project on each side for a distance of one-half the thickness of the wall at its base, and the diminution of the footings is to be formed in regular off-sets. The thickness also of walls is provided for, and, except perhaps in some minor instances, may be considered sufficient, and in the majority of instances even in good work it is rarely exceeded. One defect, however, is that adequate provision is not made for piers upon which corrugated iron columns are placed to insure their being of sufficient dimensions to carry the superstructure, nor are there any regulations as to the size of columns or posts under bressummers, or for the scantlings of bressummers themselves, and should a district surveyor find that there is insufficient strength in either or any of these parts, he has no power to order an increase in the dimensions, but has to resort to the Dangerous Structure clauses. It would be well if there were to be provided a table indicating the sizes of piers, columns, and bressummers, such a table not being a very difficult matter to draw up. (*e*) Reasonable facilities whereby old buildings can be rebuilt.—The section of the Act dealing with party-walls is so well known to architects that it need not be recapitulated. These regulations are at times somewhat irksome, but taking into account the various interests to be considered they do not work badly. Some further regulations are needed, so that it should be possible to build a new party-wall on the boundary of the land of two adjoining owners by giving due notice, or at least an external wall could be built up to the boundary of one's property, and that the projecting footings and concrete should not be considered a trespass on the adjoining owner's land. It cannot be any hardship on an adjoining owner to have such footings projecting on his ground, but it is a considerable hardship, especially where space is limited, to have to give up some 12in. or 15in. in order to get your footings and concrete on your own ground. One of the suggested amendments of the London County Council deals with this matter and must commend itself to architects. These remarks would be incomplete were I to omit any reference as to administration. The county of London for the purposes of this Act is divided into some 70 districts, and over each a district surveyor is appointed. These men have to qualify themselves by passing an examination and obtaining a certificate of competency from the Royal Institute of British Architects. The appointment is made by the London County Council, and when once the appointment is made, the surveyor so appointed has absolute discretion as to the discharge of his duties. He serves all notices of irregular works, and if they are not amended, takes out a summons; he supports such summons before the magistrate, and if he fails to convince the magistrate as to the irregularity, has the pleasure of paying the costs. He can, therefore, administer the Act independently, and without fear or favour. Such, however, would not be the case were the recommendation of the conference of delegates from the vestries and district boards, recently held at Kensington, to be adopted. This conference, composed mainly of speculating builders and those interested (in more than one sense) in building, adopted a resolution which is to the effect that district surveyors should be placed under the control of the local authorities. The evil effects of the medical officers of health being under such control, and being unable to act except at the dictates of a committee, very often of interested persons, is sufficiently manifest to prevent such a recomendation being adopted by the Local Government Board. It may be perhaps that my opinion on this question of administration may not be strictly impartial, and that as lookers-on see most of the game, those outside the pale of the administration, and who see the effect of the present system, may have reason to desire a different method than at present. I, therefore, will not detain you further upon this point. But there is one other matter of administration to which I should like to allude—viz., the desirability of having a separate legal tribunal for matters under this and kindred Acts. It is sometimes remarked that lawyers are supposed to know everything. But if there is one subject more than another in which their education has been neglected, it is a knowledge of building matters. It is often considerably difficult to explain to a magistrate the exact technical details in which some erring builder has brought himself within the pale of the law. There are, of course, some exceptions to the rule, and those district surveyors who have the privilege of appearing before Mr. Biron have not much cause to complain, but the exception proves the rule, and it would be a distinct advantage were a special court formed in some central position and the presiding magistrate assisted by professional assessors. Having thus briefly reviewed the law as it exists, I urge that it fairly meets present necessities; and if it be consolidated similar to the Public Health Act, and the minor amendments added which I have foreshadowed, we shall have a workable Building Act capable of administering to the wants of the times. I therefore think it unwise to substitute a new Act for one with which those interested have become acquainted, without it can be shown that any necessity exists for such a drastic change; and I have endeavoured to show that such a necessity does not exist. If I may be allowed to criticise briefly the proposed suggestions for a new Building Act made by the R.I.B.A., the whole scheme appears to me to be too ambitious, and an attempt to do too much, and matter has been introduced which would have been better omitted. I am afraid if such a ill as the Institute have suggested were ever introduced into Pariament, it would very soon meet with the fate it deserves.

Professor Banister Fletcher proposed a vote of thanks to the lecturer for his clear and concise statement of the proposed amendments of the Building Acts. Like Mr. Marsland, he could not agree with many of the suggested changes in the draft made by the R.I.B.A. committee, and so forcibly stated by Mr. E. T. Hall in another place on Monday in the previous week, especially in Mr. Hall's definition of a party-wall. He had put the practical question, What failure had they had in party-walls, either in preventing the spread of fire or in protection from neighbours? Assuming that one did fail, was there not an easier remedy than the one proposed?—for with all admiration for a "solid backbone of brickwork" to the party-wall, there was no justification for imposing additional cost on every building owner without urgent reason. He agreed with Mr. Marsland that everybody should be permitted to build as cheaply as possible, consistently with stability and security from fire, as every item of cost must be charged as rent. He could not understand why any limit should be set on the height of buildings, and certainly did not agree with Mr. Marsland's proposition to reduce it from 90ft. to 75ft. He should be glad to know his reason, if any, for selecting that arbitrary figure; and if any maximum were imposed, he should make it 100ft. rather than 90ft. Again, why should the minimum height of all rooms be raised from 7ft. to 8ft.? Surely, to be logical, the height should depend upon the size of the apartment and its purpose. The 8ft. minimum was mere arbitratory guesswork, unsupported by medical or scientific data, or constructional requirements. It was like many points in the proposed Bill: mere theory and not practice. One of our leading sanitarians, Mr. Lewis Angell, the surveyor to the West Ham corporation, recently remarked to the speaker that he regarded the provision of parapets carried up 18in. above roofs a useless expenditure when applied to cottage property, and other well-known architects agreed in this view. It would be far better to expend an equal sum in spreading the roofs and eaves so as to protect the walls from rain. The law as to open sheds needed amendment. A building on four posts could not be touched by a district surveyor, except on the ground that it was a dangerous structure, and it was difficult to persuade a police magistrate that a building not yet put up could be dangerous. Another difficulty of an opposite character was that as these buildings did not comply with the Act in having one-half of the front of solid brickwork, special sanction had to be given by the County Council for each structure, and it was unwise to give to any public body, into which corruption would sooner or later creep, discretionary or dispensing powers. The composition of plaster was too minutely detailed, and he had had large experience with burnt ballast, and had not found it so objectionable in concrete as Mr. Marsland thought it. The method proposed by the London County Council for estimating the open space to be left at the rear of buildings was very complicated: it should vary with the height of buildings. He agreed with Mr. Marsland that the drainage details should be left to parochial authorities, who dealt with stopped and defective drains. They ought to be exceedingly cautious in altering the law as to party-walls. Under the proposed changes the adjacent owner would get no compensation for any encroachment that might be made. He did not think that a special tribunal to hear building cases was desirable, for architects were not, at present at any rate, trained in judicial habits.

Mr. William Allport seconded the motion, remarking that consolidation was needed, as many clauses in the present Acts were ambiguous, and were differently interpreted by various district surveyors. The adjoining owner and his surveyor should have a right of entry on to building owners' works during the operation of building a party-wall, or of under-pinning an existing one. Duplicate plans of the drainage ought to be kept by the district surveyor, and also by the parochial surveyor.

Mr. E. Tidman urged that there was in practice no efficient inspection of drainage in the Metropolis, and in some districts, as in Holloway, the authorities had written him that they had no drainage regulations. He did not agree with Mr. Banister Fletcher that low rooms might be permitted, and should put the minimum height at 9ft. Burnt ballast was the worst rubbish for use in concrete or road making, and he was surprised to hear Mr. Fletcher advocate its employment. He thought a rule should be introduced, now in use in some provincial towns, that every room should be lighted by a window not less than one-tenth of the total area.

The President, in putting the vote of thanks, which was carried by acclamation, said the quality as well as quantity of light should be regarded in fixing a minimum. For instance, the interior of a parallelogram was far more effectually lighted by a window in the narrow side than from a larger opening in the wide side. Plaster was one of our best fire-resisting materials—a fact which was too generally overlooked. Much more vigilant supervision was needed for drainage details throughout the Metropolis.

Mr. Marsland briefly replied, remarking that he could not see the necessity for a "backbone" party-wall, as the present thickness prevented the spread of fire, and brick was so good a sound conductor that a greater thickness would do little to lessen the nuisance of sounds passing through. The clauses could not be too strict as to the composition of plaster and mortar, as these afforded a standard for the district surveyor to appeal to in condemning improper materials. Adjoining property was injuriously affected by inordinately lofty buildings, and he adhered to his view that the maximum height should be reduced. He could see no advantage in depositing duplicate plans of drainage with the district surveyor; it was sufficient to put the responsibility on the parochial authority. Indeed, the only plans that ought to be deposited with the district surveyor were, he thought, those of public buildings. In conclusion, he mentioned that the District Surveyors' Association had now under consideration the new Consolidation Bill, Mr. Ritchie having, on his (the speaker's) recommendation, sent a draft copy to that body for their suggestions.

THE ARCHITECTURAL ASSOCIATION.

THE fortnightly meeting of this association was held on Friday evening, the President, Mr. F. T. Baggallay in the chair. Mr. F. R. Betenson and Mr. E. F. Ware were elected as members. The President announced that Mr. F. R. Farrow had presented a set of plates of Building Construction to the Studio, and that an anonymous donor had offered an annual prize of five guineas for the best series of measured drawings. Both gifts were acknowledged with thanks.

DOMESTIC ELECTRIC LIGHTING.

A paper on this subject was read by Mr. Max Clarke, member. Mr. Clarke remarked that the plant necessary for electric-lighting, at present, may be summed up as follows:—1, The power—water, steam, gas, and petroleum engines. 2. The generators, or dynamo-electric machines. 3. The accumulators, or storage-batteries. 4. The wires, or conductors. 5. The lamps, which produce the light. Speaking generally of the power, if you have to provide it, a great deal of the question of cost hinges on this. Water-power costs very little, and the same may be said of spare steam-power in factories and the like, and in many mansions and private houses in the country there is steam-power available. For small installations, the gas-engine is the best—not very expensive in itself, requires little attention, and can be put up in a small space. The great point to be borne in mind is to have your engine, whatever the type may be, well up to its work. One which is always worked much above its nominal is more or less distressed, does not go regularly, does not last so long, and needs more repairs. Having described the dynamo-machines in their several varieties, the author remarked that those "wound in series" are best adapted for arc lamps, those wound "compound self-regulating" best for incandescent lamps driven direct, and "shunt wound" best for charging accumulators. The accumulators were in electric lighting what gasometers were in gasworks—storing up and steadying the current. They occasioned a loss of energy equal to about 20 per cent.; but no private lighting could be satisfactory without these secondary batteries. The cost of maintaining them varied from 11 to 15 per cent. per annum on their prime outlay. The accumulators should always be kept well charged and set in a cool place, not above 65° Fahr. Passing on to consider the wiring, or putting in the wires to distribute the electricity, the lecturer observed that one cause of the great difference in various estimates for wiring was that labour formed a large consideration in the work. It was better to use a cable of thin wires than one large one, as the former were more pliable and afforded a greater surface area. The purity and thickness of the copper wires, and the amount and quality of the insulating material, affected the estimates of cost, which he had found to vary from 17s. 3d. to 40s. per light. The lecturer referred to the regulations for protection from accidents issued by the Phœnix Fire Office, and to those more recently published by the London County Council affecting theatres and music halls. He did not believe a single theatre installation in London carried out the whole of these sets of rules. The jointing of wires and their fixing were described, and it was remarked that the wires should be cased in American white wood, and the pieces should be connected by screws, nails not being allowable. It was absolutely necessary that the wires should be kept dry. By Messrs. Andrew's system of concentric wiring the necessity of casings was obviated. It consisted in a copper wire insulated, round the outside of which was wound a series of iron wires, forming the return. The difficulty in making branch joints had been got over in a very ingenious way. The switches for turning the current on or off should work instantly; the plug forms at first used had disadvantages in this respect, and were now out of date. The cut-out or safety fuse was the great safeguard in electric light, but in some cases was much abused. The lecturer next described the incandescent lamps, of which several varieties were exhibited, and incidentally it was remarked that the usually-assigned duration of life of 1,000 hours was an over-estimate and beyond the average. As a lamp got old it gave less light, and the glass became blackened inside. Obscured glass absorbed about 23 per cent. of the light, and opal globes as much as 48 per cent. Much remained to be done in artistic lighting by architects: not in various coloured paper and silk shades, but in genuine artistic work in fittings. Attention was called to some sections of casings made by Fawkes, of Chelmsford, specially to provide for electric light wires. They were, Mr. Clarke thought, a step in the right direction, and with a little more simplicity about the mouldings would be very useful where stock mouldings were required. In conclusion, he remarked that at present a great too much light was provided, and it seemed to be regarded as part of an electric light installation that there should be a glare.

A long discussion followed, in which Messrs. R. Langton Cole, J. Stanley Peach, W. A. Pite, H. Clarke, and others took part, and a vote of thanks was accorded the lecturer.

SOMETHING ABOUT CHIMNEYS.—I.

By F. Dye.

It must be first explained that these few papers will not deal in any way with the subject of factory shafts or chimneys applied to mechanical or manufacturing purposes; it is only intended to speak of those that are provided in our residences for domestic purposes, or any that may be temporarily or subsequently erected for similar purposes. We may consider an iron pipe chimney as a temporary erection, as no one would place a chimney of this sort up outside a building with any idea that it would remain in permanent and good condition as long as the general brick chimneys of the house.

Draught.—Before any intelligible account can be given as to the action of chimneys (efficient or non-efficient), it becomes necessary to explain as clearly as possible the phenomenon of "draught," without which chimneys would be of little service for any of the uses to which they are put. It is understood, of course, that by the word "draught" is meant the unceasing up-flow of air that will be found passing through chimneys, entering at the bottom aperture and escaping at the chimney-top. About the only occasion upon which this steady up-flow of air becomes irregular is when a chimney suffers with "down-draught," a trouble that will be referred to presently. At almost all other times, the up-draught is constant, only varying as regards its strength, for even new brick chimneys, or those that may have been disused for a long period, are commonly found to have a constant, though somewhat feeble, draught in them. The cause of this will be given directly.

The actual cause of draught in chimneys, the regular ascending current, is due to the fact that cold air is heavier than that which is hot. The cold air, by its superior gravity displaces that which is warmed in the same way that all heavy objects find their way downwards through a lighter material, as a stone dropped into water, for instance. Of course, a stone dropped into, say, sawdust would not instantly sink to the bottom, owing to the element of friction which is present between the two substances. When, however, we speak of fluids—that is, gases or liquids—the element of friction does not require any consideration, for it is totally absent.

The air composing our atmosphere consists of two gases, oxygen and hydrogen, in a state of chemical union, and existing in the form of minute particles, termed molecules. These molecules are stated to be of exceedingly small size, and supposing the air were a tangible or visible substance, the particles would still be indistinguishable even under a microscope. The chief peculiarity of these molecules is the utter absence of friction amongst them; they are free to move in any and every direction if they are agitated or caused to move by any force. The movement takes place instantly, and in a manner that is absolutely free from impediment or resistance of any description. Everyone knows how freely an object can be projected through the atmosphere; a stone can be slung a great distance into the air, but how far would the stone penetrate into a mass of sand (which consists of particles also). This goes to show the opposite results obtained when acting upon two substances composed of particles, but in which the element of friction is so utterly different.

Now the movement of air up a chimney, the draught, is brought about in this way, or rather, this explanation will serve to show how the draught is partly accounted for, as there are two or three actions taking place at once, and a chimney that has no fire at the foot of it for the time being has the draught actuated somewhat differently to when there is a fire alight. The explanation that will go to make the action understood is as follows:—Supposing a stove exists at the bottom of a chimney, as Fig. 1.

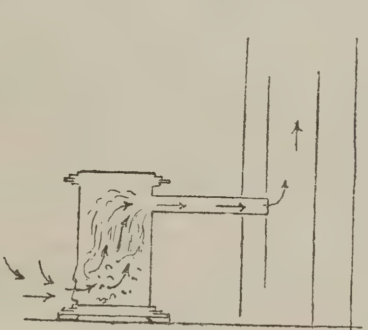

FIG 1

Now, when the fire is lighted, the air within the stove becomes rarefied by the heat, that is, it is made or rendered lighter than it was, owing to its particles having become expanded by the warmth they have absorbed. Immediately they thus become lightened, they are displaced by the superior weight of the cold particles around them, and this displacement causes them to take an upward direction. An instance of this action can be given by referring to the action of a cork in water. If we plunge a cork into a vessel of water and release it at the bottom, it instantly rises to the top. This, we should say, is caused by the fact that the cork is lighter than the liquid; but the actual cause is that any substance so placed—that is, lighter than water itself—is caused to rise by the particles of water displacing it, and it is the result of gravity that causes the heavier substance to take a downward direction, and the lighter substance the reverse.

This action, when it takes place amongst the particles of gases and liquids, is termed "convection." It takes place in precisely this manner with water, and is the action that we depend upon in all kinds of hot-water circulating apparatus.

When the air in the stove is warmed and lightened, there at once takes place an inrush of cold air through the opening in front of the stove. The warm air rises up into the chimney, and the cold air which has entered to take its place, gets warmed, and rises also, and so it goes on. The action is continuous, and exceedingly rapid, as can be judged by holding a lighted taper where the air enters the stove. The direction of the flame of the taper will show what a keen inrush or stream of air is entering the aperture.

In addition to air that may be warmed, and so caused to make an up-draught in the chimney, there are the hot products of combustion. The air which has actually passed through the burning mass of fuel, undergoes a chemical change, and becomes a gas with a different name; but it still remains lighter than the cold outer air, and consequently acts in the way described. With stoves there is very little air passes through without undergoing this change, or becoming very highly heated, and the result is a much stronger and more powerful draught in the chimney than we get with an open grate. With this latter article the open mouth of the chimney, whether the grate be an old or new pattern, permits of a deal of air passing in which is barely warmed, and this tends to retard, or at any rate interfere with the causes which go to make the draught.

So far the explanation has only applied to the up current, which is due to the rarefaction of air by a fire in a stove or grate. When there is no fire alight, the draught is still due to the convective action explained; but it proceeds from a different cause—a cause which is also present and assists when the fire is alight. This cause is the heat imparted to and retained by the brickwork of which the chimney is built.

When the fire at the bottom of the chimney goes out, it of course ceases to heat the air within the stove, and it also ceases to yield the other hot gases referred to; but it will be found that during the time the fire was giving these results, the brickwork of the chimney was actively absorbing heat as these products had contact with it. Anyone can readily discover how warm the brickwork becomes in this way, by holding the hand against the chimney-breast one or two floors above where the fire exists. The warmth is detected through 4½in. brickwork very readily and quickly. When the chimney is in this condition and the fire is out, the air which enters is warmed by the heat it receives from this source, and instantly takes an upward direction. If the fire has only just been extinguished, the draught is almost as strong as when the fire was alight.

It is peculiar to note what a length of time a brick-chimney will retain sufficient warmth to induce a draught in it. Chimneys that have not been in use for months are sometimes found to have a steady up-current of air in them, due to the brickwork still being able to impart sufficient warmth to the air in contact, to render it lighter. In perfectly new chimneys a feeble up-draught is sometimes observable, caused by the mere fact of the air inside the building being a degree or two warmer than that which is without. It may be a little difficult to grasp the fact that such a trifling variation in temperature will bring about such a pronounced action, but if a little experiment is made with water it can be easily seen. In noticing results with water, it matters not how quickly the results are obtained, it can be taken for granted that with air the action will be still quicker, as convection takes place more freely with gases than with liquids.

To illustrate the rapid action induced amongst the particles of a fluid by a very little heat, take a glass flask or jar of small size, holding, say, a pint, and nearly fill this with cold water. Into this water stir a small quantity of hard-wood dust (fine sawdust of mahogany will do), and then suspend the jar so that a lamp can be placed under, and the results noted. A small paraffin or benzoline lamp is better than a spirit-lamp for this purpose, as the flame can be turned down low, and we can see what a very little heat will do. If we place a lamp under, as Fig. 2, we shall find that, although the heat which comes from the lamp chimney is far from great, the particles of dust will almost instantly set up a motion, as shown in the illustration, and the motion of some of the ascending particles will be exceedingly rapid. By watching the dust particles we are able to tell what is happening with the particles of the liquid, for it is the movement of these latter that cause the solid particles to take the direction they do.

This action that can be thus watched and so readily understood is precisely the same with air and gases, except that with these latter the motion would be still more rapid, as just explained. Those who make this experiment will do well to notice how instantly the motion takes place when the lamp is first put under. It sometimes seems as if the movement commences before the heat has actually had time to make its way through the bottom of the vessel. It will conclusively prove that the action takes place whenever there is the faintest change in the temperature.

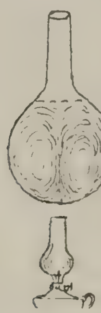
FIG. 2.

Convection currents, either in air or water, are not always due to increase in temperature. Sometimes it is a decrease of heat that causes the motion. For instance, after having the lamp under the jar of water just referred to some time, it will be found that the contents are warm. If we now take the lamp away, the circulatory action of the particles will stop; but the application of a piece of cold metal or ice to the top of the water will start the movement again. The movement will still be of the same kind—that is, descent of cold particles, and ascent of those that are warmer; but the cause is different. It is the contraction and rendering heavier of the particles that have contact with the cold object at top, and their consequent descent through their lighter fellows. These latter have necessarily to rise and take their place, and become cooled and precipitated also.

About the only instance we have of this top-cooling influence in chimneys is with those newly built or really cold from disuse. When a fire is lighted at the base of a chimney in this state, it will be found that the smoke seems positively averse to ascending the flue—it objects, so to speak, and the consequence is that most of it comes into the room, just as if a formidable obstruction existed to its free passage up the chimney. This only lasts a matter of a few seconds or minutes, as a rule. The obstruction is the overlying mass of cold air in the flue that the warmed air and gases from the fire encounter, and which has a cooling and reversing influence something similar to that just explained. It is a contest between the two for a short period; but assuming that the chimney is of an efficient character, the up-draught soon asserts itself, and the trouble does not arise again while the chimney is in regular use.

Another instance of trouble caused by a cooling influence acting upon the warmed air and gases ascending from the fire, is the persistent smoking of most of our old-pattern open ranges, and also with what are known as dog-grates or fire-baskets, as will be explained in the next paper.

BUILDERS' CLERKS' BENEVOLENT INSTITUTION.

THE twenty-fifth annual general meeting of the donors and subscribers was held, on the 23rd February last, at the offices of the Institution, 21, New Bridge-street, E.C., Mr. Colin G. Patrick (Messrs. Mark Patrick and Sons) in the chair.

The secretary read the report, which stated that the income for the past year amounted to £806 0s. 9d., being the largest annual total received since the foundation of the institution, the amount being made up of £293 4s. in subscriptions, £406 18s. 6d. in donations, £103 16s. 1d. in dividends, and £2 2s. 2d. interest on deposit, &c. The sum expended was £455 0s. 1d., including £340 paid to pensioners, and £15 in grants for temporary reliefs. During the year one of the pensioners (Mrs. Olwer) was removed by death, and another (Mrs. Hadrill) resigned, having re-married. The number of pensioners now on the books is 16; but the total number elected since the foundation has been 32. Of these nine have died, while seven have retired, owing either to re-marriage or to improved circumstances in other respects. Referring to the Orphan fund, the school term of Edith Friend having expired, Cyril Ludford was elected to fill up the vacancy. There is yet an opening for another child, and the committee are prepared to receive applications on behalf of builders' clerks orphans, whose friends may wish to place them in nomination for the vacancy. There are also two vacant pensions, an application for one of which is already before the Board.

The 13th annual dinner was held on the 6th April, 1891, at the Cannon-street Hotel, and the earnest appeal of Mr. B. Hannen, jun., who occupied the chair, resulted in the sum of £433 being announced in aid of the funds. During the year £500 additional stock was bought, making up a total of £4,150 stock, now held by the Institution. The report concludes by thanking Mr. B. Hannen, jun., for his services as president, and also the builders, architects, and merchants connected with the building trade for their continued support.

The chairman, in moving the adoption of the report, said he had felt very much flattered at receiving the letter asking him to occupy the position of president, although he confessed to having some doubts as to his fitness for the post. He had, however, accepted, and would do the best he could, and if he failed it should be no fault of his. He felt that his influence was not so strong as Mr. Hannen's, still, he hoped to do well with the assistance of the committee. Referring to the report, he was glad to find that the amount invested was growing larger every year. He thought it most satisfactory for such an institution to increase the amount of its stock. He again expressed the pleasure it afforded him to act as president of the Institution, where he should meet many of the clerks, earnest men, who were not particular as to the number of hours they often worked, and to whom the masters were so greatly indebted.

Mr. E. C. Roe then seconded the resolution for the adoption of the report, which was put and carried.

Mr. B. Hannen, jun., and the other retiring officers were then thanked for their services, and officers for the ensuing year elected, including Mr. Ernest Stanley Rider as an auditor. During the proceedings, Mr. Brooks referred to the death of Mr. John Allbright, who had been on the committee from the foundation, and who had taken a prominent part, especially in its earlier years, in assisting to start the institution on a solid basis.

The proceedings closed with a vote of thanks to Mr. Colin Patrick for having accepted the presidency, and for his attendance in the chair that evening.

MINIMUM HEIGHT OF HABITABLE ROOMS.

WE have received a memorandum from the office of the Local Government Board concerning the height for habitable rooms under the provisions of the Public Health Acts Amendment Act, 1890, section 23, signed by C. W. Geo. Buchanan and P. Gordon Smith, F.R.I.B.A., the medical officer and architect respectively to the Board. Certain proposals for regulating the smallest or minimum height of rooms by law have been under consideration, and those gentlemen show that a room may provide sufficient floor space for a given number of persons, but be without sufficient breathing space to keep them in health. This breathing space can only be obtained by a certain height, say, 8ft.; but when the height is less than this, there will be insufficient breathing space unless the number of persons in the room is reduced. In other words, by reducing height we must increase the floor area of room. Those who let houses are only mindful of the floor area, and thus many more people are packed into low-pitched-sleeping rooms than is desirable for health. Hence it is suggested that sanitary authorities should appoint a minimum height for rooms in general, and proper regard being had to economy, it is suggested that the minimum had best be 9ft., 8½ft., or 8ft. Nine feet is preferred, but in no case, it is stated, "should a by-law submitted for the Board's approval propose for any class of room a smaller height than 8ft. over the total area of the room." Three diagrams, or span roof sections, are given, showing attic rooms, each having a mean height of 8ft., which is considered essential for rooms in the roof. These three sections show how this mean height can be obtained. Thus, in the diagram A the rafter or raking lines of ceiling give at the collar, or horizontal level, 9ft., with a minimum of 5ft. of wall to the springing of rafters. From this level to the 9ft. the ceiling slopes so that one-half of the ceiling area is 9ft. high. The lower room shows a flat ceiling of 9ft. high. Diagram B shows the attic obtained within the triangle made by the rafters and floor level; the 5ft. to springing of rafters is obtained by setting in the partition or ashlaring, then there is a short slope to the horizontal portion which has a height of 8ft. 9in. In this diagram three-fifths of the ceiling is 8ft. 9in. high. In diagram C a curb or mansard-shaped roof is shown, the flat ceiling covers a larger area (five-sixths), and the height is 8ft. 4in. In each case a minimum of 5ft. is provided for each room wall, and the height and proportion of horizontal ceilings insure the mean height of 8ft. over the whole floor area.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

THE ELEMENTS OF ARCHITECTURAL FORM.—Before the Philosophical Society of Glasgow on the 18th inst., Mr. James Thomson presiding, Professor G. Baldwin Brown, Edinburgh, read a paper on "Beauty and Utility in Architecture." The guiding spirits, beauty and utility, he observed, might be said to enter as constituent elements into every production of architecture; but there were, strictly speaking, four different points of view from which they might regard architectural form, or, in other words, there were four different reasons which might be given for an architectural feature being what it was and where it was. It might be what it was and where it was because it followed naturally from the material and mode of construction, or it might have been devised specially to suit some given purpose; or, thirdly, it might be employed on intellectual grounds, because it was impressive or symbolised some idea; or, lastly, it might be due to purely æsthetic considerations as a thing pleasing to the eye. The two former reasons might, however, be grouped under the head of utility, and the two latter under the head of beauty.

CHIPS.

A Bill introduced by Sir John Gorst, Q.C., on behalf of the Government, proposes to transfer to the management of the Commissioners of Works the site of Millbank Prison, in London, which is vested in her Majesty, but is no longer used as a prison.

The Sheffield Town Council has adopted a resolution giving power to inflict penalties for breaches of the "fair contract" clause, a condition being inserted requiring that such a sum as a committee may determine shall be paid by the contractor as liquidated damages.

The Ripon town council have resolved to instruct Mr. T. S. MacCallum, C.E., of Manchester, to prepare a full scheme for the disposal of the sewage of the city.

The London County Council, having been rated at a sum exceeding £11,000 for their sewers and outfall works at Barking, appealed to the Essex Quarter Sessions, on the ground that, as the sewers were incapable of being occupied at a profit, they were not subject to rating. The Sessions affirmed the rating, and on appeal to a Division of the Queen's Bench, the Judges have upheld the decision of the Court below.

During the last fourteen years, sixty-one pictures have been purchased for the National Gallery under the terms of Sir Francis Chantrey's bequest. They have cost £39,245, the highest prices having been £2,200 for Mr. Brock's "A Moment of Peril," £2,200 for Mr. Herkomer's "The Chapel of the Charterhouse," £2,000 for Mr. Vicat Cole's "Port of London," £2,000 for Sir Frederic Leighton's "Athlete Struggling with a Python," and £2,000 for Mr. Orchardson's "Napoleon on Board the *Bellerophon*."

Col. W. M. Ducat, R.E., one of the inspectors of the Local Government Board, held an inquiry last week at the town hall, Newcastle-under-Lyme, into an application by the town council for sanction to borrow £18,344 for gas purposes, and for consent to the acquiring of certain land in Deansgate, and to a loan for a new sewer. Mr. W. Winstanley, gas manager, and Mr. J. Pattison, borough surveyor, explained the proposals.

PRICES.*—XXXI.

(All Prices Include Profit.)

JOINER (*continued*).

HARDWOOD DOORS: Spanish mahogany, ordinary sizes, semi-headed, measured square, not polished—

		£	s.	d.
2in. six-panel, stop-chamfered one side, including plain stops.	per ft. sup.	0	6	9
Ditto two sides	ditto	0	7	6
Ditto raised panels one side	ditto	0	7	0
Ditto two sides	ditto	0	8	0
Hung folding, add	ditto	0	0	2
2½in. ditto square framed	ditto	0	7	0
Ditto ditto bead butt	ditto	0	7	3
Ditto ditto flush	ditto	0	7	6
Ditto ditto moulded one side	ditto	0	7	5
Ditto ditto two sides	ditto	0	7	10
Ditto ditto ditto and one side bolection moulded	ditto	0	8	2
Ditto top panels out for glass, not including loose beads	ditto	0	7	6
Ditto top panels sashed	ditto	0	8	3
Ditto ditto in small squares	ditto	0	9	0
Ditto stop-chamfered one side, and plain stops	ditto	0	7	9
Ditto ditto two sides	ditto	0	8	6
Ditto raised panels one side	ditto	0	8	0
Ditto ditto two sides	ditto	0	9	0
Hung folding add	ditto	0	0	3

HARDWOOD DOORS: Wainscot or American walnut; ordinary sizes, semi-headed, measured square, and not polished—

		£	s.	d.
1¼in. two-panel, square framed	ditto	0	3	0
Ditto ditto bead butt	ditto	0	3	3
Ditto ditto ditto flush	ditto	0	3	6
Ditto ditto moulded one side	ditto	0	3	4
Ditto ditto ditto two sides	ditto	0	3	8
Ditto ditto ditto and one side bolection moulded	ditto	0	3	10
Ditto ditto stop-chamfered one side and plain stops	ditto	0	3	6
Ditto ditto ditto two sides	ditto	0	4	0
1½in. ditto square-framed	ditto	0	3	6
Ditto ditto bead butt	ditto	0	3	9
Ditto ditto ditto flush	ditto	0	4	0
Ditto ditto moulded one side	ditto	0	4	4
Ditto ditto ditto two sides	ditto	0	4	8
Ditto ditto ditto and one side bolection moulded	ditto	0	4	10
Ditto ditto stop-chamfered one side and plain stops	ditto	0	4	0
Ditto ditto ditto two sides	ditto	0	4	6
Ditto ditto raised panels one side	ditto	0	4	2
Ditto ditto top panel out for glass, not including loose beads	ditto	0	3	9
Ditto ditto top panel sashed	ditto	0	4	3
Ditto ditto ditto in small squares	ditto	0	4	9
Ditto ditto hung folding add	ditto	0	0	1½
2in. ditto square framed	ditto	0	4	0
Ditto ditto bead butt	ditto	0	4	3
Ditto ditto ditto flush	ditto	0	4	6
Ditto ditto moulded one side	ditto	0	4	4
Ditto ditto ditto two sides	ditto	0	4	8
Ditto ditto ditto and one side bolection moulded	ditto	0	4	10
Ditto ditto stop-chamfered one side and plain stops	ditto	0	4	6
Ditto ditto ditto two sides	ditto	0	5	0
Ditto ditto top panel out for glass, not including loose beads	ditto	0	4	3
Ditto ditto top panel sashed	ditto	0	4	9
Ditto ditto ditto in small squares	ditto	0	5	3
Ditto ditto raised panels one side	ditto	0	4	8
1¼in. four-panel, square framed	ditto	0	3	0
Ditto ditto ditto bead butt	ditto	0	3	3
Ditto ditto ditto flush	ditto	0	3	6
Ditto ditto moulded one side	ditto	0	3	4
Ditto ditto ditto two sides	ditto	0	3	8
Ditto ditto ditto and one side bolection moulded	ditto	0	3	10
Ditto ditto bead butt and moulded	ditto	0	3	7
Ditto ditto ditto flush and ditto	ditto	0	3	10
Ditto ditto stop-chamfered one side and plain stops	ditto	0	3	6
Ditto ditto ditto two sides	ditto	0	4	0
Ditto ditto top panels out for glass, not including loose beads	ditto	0	3	3
Ditto ditto top panels sashed	ditto	0	3	9
Ditto ditto in small squares	ditto	0	4	3
Ditto ditto raised panels one side	ditto	0	3	8
Hung folding extra	ditto	0	0	1½
1½in. ditto square framed	ditto	0	3	9
Ditto ditto bead butt	ditto	0	4	0
Ditto ditto ditto flush	ditto	0	4	3
Ditto ditto moulded one side	ditto	0	4	1
Ditto ditto ditto two sides	ditto	0	4	5
Ditto ditto ditto and bolection moulded on one side	ditto	0	4	7
Ditto ditto bead butt and moulded	ditto	0	4	4
Ditto ditto ditto flush and ditto	ditto	0	4	6
Ditto ditto stop-chamfered one side, and plain stops	ditto	0	4	3
Ditto ditto ditto two sides	ditto	0	4	9
Ditto ditto top panels out for glass, not including loose beads	ditto	0	4	0
Ditto ditto top panel sashed	ditto	0	4	6
Ditto ditto ditto in small squares	ditto	0	5	0
Ditto ditto raised panels on one side	ditto	0	4	5
Hung folding add	ditto	0	0	1½
2in. ditto square framed	ditto	0	4	6
Ditto ditto bead butt	ditto	0	4	9
Ditto ditto ditto flush	ditto	0	5	0
Ditto ditto moulded one side	ditto	0	4	10
Ditto ditto ditto two sides	ditto	0	5	2
Ditto ditto ditto and bolection moulded on one side	ditto	0	5	4
Ditto ditto bead butt and moulded	ditto	0	5	1
Ditto ditto ditto flush and ditto	ditto	0	5	3
Ditto ditto stop-chamfered one side and plain stops	ditto	0	5	0
2in. four-panel, stop-chamfered two sides	per ft. sup.	0	5	6
Ditto ditto top panels out for glass, not including loose beads	ditto	0	4	9
Ditto ditto top panels sashed	ditto	0	5	3
Ditto ditto ditto in small squares	ditto	0	5	9
Ditto ditto raised panels one side	ditto	0	5	3
Ditto ditto hung folding add	ditto	0	0	2
2½in. ditto square framed	ditto	0	5	6
Ditto ditto bead butt	ditto	0	5	9
Ditto ditto ditto flush	ditto	0	6	0
Ditto ditto moulded one side	ditto	0	5	11
Ditto ditto ditto two sides	ditto	0	6	4
Ditto ditto ditto and one side bolection moulded	ditto	0	6	7
Ditto ditto bead butt and moulded	ditto	0	6	2
Ditto ditto ditto flush	ditto	0	6	5
Ditto ditto stop-chamfered one side and plain stops	ditto	0	6	0
Ditto ditto ditto two sides	ditto	0	6	6
Ditto ditto top panels out for glass, not including loose beads	ditto	0	5	9
Ditto ditto top panels sashed	ditto	0	6	3
Ditto ditto ditto in small squares	ditto	0	6	9
Ditto ditto raised panels one side	ditto	0	6	3
Ditto ditto hung folding add	ditto	0	0	2
1½in. six-panel, square framed	ditto	0	4	3
Ditto ditto bead butt	ditto	0	4	6
Ditto ditto ditto flush	ditto	0	4	9
Ditto ditto moulded one side	ditto	0	4	7
Ditto ditto ditto two sides	ditto	0	4	11
Ditto ditto ditto and one side bolection moulded	ditto	0	5	1
Ditto ditto bead butt and moulded	ditto	0	4	10
Ditto ditto ditto flush and ditto	ditto	0	5	0
Ditto ditto stop-chamfered one side and plain stops	ditto	0	4	9
Ditto ditto ditto two sides	ditto	0	5	3
Ditto ditto top panels out for glass, and not including loose beads	ditto	0	4	6
Ditto ditto top panels sashed	ditto	0	5	0
Ditto ditto ditto in small squares	ditto	0	5	6
Ditto ditto raised panels one side	ditto	0	5	0
Ditto ditto hung folding add	ditto	0	0	1½
2in. six-panel, square framed	ditto	0	5	0
Ditto ditto bead butt	ditto	0	5	3
Ditto ditto ditto flush	ditto	0	5	6
Ditto ditto moulded one side	ditto	0	5	5
Ditto ditto ditto two sides	ditto	0	5	10
Ditto ditto and bolection moulded one side	ditto	0	6	0
Ditto ditto stop-chamfered one side and plain stops	ditto	0	5	7
Ditto ditto ditto two sides	ditto	0	6	2
Ditto ditto top panels out for glass, not including loose beads	ditto	0	5	3
Ditto ditto top panels sashed	ditto	0	5	9
Ditto ditto ditto in small squares	ditto	0	6	3
Ditto ditto raised panels one side	ditto	0	5	9
Ditto ditto ditto two sides	ditto	0	6	6
Ditto ditto hung folding add	ditto	0	0	2
2½in. ditto square framed	ditto	0	6	0
Ditto ditto bead butt	ditto	0	6	3
Ditto ditto ditto flush	ditto	0	6	6
Ditto ditto moulded one side	ditto	0	6	5
Ditto ditto ditto two sides	ditto	0	6	10
Ditto ditto ditto and one side bolection moulded	ditto	0	7	1
Ditto ditto stop-chamfered one side and plain stops	ditto	0	6	7
Ditto ditto ditto two sides	ditto	0	7	2
Ditto ditto top panels sashed	ditto	0	6	3
Ditto ditto ditto in small squares	ditto	0	6	9
Ditto ditto raised panels one side	ditto	0	6	9
Ditto ditto ditto two sides	ditto	0	7	6
Ditto ditto hung folding add	ditto	0	0	2

HARDWOOD DOORS: ordinary sizes, Honduras mahogany, *circular* on plan, to ordinary flat sweeps—

		£	s.	d.
1¼in. two-panel, square framed	ditto	0	4	6
Ditto ditto bead butt and square	ditto	0	5	0
Ditto ditto ditto flush	ditto	0	5	4
Ditto ditto moulded one side	ditto	0	5	3
Ditto ditto ditto two sides	ditto	0	6	0
Ditto ditto ditto and one side bolection moulded	ditto	0	6	6
Ditto ditto stop-chamfered one side, and plain stops	ditto	0	5	2
Ditto ditto ditto two sides	ditto	0	5	10
Ditto ditto hung folding add	ditto	0	0	1½
1¼in. ditto square framed	ditto	0	5	0
Ditto ditto bead butt and square	ditto	0	5	6
Ditto ditto ditto flush	ditto	0	5	10
Ditto ditto moulded one side	ditto	0	5	9
Ditto ditto ditto two sides	ditto	0	6	6
Ditto ditto ditto and one side bolection moulded	ditto	0	7	0
Ditto ditto stop-chamfered one side and plain stops	ditto	0	5	8
Ditto ditto ditto two sides	ditto	0	6	4
Ditto ditto hung folding add	ditto	0	0	1½
1½in. ditto square framed	ditto	0	5	6
Ditto ditto bead butt	ditto	0	6	0
Ditto ditto ditto flush	ditto	0	6	4
Ditto ditto moulded one side	ditto	0	6	3
Ditto ditto ditto two sides	ditto	0	7	0
Ditto ditto ditto and one side bolection moulded	ditto	0	7	6
Ditto ditto stop-chamfered one side, and plain stops	ditto	0	6	2
Ditto ditto ditto two sides	ditto	0	6	10
Ditto ditto raised panels one side	ditto	0	6	6
Ditto ditto top panels out for glass, not including loose beads	ditto	0	5	6
Ditto ditto top panels sashed	ditto	0	6	6
Ditto ditto in small squares	ditto	0	7	6
Ditto ditto hung folding add	ditto	0	0	2
2in. ditto square framed	ditto	0	6	0
Ditto ditto bead butt	ditto	0	6	6
Ditto ditto ditto flush	ditto	0	6	10
Ditto ditto moulded one side	ditto	0	6	9
Ditto ditto ditto two sides	ditto	0	7	6
Ditto ditto ditto one side bolection moulded	ditto	0	8	0
Ditto ditto stop-chamfered one side, and plain stops	ditto	0	6	8
2in. two-panel, stop-chamfered two sides	per ft. sup.	0	7	4
Ditto ditto raised panels one side	ditto	0	7	0
Ditto ditto ditto two sides	ditto	0	8	0
Ditto ditto top panels out for glass, not including loose beads	ditto	0	6	0
Ditto ditto top panels sashed	ditto	0	7	0
Ditto ditto ditto in small squares	ditto	0	8	0
Ditto ditto hung folding add	ditto	0	0	1½
1¼in. four-panel, square framed	ditto	0	5	0
Ditto ditto bead butt and square	ditto	0	5	6
Ditto ditto ditto flush	ditto	0	5	10
Ditto ditto moulded one side	ditto	0	5	9
Ditto ditto ditto two sides	ditto	0	6	6
Ditto ditto ditto and one side bolection moulded	ditto	0	7	0
Ditto ditto bead butt and moulded	ditto	0	6	3
Ditto ditto ditto flush ditto	ditto	0	6	7
Ditto ditto stop-chamfered one side, and plain stops	ditto	0	5	9
Ditto ditto ditto two sides	ditto	0	6	6
Ditto ditto hung folding add	ditto	0	0	1½
1½in. ditto ditto square framed	ditto	0	6	0
Ditto ditto bead butt and square	ditto	0	6	6
Ditto ditto ditto flush ditto	ditto	0	6	10
Ditto ditto moulded one side	ditto	0	6	9
Ditto ditto ditto two sides	ditto	0	7	6
Ditto ditto ditto and one side bolection moulded	ditto	0	8	0
Ditto ditto stop-chamfered one side, and plain stops	ditto	0	6	9
Ditto ditto ditto two sides	ditto	0	7	6
Ditto ditto raised panels one side	ditto	0	7	3
Ditto ditto top panels out for glass, not including loose beads	ditto	0	6	0
Ditto ditto top panels sashed	ditto	0	7	0
Ditto ditto ditto in small squares	ditto	0	8	0
Ditto ditto hung folding add	ditto	0	0	2
2in. ditto square framed	ditto	0	7	0
Ditto ditto bead butt and square	ditto	0	7	6
Ditto ditto ditto flush ditto	ditto	0	7	10
Ditto ditto moulded one side	ditto	0	7	9
Ditto ditto ditto two sides	ditto	0	8	6
Ditto ditto ditto and bolection moulded one side	ditto	0	9	0
Ditto ditto stop-chamfered one side, and plain stops	ditto	0	7	9
Ditto ditto ditto two sides	ditto	0	8	6
Ditto ditto raised panels one side	ditto	0	8	3
Ditto ditto ditto two sides	ditto	0	9	6
Ditto ditto top panels out for glass, not including loose beads	ditto	0	7	0
Ditto ditto top panels sashed	ditto	0	8	0
Ditto ditto in small squares	ditto	0	9	0
Ditto ditto hung folding extra	ditto	0	0	2
2½in. ditto square framed	ditto	0	8	0
Ditto ditto bead butt and square	ditto	0	8	6
Ditto ditto ditto flush and ditto	ditto	0	9	0
Ditto ditto moulded one side	ditto	0	8	9
Ditto ditto ditto two sides	ditto	0	9	6
Ditto ditto ditto and bolection moulded one side	ditto	0	10	0
Ditto ditto stop-chamfered one side and plain stops	ditto	0	8	9
Ditto ditto ditto two sides	ditto	0	9	6
Ditto ditto raised panels one side	ditto	0	9	6
Ditto ditto ditto two sides	ditto	0	11	3
Ditto ditto top panels out for glass, not including loose beads	ditto	0	8	0
Ditto ditto top panels sashed	ditto	0	9	3
Ditto ditto ditto in small squares	ditto	0	10	6
Ditto ditto hung folding add	ditto	0	0	3
1½in. six-panel square framed	ditto	0	6	0
Ditto ditto bead butt and square	ditto	0	6	8
Ditto ditto ditto flush and ditto	ditto	0	7	2
Ditto ditto moulded one side	ditto	0	6	10
Ditto ditto ditto two sides	ditto	0	7	8
Ditto ditto ditto and bolection moulded one side	ditto	0	8	3
Ditto ditto stop-chamfered one side, and plain stops	ditto	0	6	9
Ditto ditto ditto two sides	ditto	0	7	6
Ditto ditto raised panels one side	ditto	0	7	0
Ditto ditto ditto two sides	ditto	0	8	0
Ditto ditto top panels out for glass, not including loose beads	ditto	0	6	0
Ditto ditto top panels sashed	ditto	0	7	0
Ditto ditto ditto in small squares	ditto	0	8	0
Ditto ditto hung folding add	ditto	0	0	2
2in. ditto square framed	ditto	0	7	6
Ditto ditto bead butt and square	ditto	0	8	2
Ditto ditto ditto flush ditto	ditto	0	8	8
Ditto ditto moulded one side	ditto	0	8	4
Ditto ditto ditto two sides	ditto	0	9	2
Ditto ditto bead butt and moulded	ditto	0	9	0
Ditto ditto ditto flush and ditto	ditto	0	9	6
Ditto ditto moulded one side and bolection moulded the other	ditto	0	9	8
Ditto ditto stop-chamfered one side, and plain stops	ditto	0	8	3
Ditto ditto ditto two sides	ditto	0	9	0
Ditto ditto top panels out for glass, not including loose beads	ditto	0	7	6
Ditto ditto top panels sashed	ditto	0	8	6
Ditto ditto ditto in small squares	ditto	0	9	6
Ditto ditto raised panels one side	ditto	0	8	9
Ditto ditto ditto two sides	ditto	0	10	0
Ditto ditto hung folding add	ditto	0	0	2
2½in. ditto ditto square framed	ditto	0	9	0
Ditto ditto bead butt and square	ditto	0	9	9
Ditto ditto ditto flush ditto	ditto	0	10	3
Ditto ditto moulded on one side	ditto	0	9	10
Ditto ditto ditto two sides	ditto	0	11	8
Ditto ditto bead butt and moulded	ditto	0	10	7
Ditto ditto ditto flush ditto	ditto	0	11	1
Ditto ditto moulded one side and bolection the other	ditto	0	9	3
Ditto ditto stop-chamfered one side and plain stops	ditto	0	9	9
Ditto ditto ditto two sides	ditto	0	10	6
Ditto ditto top panel out for glass, not including loose beads	ditto	0	9	0
Ditto ditto top panel sashed	ditto	0	10	0
Ditto ditto in small squares	ditto	0	11	0
Ditto ditto raised panels one side	ditto	0	10	6
Ditto ditto ditto two sides	ditto	0	12	0
Ditto hung folding extra	ditto	0	0	3

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Hardwood doors: Spanish mahogany, ordinary sizes, *circular* on plan to ordinary sweeps—

		£	s.	d.
1in. two-panels, square framed	per ft. sup.	0	7	0
Ditto ditto bead butt and square	ditto	0	7	6
Ditto ditto ditto flush ditto	ditto	0	7	10
Ditto ditto moulded one side	ditto	0	7	9
Ditto ditto ditto two sides	ditto	0	8	6
Ditto ditto stop-chamfered one side and plain stops	ditto	0	7	9
Ditto ditto two sides	ditto	0	8	6
1¼in. ditto ditto square frame	ditto	0	7	6
Ditto ditto bead butt and square	ditto	0	8	0
Ditto ditto ditto flush ditto	ditto	0	8	4
Ditto ditto moulded one side	ditto	0	8	3
Ditto ditto ditto two sides	ditto	0	9	0
Ditto ditto ditto and one side bolection moulded	ditto	0	9	6
Ditto ditto stop-chamfered one side and plain stops	ditto	0	8	3
Ditto ditto ditto two sides	ditto	0	9	0
1½in. ditto, square framed	ditto	0	8	0
Ditto ditto bead butt and square	ditto	0	8	6
Ditto ditto ditto flush ditto	ditto	0	8	10
Ditto ditto moulded one side	ditto	0	8	9
Ditto ditto ditto two sides	ditto	0	9	6
Ditto ditto ditto and one side bolection moulded	ditto	0	10	3
Ditto ditto stop-chamfered one side and plain stops	ditto	0	8	9
Ditto ditto ditto two sides	ditto	0	9	6
Ditto ditto raised panels one side	ditto	0	9	0
Ditto ditto ditto two sides	ditto	0	10	0
Ditto ditto top panels out for glass, not including loose beads.	ditto	0	8	0
Ditto ditto top panels sashed	ditto	0	9	0
Ditto ditto ditto in small squares	ditto	0	10	0
Ditto ditto hung folding add	ditto	0	0	2
2in. ditto square framed	ditto	0	9	0
Ditto ditto bead butt and square	ditto	0	9	6
Ditto ditto ditto flush and ditto	ditto	0	9	10
Ditto ditto moulded one side	ditto	0	9	9
Ditto ditto ditto two sides	ditto	0	10	6
Ditto ditto ditto and one side bolection moulded	ditto	0	11	0
Ditto ditto top panels out for glass, not including loose beads	ditto	0	9	0
Ditto ditto top panels sashed	ditto	0	10	0
Ditto ditto ditto in small squares	ditto	0	11	0
Ditto ditto stop-chamfered one side and plain stops	ditto	0	9	9
Ditto ditto ditto two sides	ditto	0	10	6
Ditto ditto raised panels one side	ditto	0	10	3
Ditto ditto ditto two sides	ditto	0	11	6
2½in. ditto square framed	ditto	0	11	0
Ditto ditto bead butt and square	ditto	0	11	6
Ditto ditto ditto flush and ditto	ditto	0	11	10
Ditto ditto moulded one side	ditto	0	12	0
Ditto ditto ditto two sides	ditto	0	13	0
Ditto ditto ditto and bolection moulded one side	ditto	0	13	6
Ditto ditto top panels out for glass, not including loose beads	ditto	0	11	0
Ditto ditto top panels sashed	ditto	0	12	3
Ditto ditto small squares	ditto	0	13	6
Ditto ditto stop-chamfered one side and plain stops	ditto	0	11	10
Ditto ditto ditto two sides	ditto	0	12	8
Ditto ditto raised panels one side	ditto	0	12	6
Ditto ditto ditto two sides	ditto	0	14	0
Ditto ditto hung folding add	ditto	0	0	3
1¼in. four panel square framed	ditto	0	7	0
Ditto ditto bead butt and square	ditto	0	7	6
Ditto ditto ditto bead flush	ditto	0	7	10
Ditto ditto moulded one side	ditto	0	7	9
Ditto ditto ditto two sides	ditto	0	8	6
Ditto ditto ditto and one side bolection moulded	ditto	0	9	0
Ditto ditto top panel out for glass, not including loose beads.	ditto	0	7	0
Ditto ditto top panel sashed	ditto	0	8	0
Ditto ditto ditto in small squares	ditto	0	9	0
Ditto ditto stop-chamfered one side, and plain stops	ditto	0	7	9
Ditto ditto ditto two sides	ditto	0	8	6
Ditto ditto raised panel one side	ditto	0	8	0
Ditto ditto ditto two sides	ditto	0	9	0
Ditto ditto hung folding add	ditto	0	0	1½
1½in. ditto square framed	ditto	0	8	0
Ditto ditto bead butt and square	ditto	0	8	6
Ditto ditto ditto flush	ditto	0	8	10
Ditto ditto moulded one side	ditto	0	8	9
Ditto ditto ditto two sides	ditto	0	9	6
Ditto ditto ditto and one side bolection moulded	ditto	0	10	0
Ditto ditto top panel out for glass, not including loose beads	ditto	0	8	0
Ditto ditto top panel sashed	ditto	0	9	0
Ditto ditto in small squares	ditto	0	10	0
Ditto ditto stop-chamfered one side and plain stops	ditto	0	8	9
Ditto ditto ditto two sides	ditto	0	9	6
Ditto ditto raised panels one side	ditto	0	9	0
Ditto ditto ditto two sides	ditto	0	10	0
Ditto hung folding add	ditto	0	0	2
2in. ditto square framed	ditto	0	9	0
Ditto ditto bead butt and square	ditto	0	9	10
Ditto ditto ditto flush and ditto	ditto	0	9	9
Ditto ditto moulded one side	ditto	0	9	9
Ditto ditto ditto two sides	ditto	0	10	6
Ditto ditto ditto and one side bolection moulded	ditto	0	11	0
Ditto ditto top panels out for glass not including loose beads	ditto	0	9	0
Ditto ditto top panels sashed	ditto	0	10	0
Ditto ditto ditto in small squares	ditto	0	11	0
Ditto ditto stop-chamfered one side and plain stops	ditto	0	9	9
Ditto ditto ditto two sides	ditto	0	10	6
Ditto ditto raised panels one side	ditto	0	10	3
Ditto ditto ditto two sides	ditto	0	11	6
Ditto ditto hung folding add	ditto	0	0	3
2½in. ditto square framed	ditto	0	11	0
Ditto ditto bead butt and square	ditto	0	11	6
Ditto ditto ditto flush and ditto	ditto	0	11	10
Ditto ditto moulded one side	ditto	0	11	9
Ditto ditto ditto two sides	ditto	0	12	6
2½in. four-panel, moulded two sides and bolection moulded on one	per ft. sup.	0	13	0
Ditto ditto top panels out for glass, not including loose beads.	ditto	0	11	0
Ditto ditto top panels sashed	ditto	0	12	0
Ditto ditto in small squares	ditto	0	13	0
Ditto ditto stop-chamfered one side and plain stops	ditto	0	11	9
Ditto ditto two sides	ditto	0	12	6
Ditto ditto raised panels one side	ditto	0	12	6
Ditto ditto two sides	ditto	0	14	0
Ditto ditto hung folding add	ditto	0	0	3

Note.—Where panels are priced as raised, the prices includes all panels, whether two, four, or six to the door.

		£	s.	d.
1½in. six-panel square framed	per ft. sup.	0	9	0
Ditto ditto bead butt and square	ditto	0	9	8
Ditto ditto ditto flush and ditto	ditto	0	11	2
Ditto ditto moulded one side	ditto	0	9	10
Ditto ditto two sides	ditto	0	10	8
Ditto ditto ditto and one side bolection moulded	ditto	0	11	3
Ditto ditto top panels out for glass, and not including loose beads	ditto	0	9	0
Ditto ditto top panel sashed	ditto	0	10	0
Ditto ditto in small squares	ditto	0	11	0
Ditto ditto stop-chamfered one side and plain stops	ditto	0	9	10
Ditto ditto two sides	ditto	0	10	8
Ditto ditto raised panels one side	ditto	0	10	3
Ditto ditto two sides	ditto	0	11	6
Ditto ditto hung folding add	ditto	0	0	2

CHIPS.

Mr. Hugh Stannus, F.R.I.B.A., will take up the course of lectures at South Kensington left unfinished by the death of the late Dr. Zerffi. He will deliver ten lectures on Monday evenings at 8 p.m. in the lecture theatre of South Kensington Museum under the authority of the Department of Science and Art, and the title of the course is "The Evolution of Decoration." The first lecture will be given on Monday next.

The Leicester Corporation has, by about 50 to 8 votes, increased the salary of Mr. E. G. Mawbey, the borough engineer, from £700 to £1,000 a year. Mr. Mawbey succeeded the late Mr. Joseph Gordon at Leicester about two and a half years ago, when that gentleman was appointed chief engineer to the London County Council.

The students attending the Honours and Advanced stages of building construction in connection with the Glasgow Technical College visited the City Sawmills, Port Dundas, on Saturday afternoon. Beginning at the log pond, they were conducted through the sawmills, workshops, &c., finally through the creosoting works, at which a vote of thanks was, on the motion of Mr. Gourlay, the lecturer, accorded to Mr. Robb, manager.

The members of the Leeds Industrial Cooperative Stores are about to build a second block of premises opposite their present building in Albion-street. The new structure will cover an area of 80ft. in frontage by 104ft. in height, and will be three stories in height. The elevation to Albion-street will be of local stone, and the other elevations will be faced with white glazed bricks. The rooms will be lofty, which will be carried on iron girders and iron columns, and all will be made fireproof. The designs have been prepared by Mr. W. S. Braithwaite, architect, South-parade, Leeds.

Mr. W. W. Spence, a native of Edinburgh, but now of Baltimore, U.S., has commissioned Mr. D. W. Stevenson, R.S.A., of Edinburgh, to execute a colossal statue of Wallace, which will be cast in bronze and presented to the town of Baltimore for erection in one of its public parks.

At Tuesday's meeting of the London County Council it was decided to vote £22,000 towards the purchase of the Hilly Fields at Brockley as an open space. Mr. S. G. Gamble was elected second officer of the Fire Brigade at a commencing salary of £350 a year, rising to £500, with quarters, coal, and gas.

Mr. E. A. Pearn, of Compton Leigh, near Plymouth, has given a mansion and twenty-four acres of land for the benefit of the Royal Albert Hospital, Devonport, and the South Devon and East Cornwall Hospital, Plymouth. On the land he purposes to erect a convalescent home, and will endow it for the joint use of the two institutions named.

The town council of Heywood, Lancs, adopted at their last meeting instructions for architects in the proposed competition for technical schools. It was decided that the schools should accommodate 200 students, at a cost, inclusive of everything except furnishing, of £2,000. Two or three town councillors suggested that the limit of cost ought to be at least from £3,000 to £4,000; but the maximum originally proposed was adhered to.

The Leek Improvement Commissioners have invited Mr. E. Bailey Denton, of Westminster, to visit the town, and report and advise the board on the disposal of sewage.

Frederick Stackpoole, A.R.A., well known as the engraver of Briton Riviere's pictures, has applied to be placed on the retired list of Academy Associates.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

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The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front Page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No front page or paragraph Advertisement inserted for less than 5s.

Situations.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is One Shilling for Twenty-four Words, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., L., LI., LIII., LIV., LVIII., LIX., and LX. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

Received.—F. and V. S. Co.—M. A. T.—Geo. Marshall; —G. S. and Co.—O. L. (Leicester).—T. H. P.

"BUILDING NEWS" DESIGNING CLUB.

FIFTH LIST OF SUBJECTS.

F.—A small Post Office for a small country town. The site to be in the main street, with a frontage of 25ft. flush with adjoining shops. The depth of the land available for the building is 50ft., and no back approach. The houses on either side are three floors high, including the ground floor, and run back 25ft. from the frontage line. The post office side walls are party-walls, and light can only be obtained from the back and front walls. The accommodation is to provide a good public office, with conveniences for the ordinary telegraphic business, parcel post, and banking departments, on a limited scale. To the rear of the public office is to be located a sorting-room and waiting-space for a messenger and three postmen, and w.c and lavatory. Two upper floors to afford accommodation for the postmaster and his small family. Kitchen, &c., may be on the ground floor, but the post office must be kept entirely apart, save the postmaster's door, from the house into the office. The private door to the house must be on the right-hand side of the front, with a passage 3ft. 6in. wide. The residence to comprise a living-room, a parlour, and three bedrooms, with a w.c. and bath-room. Style suitable for red brick and terra-cotta dressings sparingly used. Scale, 8ft. to the inch. Plans, elevations, sections, and sketch.

Drawings Received.—"Sphinx," "Fire Fly," "Nil Nisi Bonum," "Don Quixote," "Jamrach," "The Influenza Fiend!" "Mars" (no name or address), "Rough Work," "Signum," "Graham," "Cyclist," "Jam," "Sanitas," "Erimus," "Amor Patriæ," "Peartree," "Black Prince," "North Pole," "Jocelin," "Symbol."

Correspondence.

REGISTRATION WANTED.

To the Editor of the Building News.

Sir,—It is a thousand pities that the wire-pullers of the R.I.B.A. (who object to the protection of our profession) cannot be bodily transplanted into the provinces, where they would become subject to the annoyances and unprofessional treatment we have to put up with.

In my own town there happens to be a carpenter, who, a few months since, began to pose as an architect, by calling himself a "designer";

growing bolder a "surveyor"; bolder still, he places a large board in front of a small house he is constructing, with "architect" upon it in large letters. I am also in a position to prove he has done work, in *his way*, at less than 1 per cent. upon the cost.

A few days since I saw a set of his drawings and specifications; the former would be a disgrace to a six-months' pupil, and the latter such a wonderful concoction of bad grammar, incorrect spelling, and absolute ignorance of the ordinary methods of building, simply astonishing. I am sorry a copy could not be made for the edification of your readers.

Surely, Sir, you must agree that, after spending years of study (without mentioning the cost), it is simply abominable that such a case should be allowed to exist. Of course this cannot be a solitary instance, and if you will kindly allow the space, I would ask for the opinion of others interested.—I am, &c.,

A PROVINCIAL ARCHITECT.

THE EXTINGUISHING OF FIRES.

SIR,—The use of mineral-oil lamps being so very general, the following incident may be suggestive to some of your readers:—

Last night a large suspended oil-lamp fell in our library. The room was instantly a "sea of fire." Some members of the staff showed much presence of mind, and rushed for "hand grenades," the use of ten or twelve of which extinguished the fire in five minutes, confining the damage to the room in question, although the flames had reached from floor to ceiling. The points to which I think attention might be invited are:

1. The lamp should have extinguished itself in falling. It failed to do so.

2. The "finest water-white oil" (the quality used) is supposed only to ignite at a very high temperature. This took fire at once.

3. The hand grenades, which have been rather depreciated (and which may or may not be of value in the open air, when the gas generated is promptly dispersed), certainly acted with magical effect within the compass of a large room. Your readers will draw their own conclusions.—I am, &c.,

ROBERT JOHNSON.

The Colonial College, Hollesby Bay, Suffolk.
Feb. 19.

CHIPS.

In the case of Richard George Guy, of Fenchurch-street, City, and Loughton, Essex, timber merchant, lately trading with Lambton Lee Loraine Beven, as George Guy and Co., the discharge from bankruptcy has been suspended for four years.

Mr. Arthur Cawston, A.R.I.B.A., is a candidate in the Moderate interest for North Camberwell for the London County Council.

The Corporate Property Committee of the Leeds Corporation, at a meeting held on Friday, had under consideration numerous suggestions for the preservation of Kirkstall Abbey, made in response to the invitation of the committee by Mr. J. T. Micklethwaite, F.S.A., F.R.I.B.A., of Westminster, at whose suggestions the works of reparation have been carried out since the Leeds Corporation acquired the Abbey ruins. The outcome of a brief discussion was that all Mr. Micklethwaite's suggestions were agreed to.

Miss Clara Montalba and Mr. Richard Beavis have been elected members, and Mr. Robert Little and Mr. Lionel Smythe associates, of the Royal Society of Water Colours.

New baths and wash-houses, built by the Stockton Corporation, were formally opened on Friday in Portrack-lane. The building contractor was Mr. W. C. Atkinson. The premises comprise ladies' first-class slipper baths, public wash-house, laundry and callendering-room, private wash-house, plunge bath (75ft. long by 27ft. wide). On the first floor are men's first and second-class slipper baths, Russian and vapour baths. The contract for the building and machinery was £6,448.

Mr. Stephen W. Williams, F.R.I.B.A., of Rhayader, Radnorshire, author of "The History of the Abbey of Strata Florida," was on Thursday last elected a Fellow of the Society of Antiquaries of London. Mr. Williams is now engaged in preliminary explorations with a view to the excavation of the ruins of Talley Abbey, in Carmarthenshire. Last year Mr. Williams carried out a series of very interesting excavations at the great Cistercian Abbey of Strata Marcella, near Welshpool, founded in 1170 by Owain Cyfeiliog, Prince of Powys. A full report of the work done appears in the January number of *Archæologia Cambrensis*.

Intercommunication.

QUESTIONS.

[10728.]—**Fireproof Plaster.**—I have an engine-boiler built in, I wish to widen the flues by taking out the brick lining. Can any of your readers give me a cement plaster to protect the stone walls from the action of the fire?—FORFAR.

[10729.]—**Pile-Driving.**—It is stated in some manuals that piles should be driven with the butt, or natural lower end, downwards. Is any attention paid to this rule in practice, and if so, why?—E. J. W.

[10730.]—**King-Post Roof.**—Will some expert kindly say why a tie-beam should be deeper than the principal rafter (thus—tie-beam 12in. by 6in., principal rafter 8in. by 6in., as given in "Building Construction,") when the tie-beam is in tension?—H. D. P.

[10731.]—**Circular Ramped Coping.**—Can any of your correspondents inform me how to set out and make the moulds for circular ramped coping for each side of entrance steps to a mansion? Can I obtain any work on this and kindred subjects? Also costs? An early reply will greatly oblige.—OLD SUBSCRIBER.

[10732.]—**Smoky Chimney.**—I have just erected a pair of houses on a site just off the crest of a hill on the main road, and in one of them am troubled with a somewhat unusual form of smoky chimney—*i.e.*, when the wind blows across the pots, the flue next the one in use seems to draw the smoke into the room to such an extent as even to discolour articles of furniture. Can anyone inform me the cause, and the best means to remedy same?—NONPLUSSED.

[10733.]—**Half-Timber Work.**—I am designing a dwellinghouse and introducing timber struts filled in with cement in the gables (to wit, half-timbered work). What ought to be the scantling of the woodwork? How fixed to bricks? By wood nogs built in at intervals, or plugs driven into the courses? How far should the timber project beyond face of cement when finished? and what is the best and cheapest kind of wood for the purpose, after oak?—BLACK AND WHITE.

REPLIES.

[10717.]—**Architect and Building Committee.**—I have had a similar case to deal with to that stated by "Disgusted" in your issue of Feb. 12, the committee requiring copies of quantities for all trades for their guidance in checking the final accounts of extras and deductions, as made out by myself as architect, and the following is the answer I sent:—"In reply to yours of the 3rd, I am surprised at your demand, as neither trustees nor the contractors have now anything to do with the quantities, as they ceased on the works being let, the contract being for lump sums, and the quantities, in the first instance, were simply prepared, as customary, for the convenience of contractors, upon which to base amount of tenders, and do not form part of the contracts, according to the conditions of tender, as the signed contracts, with the drawings and specifications, are to be followed; any deviations from which are usually settled at the completion of works as per priced quantities deposited for the architect's sole use, in getting out final accounts." I have since had a deputation of six of the trustees to wait upon me in reference to my answer, but I stood to my right to withhold detailed quantities and prices in accordance with my authority under the contract. I hope other readers will give their opinion and experience, as this demand is an important innovation, and an architect should be the best interpreter of his own design and documents.—PATCHETT, HX.

[10727.]—**Portland Stone.**—There are two beds of Portland stone usually sent into the market—viz., brown, which is sometimes called "Whitbed," and upon other occasions alluded to as "Top-bed"; and the white, which is sometimes specified as "Base-bed," and upon other occasions as "Bottom-bed." Hence the "best brown Portland stone" which he alludes to is that first mentioned above. In addition to the above, there is the "Roach Portland" bed, which lies upon the brown or "Top bed" (or "Whitbed"), which is sometimes sent into the market for girder and engine beds, harbour and dock walls, and other engineering purposes.—F. J. BARNES.

At the monthly meeting of the Cardiff Rural Sanitary Authority, on the 10th inst., it was unanimously resolved to increase the salary of their surveyor, Mr. W. Fraser, A.M.Inst.C.E., by £25, for extra services rendered, and the efficient manner in which his duties were carried out. This is the second increase in three years.

On behalf of Lady Siemens, Lord Kelvin, the President of the Royal Society, presented to King's College, on Friday, an electrical laboratory, which has been furnished with the latest appliances, under the superintendence of Professor John Hopkinson. Lady Siemens has also endowed it with a fund sufficient to maintain it in thorough efficiency. The gift is intended as a memorial of the late Sir William Siemens. Dr. Wace, the Principal of the College, gratefully accepted the generous gift.

At a meeting in Glasgow, on Friday night, for distributing the prizes and other awards gained in May last by pupils attending the science, art, and technological evening classes in connection with the School Board, it was shown that the total number presented in both stages was 3,171, an increase of 605 on the previous year's total. The number of passes, however, owing to the raising of the standard by the Science Department, had fallen by 107, the numbers for the respective years being 1,941 and 1,834. The grant earned was £2,234, against £2,661 in the previous year.

Legal.

APPEALS FROM ARBITRATORS.

THE practical end arrived at in submissions to arbitrations, as well as in contracts accepting the certificates of architects as final and conclusive, is always the prevention of litigation and the avoidance of legal proceedings. No sensible man nowadays wants to go to law about anything if he can help it; and so these methods of preventing disputes from arising by making certificates conclusive, and of settling them without litigation when they do arise by means of arbitration, are constantly growing in favour with all concerned in the great business of building. It is, therefore, very satisfactory to find the Courts of law and of appeal endorsing this view, and doing what they can to keep the parties out of that litigation into which some are so fond of entering. This sort of thing has lately happened in two recent cases that are worth passing notice. In the case of a claim against the Liverpool Corporation for compensation in regard to insanitary property, the plaintiff again came to the Court of Appeal (13th February) on the ground that, by the amount the arbitrator had awarded, it was clear he could not have followed the rule of law laid down by that Court for his guidance. The Lords Justices, however, firmly refused to go into the question of amount. They held that there was no ground for saying the arbitrator had gone wrong in point of law; while as to the facts, he had personally inspected the property, and if he had made any mistake, it was upon the facts, into which they would not enter. The Court, therefore, refused to go into his award, and so finally disposed of this case by supporting the decision of the arbitrator.

An even more important decision was that of the Queen's Bench Division in the case of "Ex parte Stevenson" (*Times*, 16th February), which arose out of an arbitration into the amount of compensation to be paid to owners of property taken under the Housing of the Working Classes Act, 1890. Under this statute the compensation is to be ascertained by awarding certificate, which is generally final. But in some classes of cases, including the case where the amount awarded exceeds £1,000 and the party claiming is dissatisfied, an appeal may be allowed. This appeal, however, can only be brought after leave has been granted by a Judge at Chambers or the Court, and upon their being satisfied that there will otherwise be a failure of justice. With such leave the claimant can submit the question of compensation to a jury. In this case some owners of property at Manchester had obtained an award of £3,000, and not being satisfied, they applied to a Judge at Chambers for leave to appeal, which being refused, they now came to the Court upon appeal from that refusal. It was at once pointed out by the Court that, if such an appeal could be brought in this case, it would also lie where leave had been granted, which could not be entertained. The Court then decided that there was no appeal given in either event, and that the exercise of discretion by the Court or Courts below upon the application for leave to appeal was final and conclusive, and ended the whole matter.

FRED WETHERFIELD, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

NOTE.—All questions for reply in this column must be headed "BUILDING NEWS," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

M. B.—ARBITRATION.—DECLARATION.—There is no need for any such declaration in this case of an ordinary arbitration, and there is no requirement of the sort in the Arbitration Act, 1889, which now governs such matters, and to which you should refer.

BANGLEY.—BUILDER.—CONTRACT.—SETTLEMENT.—The agreement used by you does not contain a proper clause as to the final certificate being conclusive; and it apparently leaves the builder in a position to dispute what is owing. The best way out of the confusion will be to give him written notice that if he does not render his account within 14 days you will close the whole matter; and thus leave him to do what he can after this long delay.

TEMPUS OMNIA REVELAT.—ARCHITECT.—BUILDER.—A firm, as architects, should have refused to act in the matter except in accordance with the contract. As they did not adopt this course, the question becomes one of fact as to what did happen. A. can raise the question by an action for charges owing, and in the meantime should refuse final certificate.

RUEIL.—BUILDING.—LINE.—There are discretionary powers given in such cases. Get the local board to state their reasons for refusal. Then consult a local solicitor on the whole case. The way to proceed would be by mandamus, if the board is in the wrong.

Owner.—Drains.—Water.—Local Board.—Certainly the local authorities are bound to provide proper drains to take off the surface water, and if the houses in question are flooded solely by their omission to do this, they might be made liable.

LEGAL INTELLIGENCE.

The Fatal Fire at Battersea.—The following is the full text of the verdict of the jury in this case, which was delivered too late on Thursday, the 18th, for our last issue:—"That the deaths of Ada Gertrude Dodd and Mary Louisa Medlam were caused by burning and suffocation, in accordance with the medical report, at the fire which took place at 307 and 309, Lavender-hill, on December 19th, 1891, the deceased at the time being in the employ of Mr. Joseph Minnis, draper and dressmaker, and we find that the said fire was caused accidentally by some pampas grass with which the shop-window had been dressed coming in contact with naked and unprotected gaslights which were in the said window, and which he had been warned were dangerous by a previous fire. We find Mr. Minnis was guilty of gross negligence, and deserving of severe censure. Further, seeing that there was ample time to alarm the girls in the workrooms, his conduct was almost reprehensible in failing to immediately give them the necessary warning. That urgent legislation is necessary to compel the inclosure of gaslights where highly inflammable materials are stored or exhibited. That so far as the Metropolitan Fire Brigade are concerned, nothing more could have been done than was done, and we desire to record our confidence in Engineer Glover, who has charge of the Battersea fire station, and we consider him worthy of our commendation. Water Company: The evidence given respecting the water supplies at fires in Battersea proves that the system requires improvement, and that it is not only necessary, but imperative, that the old-fashioned fire-plugs be done away with at once, and proper fire-hydrants substituted. We, therefore, urge this upon the London County Council, and ask them to put the work in hand without delay, for the public safety of property and lives. With regard to the supply of water at the commencement of the fire, we are of opinion that Engineer Glover's statements are right, and that the seeming want of pressure was due to the kinking of the hose whilst carrying it from No. 305 to 311. We urge upon the proper authorities the necessity of thoroughly investigating the matter of exits in case of fire where any number of workpeople are employed. We consider that the Metropolitan Building Acts for ordinary buildings should be amended without delay to bring them up to the requirements of modern construction, in which ironwork is now an important factor, and that all constructional ironwork should be cased with fire-resisting material. That staircases in warehouses, factories, shops, &c., should be inclosed with brick partitions, to keep the fire from immediately attacking the woodwork of stairs. That no matchboarding should be allowed on ceilings of shops, warehouses, or factories. That where matchboarding is used to cover walls, the space between the battens should be filled in with incombustible material to prevent a flue being formed at the back of matchboarding, and that it should not be carried out to within 18in. of the ceilings. Amendment of Section 5 of the preliminary to part 1 of rules as to the thickness of walls to private houses: 'That, for the purpose of getting proper thickness to walls, rooms in the roof should be counted one story.' It should be penal not to submit plans and specifications to district surveyors before alterations or additions are commenced, and in many other respects the Metropolitan Building Acts can be vastly improved as regards alterations, additions, &c. We consider that in the matter of giving assistance during the fire, great credit is due to p.c. Evans, 478 V, and Mr. Harry Taylor; and that p.c. Kiddle, 563 V, deserves special commendation for his coolness and courage. We also consider the conduct of Miss Nellie Green and Miss Elizabeth Taylor very praiseworthy. We hear with pleasure of the improvement of Miss Davidson, and hope her recovery from her severe injuries will be complete. We, the jury, wish our sympathies and best wishes specially conveyed to her, and our sympathies are further extended to the relatives and friends of the two deceased." The coroner expressed his entire concurrence with the verdict.

In re R. Cull and Son.—Under a receiving order made on the 22nd ult. against Reuben Cull and Reuben Thomas Cull, brick and tile merchants, Palmerston-buildings, Old Broad-street, trading as "R. Cull and Son," a statement of affairs has been submitted showing liabilities £6,542, of which £5,508 are unsecured, with assets £1,518. The debtors attribute their failure chiefly to the loss of valuable agencies, and to losses by bad debts. The Senior Official Receiver (Mr. G. Wreford) asserts that proper accounts of expenses and drawings do not appear to have been kept since March 1890, and the books have not been completely balanced since March, 1889. An adjudication of bankruptcy has been made.

School Board for London v. Holloway.—(Queen's Bench Division, Feb. 22, before the Lord Chief Justice and a special jury.)—This was one of the many actions brought by the London School Board against builders and contractors to recover damages for defects in construction of schools. In the present instance the action was against Henry Leonard Holloway, builder, of Queen's-road, New Cross, to recover damages for breach of contract in regard to the construction of a school in Essex-street, Mile-end. The defendant denied the breach, and also alleged that the action had not been brought in time. Mr. Lockwood said the contract in question, which was entered into in July, 1885, contained a provision that the contractor should for four years remain liable for fraud, default, or wilful deviation from the contract. The defendant said that he had completed the works to the satisfaction of the clerk of the works, and had received a final certificate from the architect, and that the action had not been commenced within the required period. It was not until June, 1890, that the School Board became aware of any deviations, and for these they now sought to recover damages from the defendant. One complaint was that for the ceiling the defendant had used 1in. laths instead of 1½in. This was found out in January, 1890, and in the June following a thorough inspection took place, and then it was found the whole of the ceilings were defective, that the drains were not laid as required in cement, and that while in the playground there ought to have been under the tar paving a foundation of 6in. of hard rammed débris, no such débris was used. Mr. E. R. Robson, F.S.A., formerly the architect to the School Board, and the designer of the schools; Mr. Walker, the clerk of the works; Mr. John Bull, surveyor; Mr. Wm. Hy. Strudwick, surveyor; Mr. Horace Bradfield, assistant architect for repairs, and others gave evidence in support of plaintiffs' case. On the conclusion of the case for the plaintiffs, the Lord Chief Justice said it seemed that the person who stood between the board and the contractor had approved, so far as he saw, of everything that was done as being perfectly done; and then there was an allegation against the defendant of wilful default and fraud, which ought to be clearly made out. The jury gave a verdict for defendant, and judgment was entered for him with costs.

Employers' Liability. — At the Darlington County Court last week, Judge Turner had before him the action of Beale *v.* Hoskins and Hoskins. This was an action brought by a journeyman painter, who had been about 20 years in the employment of Messrs. Hoskins, decorators and painters, Blackwellgate, Darlington, to obtain £60 damages. Plaintiff was engaged in August last painting the spouting at the county court when the ladder upon which he was standing broke. Plaintiff was thrown to the ground, a distance of 30ft., and sustained severe concussion of the buttock.—For the defendants it was alleged that the accident was due to plaintiff placing the ladder too far out at the bottom.—The Judge said that to establish a claim for compensation the plaintiff must show culpable negligence on the part of defendants. No negligence had been proved, or even alleged. A verdict would therefore be given for the defendants.

Action for Damages by Vibration.—Allison v. The City and South-London Railway. — Before Mr. Justice Kekewich on Tuesday, a motion was made by the trustees of the late Mr. Spurgeon's Stockwell Orphanage, Clapham-road, to restrain the Electric Railway Company from working three engines of 400H.P., each driving dynamos, and connected with three hydraulic engines for the purpose of working the electric railway, so as to cause a nuisance by the steam, noise, and vibration of the engines and dynamos. The case was heard in June, 1891, and Mr. Justice Kekewich allowed the case to stand over to enable an engineer to inspect the property and report. The engineer, Mr. Harris, reported that the engines and dynamos did cause a nuisance, and the defendants had not done all that was possible to mitigate the nuisance. The defendants have since moved the engines further away from the orphanage, but they pleaded that they were acting under their statutory powers. Mr. Justice Kekewich said that the railway company were wrong in the first instance, but had since done all they could to mitigate the nuisance. They must pay the costs up to the end of 1891, and also £50 damages.

Action by an Architect.—Earl v. London Share and Debenture Company, Limited.—Mr. Justice Denman and a special jury heard last week an action brought by Harry Earl, an architect and surveyor, to recover damages for breach of a contract, dated February 7, 1891, by which defendants were to purchase the rights of certain patents relating to automatic weighing machines at a price of £7,700 and ten founders' shares in the company which was to be formed. The defence was that the alleged contract never in fact became one, as there was an express condition that the contract was only to take effect in the event of defendants' patent agents reporting favourably as to the novelty and validity of the said patents, and upon verification of the representation by the plaintiff that such validity had been established by a decision of the High Court of Justice. The patent agents did not report favourably, and plaintiff's representation as to the validity of the patents had not been established in the High Court. In the alternative, the defendants pleaded that if they did in fact enter into any contract, they were induced to do so by the representations made to the plaintiff as to the novelty and validity of the patents. The defendants further claimed rescission of the alleged contract, if any in fact existed. The jury found that the document of Feb. 7 was a contract, and returned a verdict for plaintiff for £2,500.

Covenants as to Height of Buildings.—Cooke v. Gilbert. (Before Lords Justices Lindley and Kay). — An appeal against a decision of Mr. Justice North, reported in our issue of last week, p. 294, was heard by Lords Justices Lindley and Kay on Wednesday. We gave the facts so recently, that it is only necessary to add that the Court allowed the appeal.

PARLIAMENTARY NOTES.

The New Admiralty Offices.—Mr. Plunket explained, on Tuesday, that the foundations for the new Admiralty buildings were completed last spring, but the invitations for tenders for the superstructure were considerably delayed owing to the strike that prevailed in the Metropolis from May to November. On the termination of the strike, advertisements for tenders for the first block of buildings were immediately published. As a result the contract with Messrs. Shillito and Sons was agreed to, and after the adjustment of the contract, orders were given to commence work. That was a week ago, and operations were now in progress.

WATER SUPPLY AND SANITARY MATTERS.

Crewkerne.—The authorities of the town of Crewkerne, Somerset, have secured the services of Messrs. Bailey Denton, Son, and North, MM.Inst.C.E., to advise them on the question of sewage disposal. It is proposed to treat the sewage of the town on neighbouring land of poor quality by means of irrigation or intermittent filtration, and thus to put an end to the present unsatisfactory state of things.

CHIPS.

Dr. Archibald Barr, Professor of Engineering at Glasgow University, lectured in the Philosophical Society's Hall in that city, on Friday evening, to a meeting of teachers on the subject of "Some Scientific Questions Concerning Pictures." The lecture was illustrated by a series of lantern views.

Sir John Lubbock unveiled, on Tuesday, the bust of the late Mr. Firth (first Deputy Chairman of the London County Council), at their hall in Spring-gardens. The bust is in marble, and has been executed by Mr. Verheyden.

At a meeting held at the Guildhall Court, Beverley, under the presidency of the Mayor of that town, last week, presentations were made to Mr. James Sharp on his retirement from the office of borough surveyor, and also to his wife.

The death is announced from Wellington, New Zealand, of Mr. John Knowles, who held the appointment of Under Secretary for Public Works for that colony from the creation of the department in 1871 until 1883. Mr. Knowles was 68 years of age.

The proposed memorial in Peterborough Cathedral to the late Archbishop Magee appears to hang fire. The proposal is for a tomb with a recumbent figure; but of the minimum of £800 required, only £570 has thus far been subscribed.

A large clock has just been erected in the Jesse Haworth Memorial Church, Walshaw, near Bury, by Messrs. John Smith and Sons, Midland Clock Works, Derby. It strikes the hours and shows time on two 6ft. dials, which are illuminated at night. Messrs. Booth and Chadwick, of Manchester, were the architects.

A receiving order and an order of adjudication have been made, on his own petition, against Mr. Charles Sprakes, of 37, East Laith Gate, Doncaster, builder and contractor (trading as Charles Sprakes and Sons).

The contributions towards the restoration of Gloucester Cathedral amount to about £4,100, the cost of the work, as estimated by Mr. Frederick S. Walker, the architect to the Dean and Chapter, being £6,000.

Our Office Table.

THE annoyances inflicted on communities by the defective draughtsmanship of Acts of Parliament are afresh illustrated by the quandary in which the county road boards of Ross, Cromarty, and Sutherland find themselves with regard to the proposal to rebuild the highway bridge at Bonar, destroyed by the recent floods. The boards are anxious to proceed at once with the work of reconstruction to meet the requirements of the traffic; but are hampered by a provision in the Local Government Act of 1889, whereby a recommendation to the county council to construct or rebuild a bridge cannot be considered before the annual meeting in October. As the county councils of Inverness, Ross, and Sutherland are all in the same position, they have written to ask for permission for the county councils to meet on a special date and give their consent to the progress of such works. Counsel's opinion has been taken on the point, and as to whether a ferry may be temporarily maintained. The reply advises the bodies to leave the provision of the ferry to private enterprise, as money could not be allocated to the purpose, nor could tolls be enforced, and that to overcome the greater difficulty as to the statutory date of meeting the only remedy is to pass a short amending Act. The various county authorities will memorialise the Secretary for Scotland to do this at once, and in the mean time will take measures for removing the wreckage and salvage of the old bridge, and make accesses on either side for the unauthorised ferry boats, which will tacitly be permitted to ply at the boatman's private risk.

A SENSATIONAL paragraph has been the round of the Metropolitan dailies, copied from a Kentish journal, to the effect that "a pronounced tendency to fall outwards has manifested itself recently in the north and south walls of Canterbury Cathedral." Dr. Payne Smith, the Dean, writes, however, to explain that these walls have for a century and more been out of the perpendicular, each leaning slightly outside, from the pressure of the roof. When a new roof was put upon the nave 40 or 50 years ago, much was done to correct the pressure; but some months ago the Chapter asked Mr. Ewan Christian to examine these walls and see if they had moved at all. He reported that they were perfectly safe and had not moved, but that it might be as well to brace them together for more perfect security. The braces, designed by Mr. Christian, are now being put into position, and will tie the two walls together. What is being done is thus simply a matter of precaution.

THE death of Mr. Henry Edward Doyle, C.B., the energetic director of the Dublin National Gallery, is a serious blow to that institution. With very slender pecuniary resources, never exceeding £1,000 a year, he has succeeded in increasing the collection in that gallery by many works of artistic and historical importance, a strong point being the acquisition of works by the Dutch masters at very reasonable rates. Mr. Doyle was 68 years of age. He had held the post of director of the Dublin National Gallery since 1869, and hon. secretary of the Irish National Portrait Gallery since 1872.

MR. THOMAS BEATY, builder, of the firm of Messrs. Beaty Bros., Devonshire-street, Carlisle, died on Wednesday week, after a very brief illness from influenza, followed by inflammation of the lungs, at his residence at Dalston. Mr. Beaty, who was 47 years of age, was widely known, having been engaged with his firm in carrying out many large building contracts in all parts of both Cumberland and Westmoreland. In order to superintend extensive alterations and additions which the firm are making for Colonel Salkeld at Holm Hill, Mr. Beaty removed some time ago from Birklands, his place at Carleton, to Dalston. While at Dalston his wife died very suddenly. He was a member of the Carlisle board of guardians, and also did much useful work upon the Carlisle rural sanitary authority. He was a prominent Freemason, and was a P.M. of the Union Lodge. The interment took place on Saturday, the deceased being borne to his last resting-place by four Past Masters of the Union Lodge.

FROM the recent report by the Board of Trade upon all railway, canal, tramway, gas, water, and electric lighting Bills and provisional orders which are being promoted this session, it appears that the number of Bills is 163, as compared with 148 deposited last session. The total amount of capital proposed to be raised under these Bills is £56,363,061, or a decrease of £1,769,529 as compared with last year. The Bills deposited by existing railway and canal companies number 86, and the new lines proposed in them show a length of 304 miles, as against 308 miles. The number of Bills promoted by new railway companies is 20, as compared with 12 of last year. The new lines proposed by these companies show a length of 146 miles, as compared with 296 miles. The total length of new tramway lines proposed in the 14 deposited Bills relating to tramway undertakings is 27 miles.

ALEXANDER JACKSON DAVIS, one of the foremost architects of the United States, a founder of the American Institute of Architects, Secretary of the American Academy of Fine Arts—now the National Academy of Design—and designer of the (former) State capitols of Connecticut, Indiana, and North Carolina, and many prominent public and private buildings in various parts of the country, died on Thursday, January 14, at his residence near Llewellyn Park, West Orange, N.J., after a short illness. He was born in New York in July, 1803, and was thus in his 89th year. In 1829 he commenced practice in New York as partner to Ithiel Town, a bridge engineer, and the firm very soon wrought important changes in the town architecture of the city; they were the first to introduce the pilaster on doorways, the bay, and oriel window. Mr. Davis worked on Palladian lines, but impressed his work with the stamp of his own character. Among his works were the Patent Office and Executive Department buildings, Michigan and North Carolina Universities, and many lunatic asylums and other institutions. He also carried out a considerable practice in landscape gardening. He retired from the profession in 1874. Mr. Davis was intimate with most of the prominent literary and scientific men of his time, and whom his deep classical and scietific learning attracted to him. His influence upon the American architecture of his own and subsequent time can never be measured. The first professional American architect, he was widely copied by many whose ability was not sufficient to originate or create.

IT is proposed to hold in Chicago, during the Columbian Exposition of 1893, an International Congress of Engineers. The principal objects of the Congress will be to enable engineers to inform each other concerning the latest and most economical practice in methods of construction and operation, machines, processes, experiments and investigations, including standards of efficiency, tests, and measurements, to compare and interchange ideas, and to discuss points of professional interest. The Engineering Congress will probably take place in July or August, 1893, and will last six days, a portion of which may be devoted to visits for the inspection of objects of engineering interest. The Congress is to begin with a joint meeting and addresses, and in view of the wide scope of engineering specialities it is then to be divided into seven general divisions, as follows: A—Civil engineering, in which several subjects of interest to our readers are, we notice, to be discussed; B—mechanical engineering; C—mining engineering; D—metallurgical engineering; E—electrical engineering; F—military engineering; G—marine and naval engineering.

THE great central hall of the Columbian Exposition is the chief feature. It has a clear area of 1,280ft.; the roof rises to a height of 245½ft. at the apex, and the span of 380ft. has a single steel arch weighing 125 tons, of which there are 22. Extending round the hall is a gallery 67ft. wide, 21ft. of which overhangs the floor of hall. It is 3,504ft. long. Beyond the gallery and round the central hall is a nave, 108ft. wide, 114ft. high to apex of roof, and of a total length of 4,119ft., and a gallery, 49ft. wide, extends round the nave The two galleries are connected by 28 bridges, 50ft. high and 108ft. long. There are 11 acres of skylight in the roof, and about 41 acres of floor and galleries.

THE 28th annual report of the Pearl Assurance Company, presented last week, announces a dividend of ten per cent. The total income for the past year was £320,405 11s. 4½d. During the same period 431,911 policies were issued, representing a new premium income of £191,911 8s. 1d. The total annual premium income was £343,914 19s. 1d.

MEETINGS FOR THE ENSUING WEEK.

MONDAY.—Surveyors' Institution. Discussion on "The London Water Question." 8 p.m.
Leeds and Yorkshire Architectural Society. "The Architecture of Michael Angelo," by A. Beresford Pite. 7.30 p.m.
TUESDAY.—Institution of Civil Engineers. Discussion on papers by W. T. Douglass on "The Bishop's Rock Lighthouse," and, by D. C. Salmond, on "Tory Island Lighthouse." 8 p.m.
Glasgow Architectural Association. Annual Business Meeting. 8 p.m.
WEDNESDAY.—Civil and Mechanical Engineers' Society. "Practical Notes on the Water Supply of Boilers," by R. J. Friswell. 7 p.m.
Society of Arts. "Spontaneous Ignition of Coal, and its Results," by Prof. Vivian B. Lewes. 8 p.m.
Carpenters' Hall Free Lectures: "Sanitary Construction of Public Buildings," by Prof. T. Roger Smith. 8 p.m.
THURSDAY.—"Indian Sanitation and the International Congress of Hygiene," by Sir W. J. Moore. 4.30 p.m.
FRIDAY.—Architectural Association. "How They Built in Shakespeare's Time," by Alfred Gotch, F.S.A. 7.30 p.m.
Royal Institution. "The Surface Film of Water," by Prof. L. C. Miall. 9 p.m.

The Architectural Association.—March 4th, the Tenth Ordinary General Meeting at 7.30 p.m. Paper by J. Alfred Gotch, Esq., on "How they Built in Shakespeare's Time," with lantern illustrations.

March 5th, the Third Spring Visit. Particulars will be given in the BUILDING NEWS of March 4th.

ERNEST S. GALE } Hon. Secs.
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CHIPS.

At Cleckheaton, near Bradford, on Wednesday evening, a high chimney, which was under repair, fell across a four-storied mill. A number of workpeople were buried under the ruins, and fourteen of them were killed, while others were injured, some seriously. The chimney was built some fifty years ago, and was 180ft. in height. It was of brick, and at the time of the accident two men, in the employment of Messrs. Moulson and Sons, of Bradford, were engaged upon it making repairs near the base.

The death of Mr. Robert Stayner Holford, the well-known art connoisseur, ought not to pass unnoticed. The collection of works of art which he brought together at Dorchester House comprises many of the finest examples of the Italian, Spanish, and Dutch schools of painting, a fine collection of drawings by Dutch masters, many invaluable illuminated manuscripts, and Rembrandt etchings. His interest in modern art was not less active than his desire to collect from older schools. He was among the first to appreciate the remarkable genius of Alfred Stevens, and he obtained his assistance in the decoration of Dorchester House, which contains several of Stevens's most important works. Mr. Holford employed the elder Vulliamy to design for him in the Italian style his country and town residences at Westonbirt and in Park-lane.

At a meeting of the council of the Royal Society of Painter-Etchers, held on Monday evening, Mr. Robert W. Macbeth, A.R.A., was elected to a Fellowship, and M. Hellon to an Associateship of the society.

One of the most important of the improvements in Stockport now being effected by the corporation is the construction of a new bridge and road to connect Chestergate with Heaton-lane, on the low level. The bridge is to be of a lattice tubular form, and of steel, having a span across the river of 80ft. The width inside between the parapets will be 54ft. Mr. A. M. Fowler, M.I.C.E., of Stockport and Manchester, the designer of the Millgate and Lancashire bridges, is the engineer.

St. Paul's Schools, Rochdale, were opened on Tuesday. The buildings include a room that will seat 500 people, and four large classrooms that can be thrown into two. Messrs. Peters and Sons were the contractors, and the cost (exclusive of furniture and fittings) has been £2,300, which was the amount of their contract. Mr. R. Knill Freeman, F.R.I.B.A., of Manchester and Bolton, was the architect, and Mr. Thomas Rhodes clerk of the works.

At the Cutlers' Hall, Sheffield, on Tuesday, Mr. Gustav Alsing, A.M.I.C.E., formerly engineer of the sewage works at Blackburn-Meadows, was presented with a cabinet of cutlery and a travelling-bag, in recognition of his services to the town. The presentation was made by the chairman and vice-chairman of the sewerage committee.

Trade News.

WAGES MOVEMENTS.

Edinburgh and Leith.—A joint meeting of the Edinburgh and Leith joiners was held on Monday in the Trades Hall, High-street, Edinburgh. A report from the Conciliation Board was submitted, embodying the draft of the working rules. A good deal of discussion took place; but ultimately it was agreed to accept them in the mean time, and to modify them afterwards in the light of subsequent experience of their working.

Plymouth.—The Plymouth Master Builders' Association have decided to submit to the men of the various building trades a proposition having for its object the adoption of uniform hours for all trades during the winter months. At present much inconvenience is caused by the fact that the carpenters begin work at 7.30 a.m., and work 8 hours, while the masons, bricklayers, and plasterers begin the day at 7, and make a day of 8½ hours; while the stoppages for meals vary. The employers ask the men to arrange so that all the trades shall begin work at the same time during the four winter months, making the eight hours' day general.

◆

In the competition for a State House for Rhode Island, U.S.A., a decision has been reached which places the designs in the following order:—McKim, Mead, and White, of New York, first; Shepley, Rutan, and Coolidge, of Boston, second; and Stone, Carpenter, and Willson third. The style of the selected design is Classic, with large memorial hall in centre, with lofty dome above.

Messrs. Holloway Brothers, of Victoria Works, Queen's-road, Battersea, write explaining that the defendant in the case of London School Board v. Holloway (reported on p. 326) has no connection with their firm.

The parish church of St. Margaret, Wetton, near Leek, is about to be restored, reroofed, and reseated at a cost of about £800. Messrs. W. Sugden and Son, of Leek, are the architects.

◆

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TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

Bermondsey.—For stables in Long-lane, Bermondsey, for Mr. Samuel Taylor. Messrs. Newman and Newman, 31, Tooley-street, London Bridge, architects:—

Castle, W. and H. (accepted) ...	£3,700 0 0

(No competition.)

Bexhill-on-Sea.—For the erection of new premises for Lloyd's Bank, Limited. Mr. Arthur Wells, F.R.I.B.A., Hastings, architect:—

Barker, S., Bexhill	£3,472 0 0
Thomas, C., Bexhill...	3,287 0 0
Jenkins, P., St. Leonard's* ...	3,075 0 0

* Accepted.

Bowness.—For new bank, Bowness, for Messrs. Wakefield, Crewdson, and Co., Kendal. Mr. Robert Walker, M.S A., Windermere, architect:—

Masons' work and walling:—Atkinson Bros.
Joiners' work:—Latham and Dobson.
Plumbers' work:—Pattinson, J. A.
Plastering:—Armstrong, H. B.
Painting, &c.:—Croft, F. G.

Bristol.—For the construction of boundary-walls at the Victoria Park, Windmill Hill, for the city council:—

Yalland, T. K., Bristol (accepted), £331.
(Lowest tender sent in, the highest being £490.)

Bristol.—For the erection of lavatories on Clifton Downs, for the city council:—

Howell, E. J., Bristol (accepted), £1,115.
(Eighteen tenders received, the highest being £1,500.)

Bristol.—For the erection of the St. Augustine's Bridge, and the covering-in of the waste space above the drawbridge, for the city council:—

Krauss, A., Bristol (accepted), £19,700.
(Lowest but two of the tenders sent in, which ranged from below £17,000 to £27,000. Engineer's estimate, £19,550.)

Broxbourne.—For residence at Broxbourne, for Mr. J. Kirkaldy. Messrs. Newman and Newman, 31, Tooley-street, London Bridge, architects:—

Hunt, J. A. (accepted)	£4,900 0 0

(No competition.)

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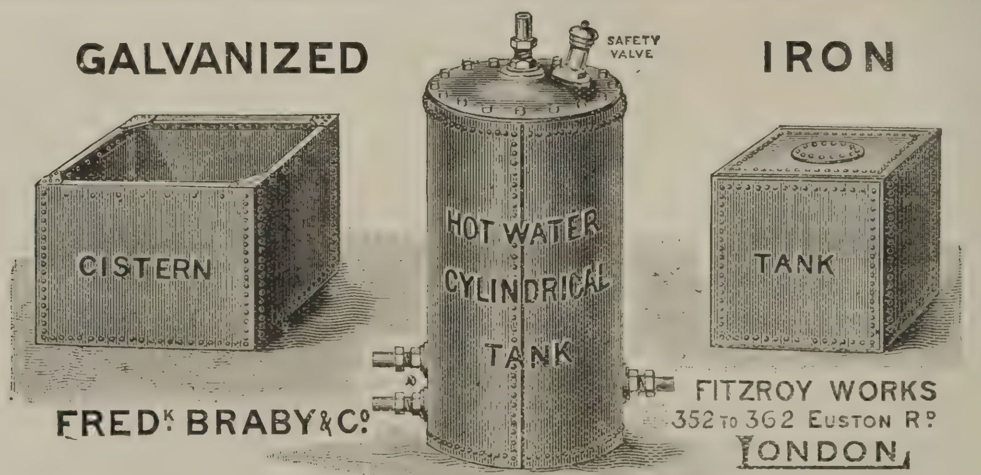

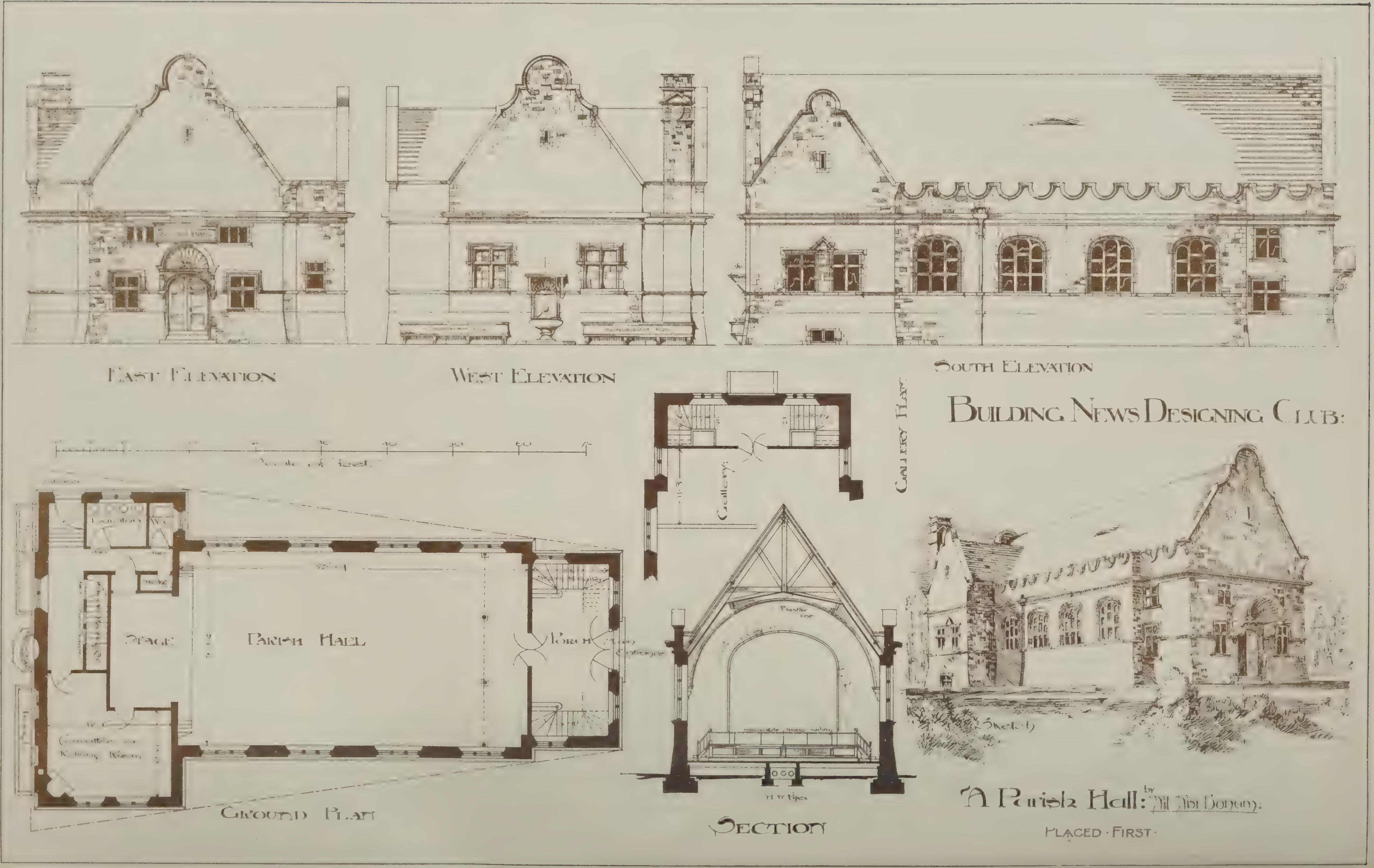

BUILDING NEWS DESIGNING CLUB:

A Parish Hall: by Nil Nisi Bonum:

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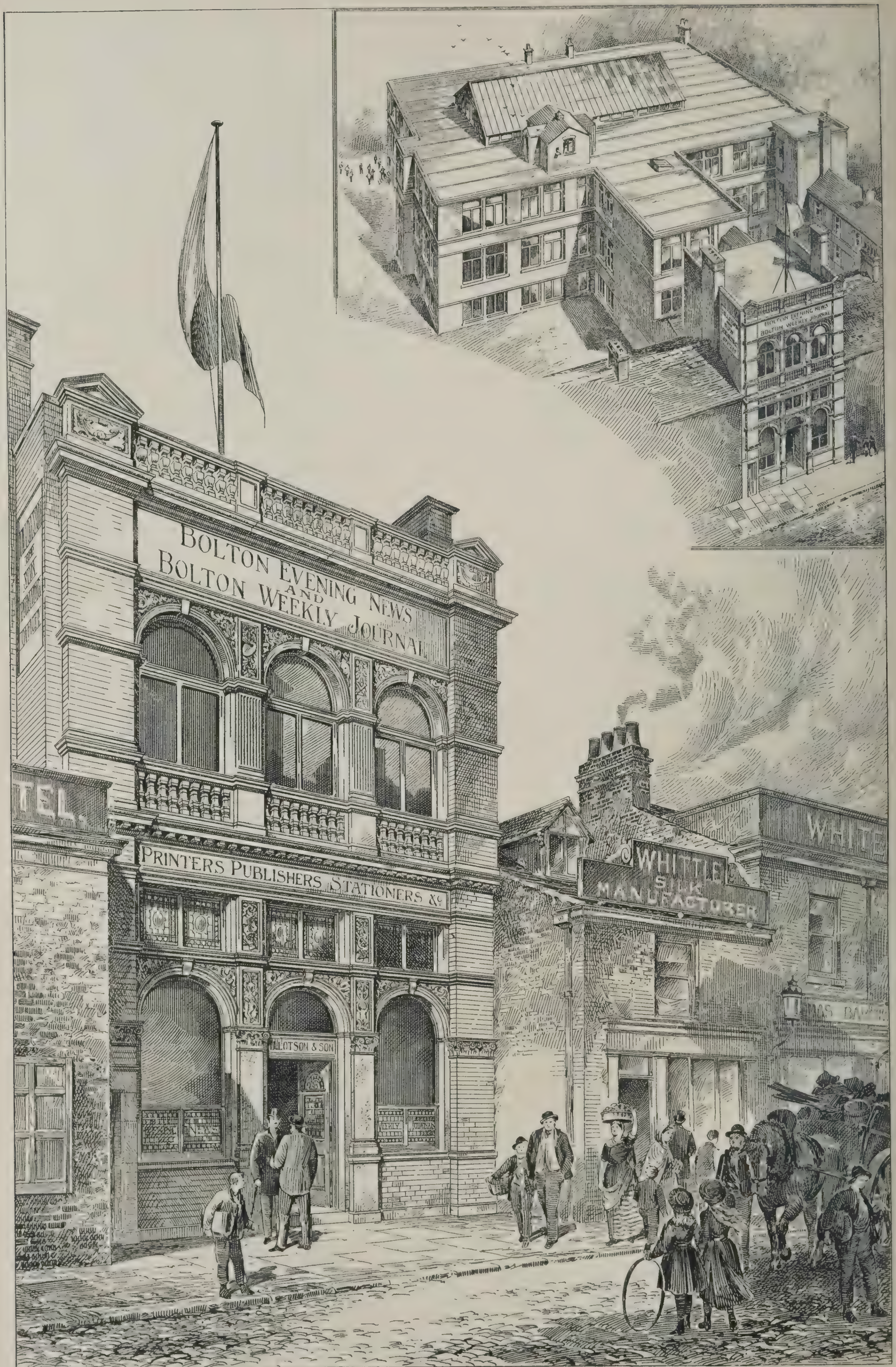
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CONTENTS.

What is "Superintendence"? ... 295
Interiors ... 295
Building News Designing Club ... 296
Stained Glass Artists and Architects ... 297
The Society of Architects ... 299
The Architectural Association ... 300
Something About Chimneys.—I. ... 301
Builders' Clerks' Benevolent Institution ... 3 2
Minimum Height of Habitable Rooms ... 302
Architectural and Archæological Societies ... 302
The Building News Directory ... XIII
Building Intelligence ... XIV
Our Illustrations ... 303
Competitions ... 303
Wayside Notes ... 322
Engineering Notes ... 322
Prices.—XXXI. ... 323
Correspondence ... 324
Intercommunication ... 325
Legal ... 325
Legal Intelligence ... 326
Parliamentary Notes ... 326
Water Supply and Sanitary Matters ... 326
Our Office Table ... 327
Meetings for the Ensuing Week ... 327
Trade News ... 328
Tenders ... 328

ILLUSTRATIONS.

LOSTOCK HALL, LANCASHIRE.—OLD HALL, PLEASINGTON, LANCASHIRE.—NEWSPAPER OFFICES AT BOLTON.—THEATRE AT CAPE TOWN.—ROYAL ACADEMY GOLD MEDAL DESIGN FOR A TOWN HOUSE.—DESIGNS FOR A PARISH HALL.—HOUSES AT PROSPECT HILL PARK, READING.

Our Illustrations.

LOSTOCK OLD HALL, LANCASHIRE.

This hall, situated about four miles from Bolton, though small in scale like Pleasington, and of about the same date (1590), is more pretentious in appearance, and is probably a fragment of a building of considerable size. The original arched entrance, of which there is a counterpart at the back, is now filled in with a modern doorway, and the sash windows, with their jambs and lintels on either side, are also modern insertions. Probably a courtyard formed part of the original plan. The building is now occupied as a farmhouse.

PLEASINGTON OLD HALL, LANCASHIRE.

This picturesque old house is situated about three miles from Blackburn, and bears the date 1587 over the entrance porch. It probably replaced a more ancient mansion, for as far back as the reign of Henry III. the manor was in the possession of Henry de Plessyngton, who gave lands to John de Stodleigh, and Margery, his wife, daughter of the above. In the reign of Edward III., Roger de Winkeley held the estate, having married an heiress of Pleasington. Subsequently the manor appears to have passed into the possession of the Cunliffe family, for in 1396 Robert, son of Adam de Cundeclif, quit claims to John de Aynsworth, of Plessyngton, and his heirs, all his rights and title in the whole manor of Pleasington. The house, with its richly-tinted roof of stone slabs, and background of foliage, makes a delightful study of colour.

NEWSPAPER PREMISES AT BOLTON.

The architects of this building, which has been erected for Messrs. Tillotson and Son (M. Tillotson and William Brimelow), are Messrs. Bradshaw and Gass, F.R.I.B.A. The design in character is Renaissance, the central portion being of York stone, with the broad side pilasters of Ruabon bricks. In the lower part are three semi-elliptical openings, with moulded jambs and arches. The centre opening contains the mahogany entrance doors, with glazed, leaded upper panels. In each of the arch spandrels carving is introduced, on the shields above the entrance archway being the letters "W. F. T.," the initials of the late Mr. W. F. Tillotson, and "1867," the date of the establishment of the *Bolton Evening News*. In other spandrels are represented Comedy and Tragedy; whilst in pilaster panels are symbols of Music, Literature, Painting, and Architecture. All this carving was executed by Mr. Floyd, of Manchester. The public office forms the ante to the main building, and is 70ft. long and 24ft. wide. The main block occupies an area of about 11,700 superficial feet, and is three stories in height. The lower story, being partially below the ground, is the principal machine-room, where all the heavy machinery is placed. A stained and varnished screen, the upper part glazed with clear glass, separates the foundry from the machine-room. Another staircase communicates directly with the first story, and gives access to the central part of the building. The publishing department for the newspapers has been placed away from the street, and the newspaper agents now congregate in the yards at the rear of the works. The second story is devoted wholly to the literary staff, the composing-room, and the general printing department. The central staircase gives access to the editorial and reporters' rooms. The outside walls of the building are constructed of brick, with stone sills and cast-iron lintels to the large window openings. These openings are filled in with fast sheets glazed with ¼in. rough plate, and have swings at the top for ventilation. The floors are of fireproof construction, with cast-iron columns and deep rolled iron girders, making large bays. Cross girders are placed on these, and a flat concrete floor with rolled iron joists in same form. Above the concrete are placed joists and boards, the whole making a very rigid floor. The roof is formed as a floor, and covered with asphalte. In the centre is a large lantern light with cast-iron arch trusses. The fireproof staircases are formed of concrete, with Doulton's patent treads. The whole of the offices and works are lighted by the electric light.

NEW THEATRE FOR CAPE TOWN, CAPE OF GOOD HOPE.

This building, designated the Grand Parade Theatre Building, is to be erected by a syndicate of gentlemen who have the welfare of the public at heart, on the Darling and Grave-street corner of the Grand Parade, one of the most eligible sites in Cape Town, kindly granted by the Cape Town municipal council at the nominal rental of £1 per annum for 99 years. Past experiences have induced the syndicate to erect, and the council to accept, a costly but substantial edifice, based on fireproof principles, and in order to assist in defraying expenses, a number of shops, offices, &c., are provided for in the building. The stage is large and lofty, and the auditorium conveniently seated and arranged for 1,200 people. The works were commenced in the beginning of September, 1891, and are to be completed in two years. The architect is Mr. G. M. Alexander, F.R.I.B.A., of Cape Town, whose designs were chosen in a selected competition, and the works are being carried out by Mr. William Kitch, of Cape Town, under the general supervision of the architect.

ROYAL ACADEMY GOLD MEDAL COMPETITION.—DESIGN FOR A LARGE TOWN HOUSE.

Last week we illustrated a view and plans of this design, and it may be now as well to mention that under the conditions it was planned with a view to the proper placing and lighting of works of art. The site to have a frontage of 70ft., with a depth of 180ft. To be lit from front and rear, and from a centre court. In this plan an attempt has been made to introduce the Elizabethan form of gallery. The stateliness and dignity of this apartment, as seen at Hatfield, Knole House, and other old country seats, renders it eminently suitable for reception occasions, as well as for the display of works of art, &c. Small areas have been avoided. The apartments are all well lighted by one large central courtyard, increasing in size as it ascends. The ground floor is reserved for the family apartments, and has been arranged with a view to comfort and convenience. The first floor is occupied by the state apartments; circuit is obtained either through the conservatory, or by the secondary staircase through the ground-floor gallery to the grand staircase again. The street front is treated in a free style of Renaissance, the aim being to get the rich effect and the fine play of light and shade of the Venetian palaces, together with the domestic character of the English Renaissance work. An endeavour has been made in the courtyard to get a picturesque effect by introducing roofs and dormers of the François I. style. Applied ornament has been avoided, the object being to get a simple but dignified effect, and expressive of the interior, by relying solely on the necessary features of the plan. Mr. Alex. Mackintosh is the author of the design.

"BUILDING NEWS" DESIGNING CLUB: DESIGNS FOR A PARISH HALL.

(See description on page 296.)

HOUSE AT PROSPECT HILL, READING.

This house was erected recently at Prospect-hill Park, Reading, for Mr. G. Philbrick, together with stables and outbuildings. The contract for the house amounting to £3,200, and the stables £375. The plans and sketches drawn by Mr. Dudley Newman will sufficiently explain the general arrangement of the house, with the exception of the second floor, which contains a large billiard-room and five bedrooms. The house is built in red brickwork, with tile-hung walls on first floor, and timber-framed gables, with brickwork at the back of same, and is roofed with Broseley tiles. The interiors of the dining and drawing rooms, hall, and staircase have been decorated in colour in anaglypta; the woodwork in sitting-room has been finished in enamel colours, and in the hall stained and varnished. The contractors for the work were Messrs. Bottrill and Son, of Reading; and the architects, Messrs. Newman and Newman, of 31, Tooley-street, London Bridge, S.E.

COMPETITIONS.

Darwen Technical School Competition.—In reply to the advertisement, twenty-five sets of plans were received. The design placed first is that of Mr. J. Lane Fox, architect, Dewsbury. The design placed second is by Messrs. Morley and Woodhouse, architects, Bradford. The design placed third is by Messrs. Dunn and Watson, architects, Bond-street, London. Mr. J. Murgatroyd, F.R.I.B.A., Manchester, was called in by the committee to make the selections.

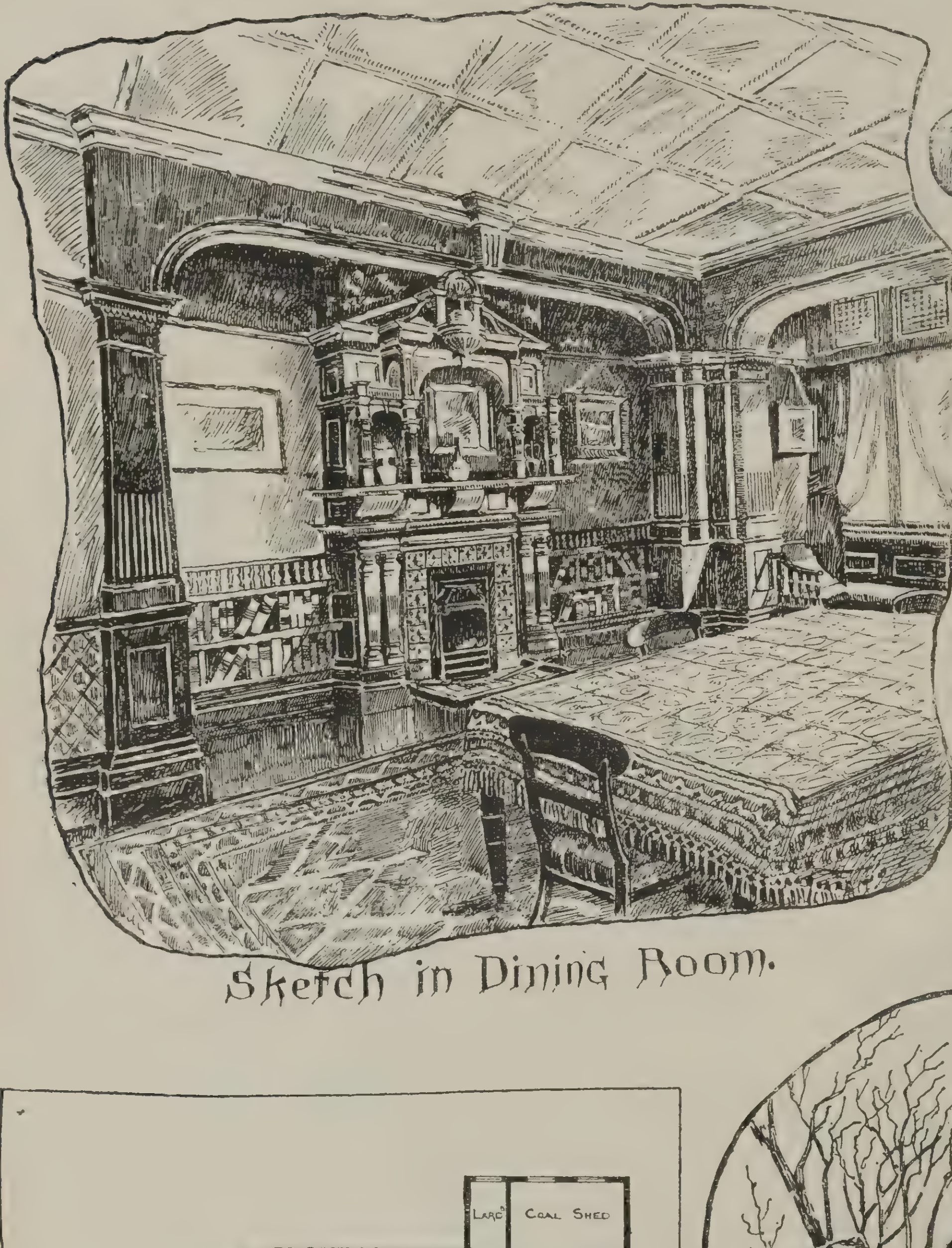
Drummond of Hawthornden Memorial.—At a meeting of the committee, Lord Melville in the chair, held in Edinburgh the other day, it was decided to accept the design of Mr. William Birnie Rhind, sculptor, 9, Cambridge-street, Edinburgh, for the above memorial.

Sunderland.—The competition for the new Borough Lunatic Asylum for the accommodation of 350 patients, with administrative accommodation sufficient for 500 patients, at Sunderland, has been settled. A special meeting of the town council was held at the end of last week to consider the report of the referee, Mr. C. H. Howell, F.R.I.B.A., and his award, after a somewhat stormy discussion, was adopted, the first premium being awarded to "Scio," Mr. G. T. Hine, F.R.I.B.A., of Parliament-street, London; the author of the second premium was not disclosed; but the third went to "X.," Mr. J. G. Gough (Giles, Gough, and Trollope), Craven-street, Charing Cross. The estimated cost of the work is £60,000. The discussion mainly turned on the question of outlay, it being stated in the course of the proceedings that the Derby Asylum cost £123 per bed, and that the average cost of twenty-four county asylums was £162 per bed. Nine borough asylums in England gave an average of £182 per bed. Newcastle Asylum cost £200 per bed. Mr. Bruce added that Mr. Hine's design for Sunderland was estimated at £170 per bed. Thirty-three designs were submitted under motto.

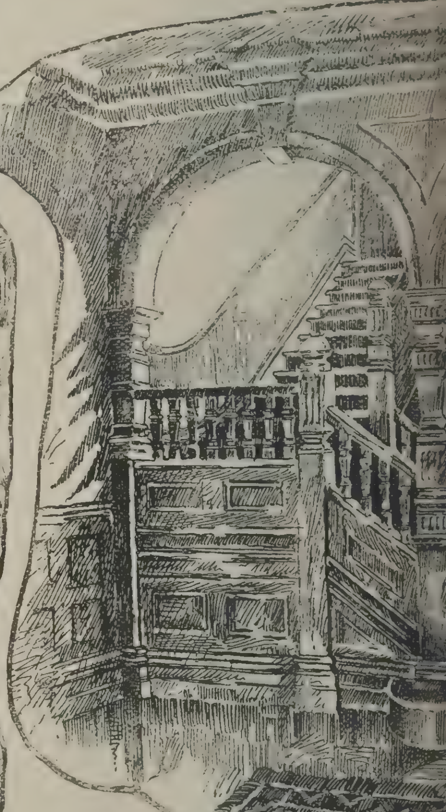
Walsall.—In May last the Walsall School Board advertised for competition plans for new schools. Designs were submitted, and from these the Board selected a set, the motto of which was "Bruin." When the selected design was on view, Mr. Ellis, of Walsall, another competitor, asserted that it did not fulfil the conditions of competition or the rules of the Educational Department. The Board declined to alter their decision; but all the competitive drawings were retained for several weeks, and ultimately returned. The selected design was duly submitted to the Department, but was not approved. A second design submitted in the competition by the same author as the design "Bruin," under the motto "St. George," was, however, sent to the Department and approved. This Mr. Ellis considered to be grossly unfair, and instructed his solicitor to enter an action against the board for the cost of preparing his design. This has been done, and the case will be heard at the Walsall County Court on Thursday next, the 3rd of March.

* * *

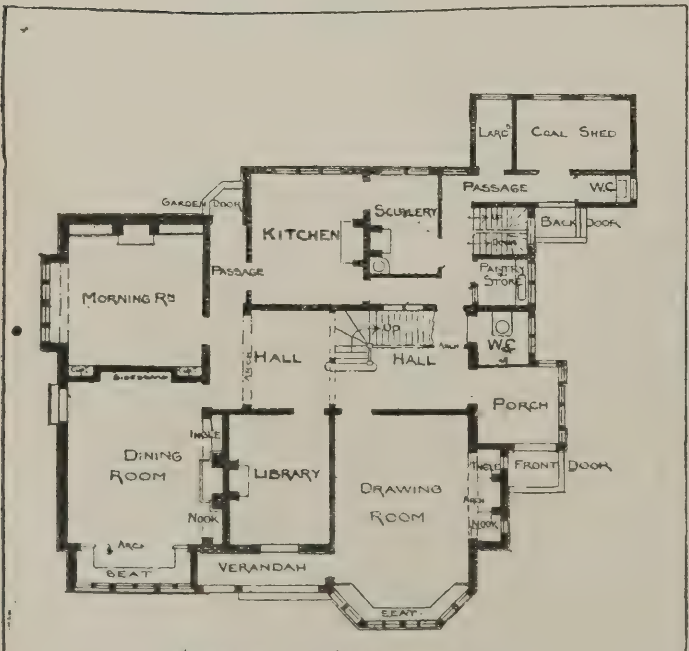
The Glasgow Institute of Measurers have drawn up a memorandum on the Glasgow Building Regulations Bill, in which it is stated that, "with modifications, it would be a good and beneficial Act for the city," and it is suggested that the Bill should be retrospective, and that the height limit should apply to dwelling-houses only.



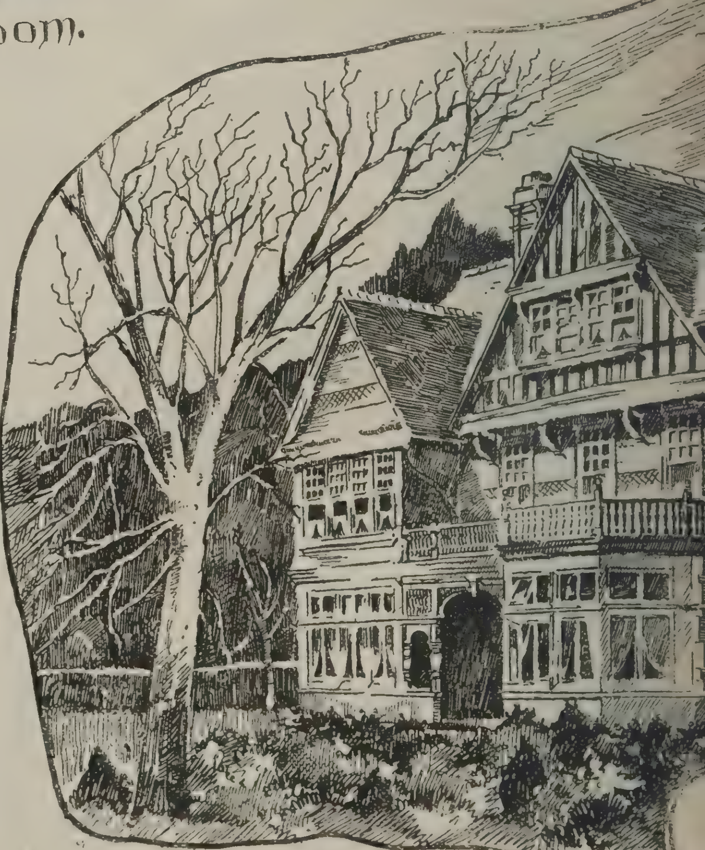
Sketch in Dining Room.



View of

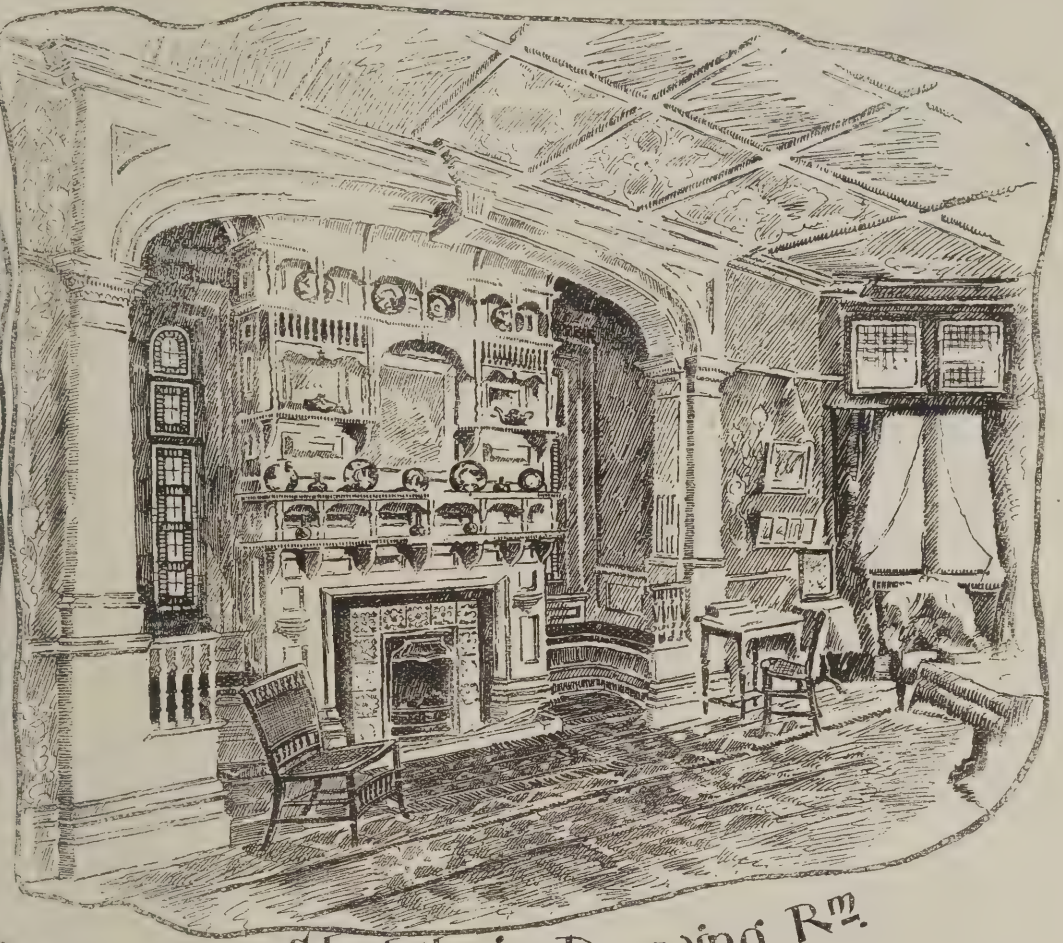


Ground Plan.



Sketch from

Staircase

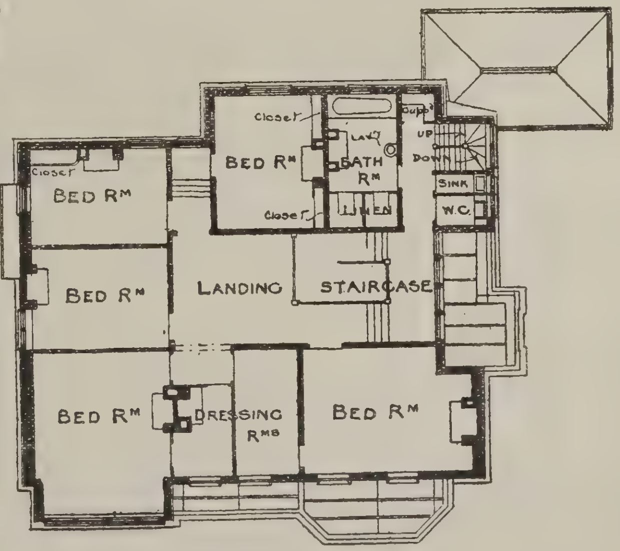


Sketch in Drawing Rm.

HOUSE·AT·PROSPECT·HILL PARK·READING

MESSRS NEWMAN & NEWMAN·ARCHTS

Carriage Drive.



First Floor Plan.

DELLAGANA LTD SC

WAYSIDE NOTES.

THE Institute has latterly been indulging in the practice of listening to three or four papers at one meeting. There may be benefits to be derived from this method of procedure, but it certainly lacks boldness and breadth of effect. On principle the thing does not recommend itself. It is surely preferable to have one good paper than three or four insignificant essays. On Monday no less than four papers on "stained glass" were read, and the audience must have been left with ideas as to the various lecturers' views rather mixed up, like toast-and-water.

Much more business-like and practical, to my mind, are the papers at the Society. Mr. Ellis Marsland's paper on building law is a valuable contribution to the discussion of an important question. So long as amendments to the present legal enactments may mean greater power to the district surveyor to prevent actual and wilful jerry-building, all well and good; but we are becoming so subject to "grandmotherly legislation," that it is necessary to keep awake to the tendencies of the times. When it is within the power of Mr. Bumble to prevent the adoption of a urinal basin in a stable for thirty horses, unless there be an automatic flushing arrangement, then, I fancy, we are getting a bit too advanced. Amendments to building Acts should be made with a view, not only to the nonplussing of jerry-builders, but also so as to do away with petty restrictions on well-intentioned persons.

What next? The Local Government Board recently issued alarming posters throughout the country with respect to the influenza. Returning home one evening I found every convenient post and wall-space in the place plastered with bills headed "Influenza," for all the world as though the sweating-sicknsss, black-death, or Asiatic cholera were decimating the land, and doubtless frightening the inhabitants into imaginary sicknesses of all kinds. Not content with this enterprise, the L.G.B. has issued a circular, pointing out that it is possible for local authorities, under the provisions of a certain statute, to say that the rooms of the Englishman's home shall not be less than a certain height from floor to ceiling. I really think I shall turn into an anti-sanitary faddist, become an apostle of constant inebriation, and join the anti-vaccinators. We shall soon have to ask permission even to open our mouths.

Something like the following may be anticipated for the opening of the 20th century:—

Mr. Buggins-Pecksniff, architect, arrives at the office in the morning, opens his letters, and calls for his head assistant.

Mr. B.-P.: "Good morning, Mr. Goggles; have you completed the plans for Smith's house?"

Mr. G.: "Not quite, sir, we cannot get the 200 cubic feet for the larder that the New Local Government Board regulations require."

Mr. B.-P.: (after relieving himself with a little beautiful language anent local authorities in general): "What a nuisance! Can't you do away with this dust-hole?"

Mr. G.: "Impossible, sir: the vestry will not pass the plans unless there is a dust-hole shown."

Mr. B.-P.: "Ah, I forgot. And of course we cannot get the extra space by additional height, as a maximum has now been added to 10ft. minimum enforced at the end of the 19th century. How one envies the architects of those days! It is bad enough, perhaps, to have a minimum enforced; but an unalterable maximum is much worse."

Mr. G. (Thinking of his "screw"): "Quite right, sir."

Mr. B.-P.: "I really think that you might manage to do away with that break in the street elevation; that small recess is purely wasted space."

Mr. G.: "Not at all, sir. The Society for the Preservation of Able-bodied Men in Absolute Idleness has obtained a Bill compelling all frontage-owners to provide a hot foot-bath for street loafers."

Mr. B.-P.: "Confound it! And I suppose some society or another prevents our setting the building back?"

Mr. G.: "Exactly so, sir. The S.P.A.B. Mr. Smith's old cow-house was designed by Sir Horace Jones towards the end of last century, and the society threatens proceedings if the old shanty is pulled down. They consider it a unique specimen of Late Victorian."

Mr. B.-P.: "Well, well, we mustn't make our plan overlap the ground at our disposal, as I have heard the successful competitor in the great Liverpool Cathedral competition did. Some 50ft., was it not, Mr. Goggles?"

Mr. G.: "I believe so, sir; and very few people knew anything about it."

Mr. B.-P.: "Cannot we shift this place?"

Mr. G.: "Impossible, sir; the electrical apparatus now enforced by the vestry has been made to fit as planned."

Mr. B.-P.: "And I suppose the ·12in. ventilating pipes, as prescribed by the revised regulations, have been arranged?"

Mr. G.: "Yes, sir; and the ventilating electrical fan-wheel, too."

Mr. B.-P.: "Perhaps we might cut off a portion of the kitchen; it looks amply large."

Mr. G.: "I fear not, sir; we have already reduced it to the limits stated in the new Consolidated Building Act, and the district surveyor will live on the job, and be provided with refreshments at Mr. Smith's expense."

Mr. B.-P.: "Then all I can say, Goggles, is that Mr. Smith will have to do without a larder, or hang his hams on the hat-pegs in the hall."

Mr. G.: "I have an idea, sir."

Mr. B.-P.: "Out with it then, or by Sir Christopher Wren, I shall take leave of my senses! These by-laws and regulations are fast driving me mad."

Mr. G.: "Let us search the back numbers of the Building News."

Mr. B.-P.: "The very thing! Goggles, you have saved me. Let us look at the plans for small houses for the old Building News Designing Club. Those Late Victorian students were wonderful students for making 3 go in 5 twice, with something over. I think I remember some of their plans showing larder, pantry, and housemaid's closet comprised in a space of only about 20 superficial feet. Hurrah! Saved! Saved!!"

(Mr. Buggins-Pecksniff and Goggles search, and are well rewarded.)

The new Admiralty buildings are at last proceeding again. Mr. Plunket stated on Tuesday that the foundations were completed last spring; but the strike that succeeded prevented the getting-in of tenders for the superstructure. The contract for the work having been settled on the termination of the strike, orders have been given to proceed with the work. Operations are accordingly now in progress, and quite time, too, I expect the architects consider.

Why should the London County Council wish to oppose the Birmingham Water Supply Bill? It is a little puzzling to arrive at something like a definite opinion on this point. The only possible reason seems to be that the Birmingham people are forestalling us in the matter of a source for a new supply. In which case the opposition to the scheme is for a very selfish motive. If London had paid proper attention to the question years and years ago, it might have been in possession of all the distant sources of supply, or at least have kept to itself the choice of such when the time came for definite action. Peradventure Birmingham has taken its idea from some old scheme proposed for London's new water supply, in which case it should be *seniores priores*. London should lay claim to the sources in question, and the County Council would be doing right in taking the line of action described by Sir John Lubbock at the last meeting.

I trust that architects will make a good show of garden plans, &c., in the forthcoming Horticultural Exhibition as advertised by you last week. Architects should aim at establishing a reputation for being good gardeners, from a pictorial and artistic point of view; and this may be done if no attempts are made to foist peculiar fads on the garden-loving public. I make this suggestion because I have lately seen more than one architect's name of repute associated with pictures of such a howling wilderness of clipped hedges and shrubs as cannot be reconciled with any principles of gardening, formal or informal, modern or old English. A man who would cut God's trees into cubes, pyramids, and fancy figures is surely capable of any artistic outrage in pictorial, architectural, or horticultural art. To render the hideousness of this treatment more apparent, pictures and photographs are the best means in the world, and yet we have had not a few such put before us as examples. Goth.

Engineering Notes.

Compensation for Subsidence at Greenock.—The first of a series of claims against the Caledonian Railway Company for compensation for damage in respect of subsidence caused by the construction of Newton-street Railway tunnel was brought before Mr. Lowson Walker as arbitrator on Monday. Mr. Thomas Jamieson, builder and joiner, Greenock, is the claimant in the present case, and he represents that his property, situated at the corner of Robertson-street and Newton-street, has sustained damage amounting to £1,087. The arbiter will give his decision in a few days.

Heywood, Lancs.—The town council of Heywood, near Bury, formally inaugurated on Wednesday week extensive additions and alterations just carried out at their Gasworks at Hooley Bridge. They include a new gasholder, constructed of wrought iron, the inner lift being 49ft. 6in. diameter by 16ft. deep, and its holding capacity 64,000 cubic feet. The guide standards are of wrought iron 34ft. long. The contract for the holder was placed in the hands of Messrs. Newton, Chambers, and Co., Thorncliffe Iron Works, Sheffield. The tank is 52ft. diameter and 16ft. deep. A new boiler-house has been erected between the retort-house and the sulphate works. It is 39ft. long, 29ft. wide, and 16ft. high. The walls are faced with Platt's stocks, relieved with panels and oversailing courses. The contract for the boilers was taken by Messrs. Thomas Hill and Sons, of Heywood. The chimney is 65ft. high, and is panelled and faced with Platt's stocks and coped with stone moulded and shaped cornice. New engine-houses are erected on the site of the old engine and boiler-house. The building contract was placed in the hands of Mr. James Berry, of Heywood. The plans and specifications for the new works were prepared by Mr. James Diggle, borough engineer, under whose superintendence, with the assistance of Mr. Watmough, the gas manager, they have been carried out at a cost of £3,000.

Peterhead.—The annual report of the progress of Peterhead Harbour Works states that 416 cubic yards of masonry had been added to the South Breakwater Pier, at which also 640 square yards of pitching had been laid, and 430 yards of permanent way. The output of stone at the quarry has been 20,590 tons, that having been the quantity required to meet the demands of the works. The daily average of men employed is 127 free men, 142 convicts, and 18 warders.

South-Eastern Extension to Chatham.—The extension of the North Kent Railway from Strood to Chatham, to be opened on Tuesday next, is a useful addition to the South-Eastern system, as it gives a shorter route by three-and-a-half miles than the London, Chatham, and Dover line, and provides a more central station for Rochester, Chatham, and Gillingham. The new line is about 1⅛ miles in length, and is carried for the whole distance on a viaduct consisting first of brick arches on either side of the new iron bridge over the Medway, 670ft. in length. It crosses the goods yard of the London, Chatham, and Dover line on iron pillars, and thereafter is supported on wood piling over the Common to the terminus at Chatham. The bridge over the river is a lattice girder construction, carried on piers with four navigation openings of 104ft. and 170ft. The piers are formed of iron double cylinders, and in horizontal sections 16ft. by 36ft., sunk in the usual way by extraction of materials, and subsequently in-filled with concrete. The piers are carried down to the chalk, which is attained at 60ft. from high-water datum, the rise of tide being 16ft. The total cost of the works of the new line is about £171,000, of which the bridge has absorbed £71,000. There is a station also at Rochester. The works have been carried out from the plans of Mr. F. Braby, the engineer to the company.

Mr. Alex. R. Stenning, F.R.I.B.A., F.S.I., of 121, Cannon-street, has been elected surveyor to the Worshipful Company of Cutlers.

PLACED · SECOND ·

· B · N · D · C ·
A PARISH HALL

BY "SMILASH THE GOTH"

JAN 1892.

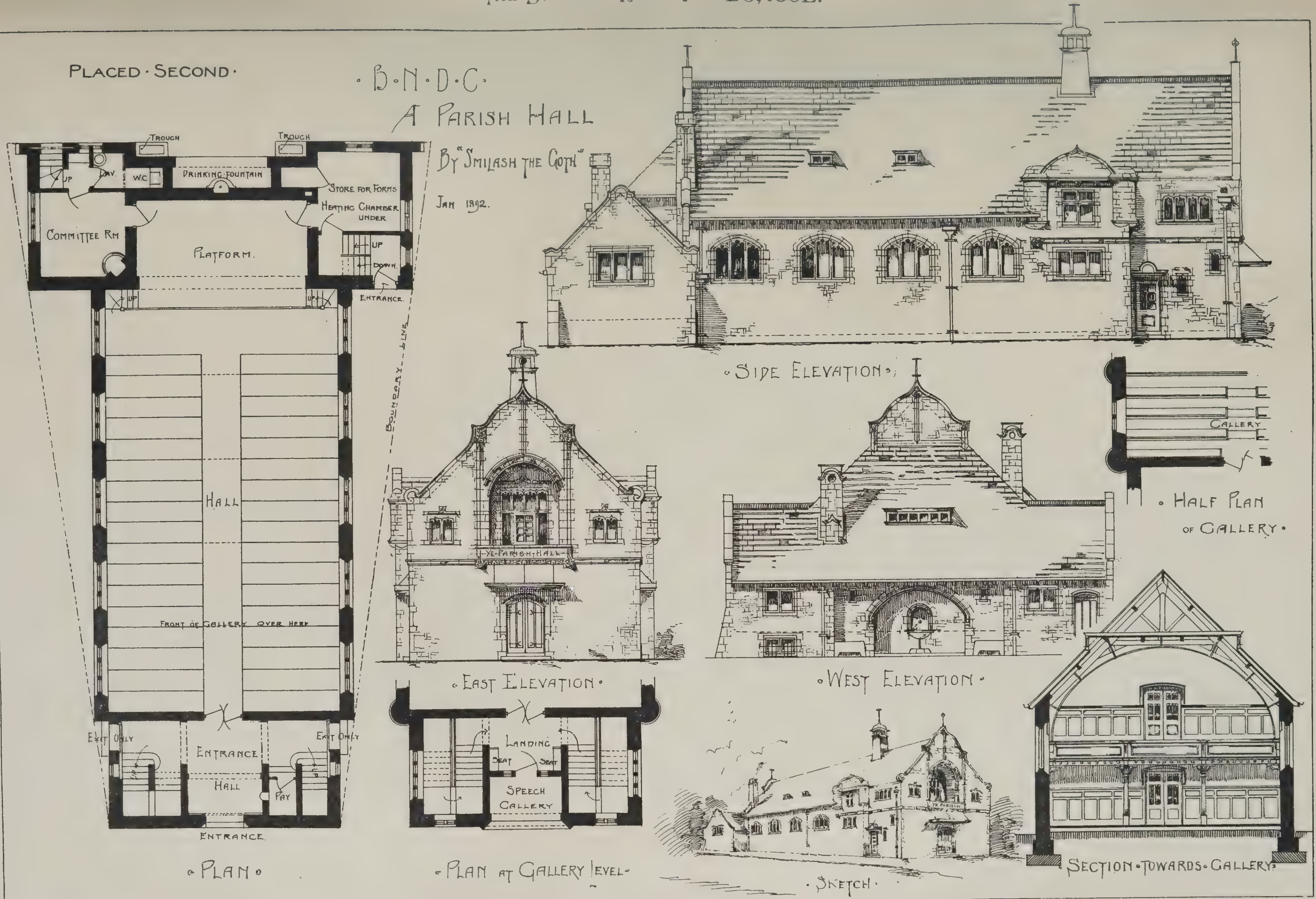
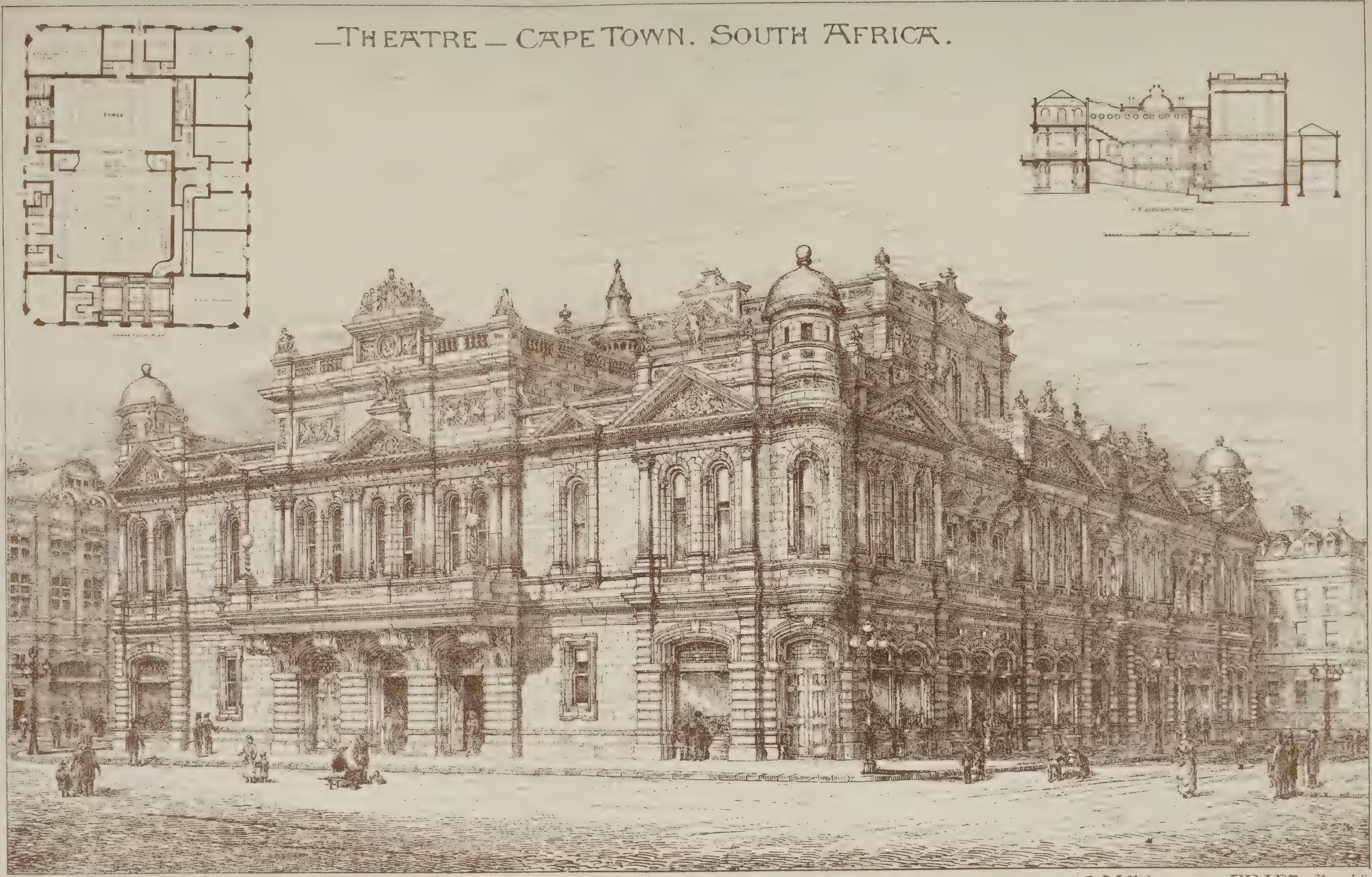


Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.C.



—THEATRE — CAPE TOWN. SOUTH AFRICA.

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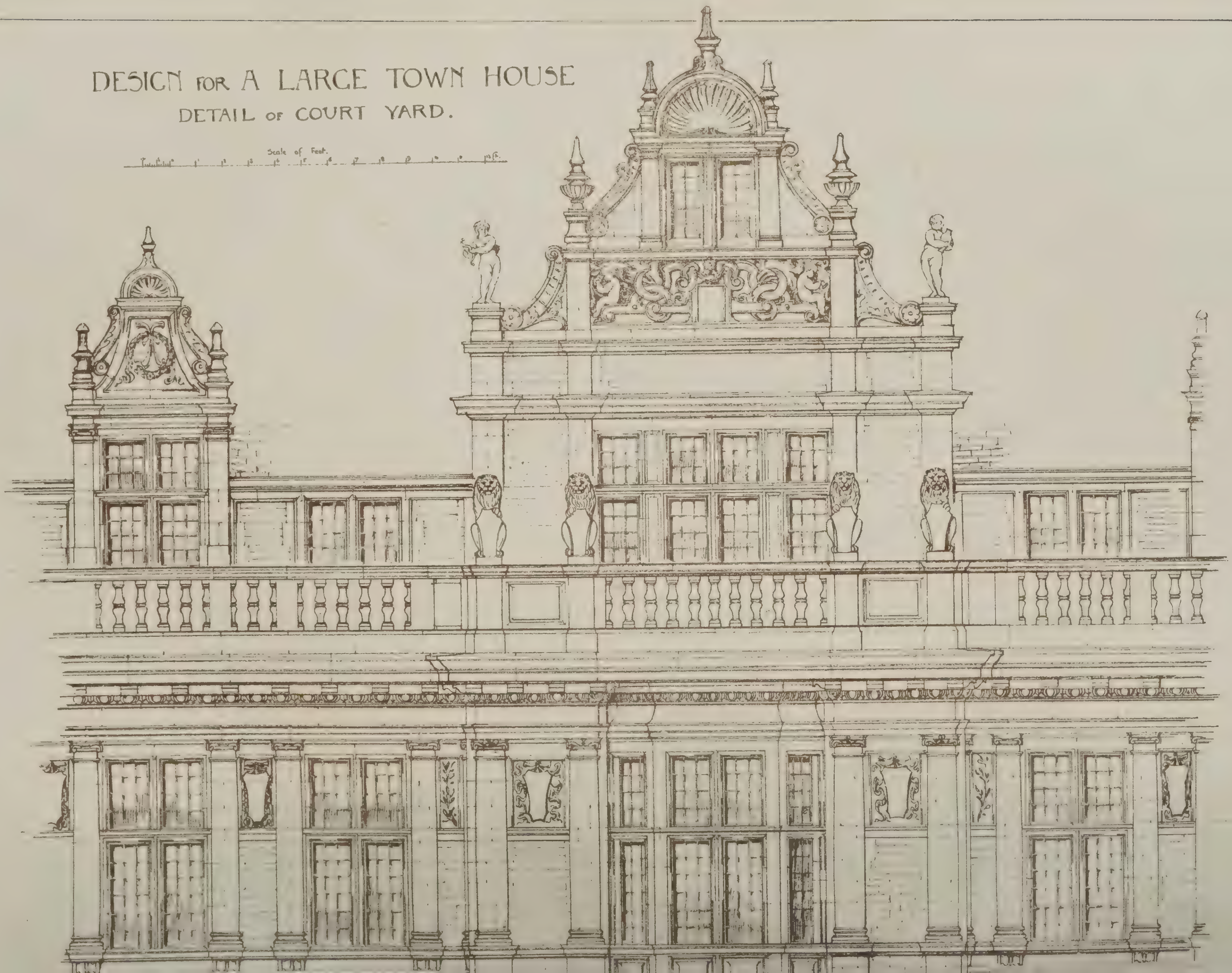
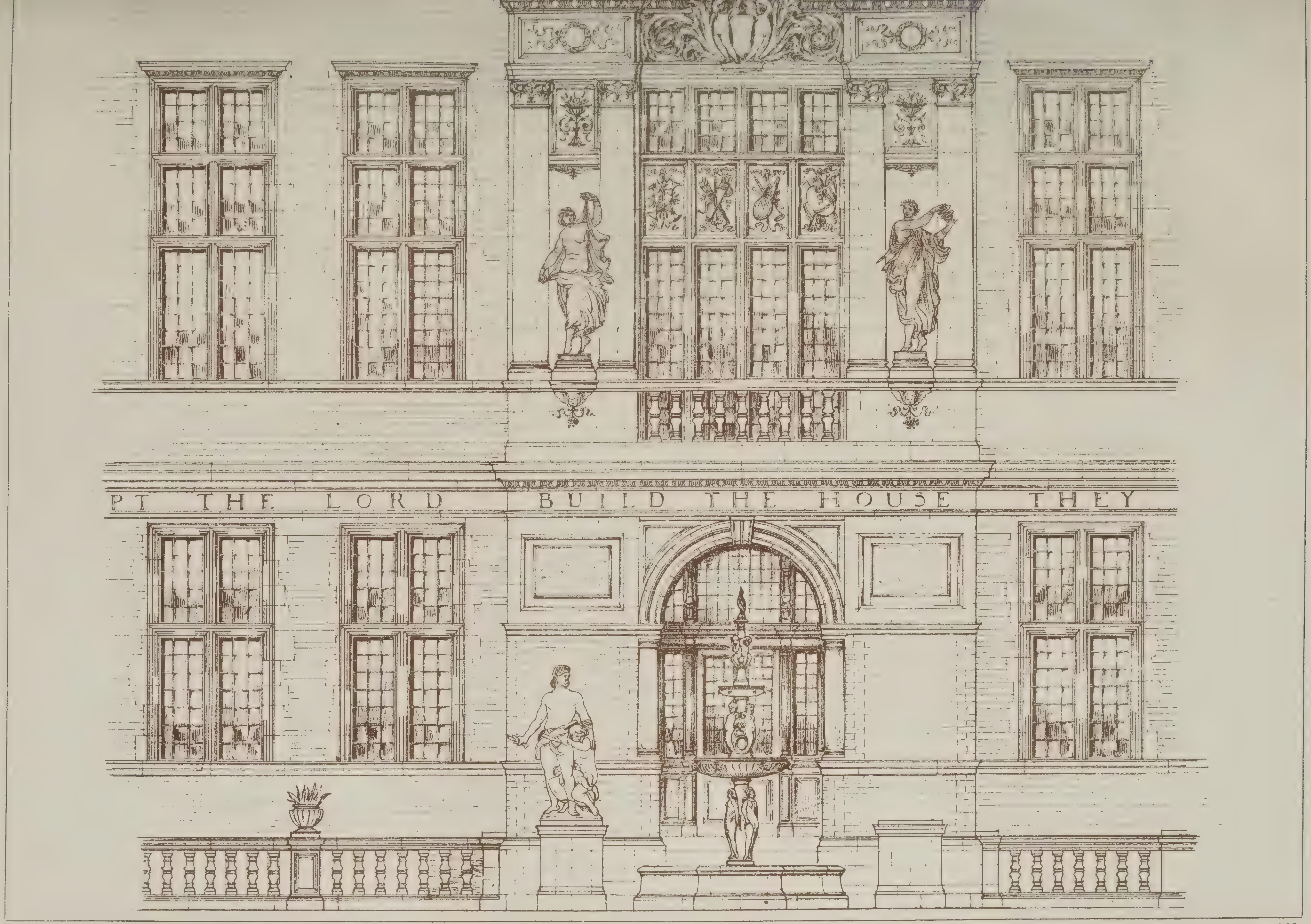
G. M. Alexander, F.R.I.B.A. Archt.

THE BUILDING NEWS, FEB. 26, 1892.

DESIGN FOR A LARGE TOWN HOUSE

DETAIL OF COURT YARD.





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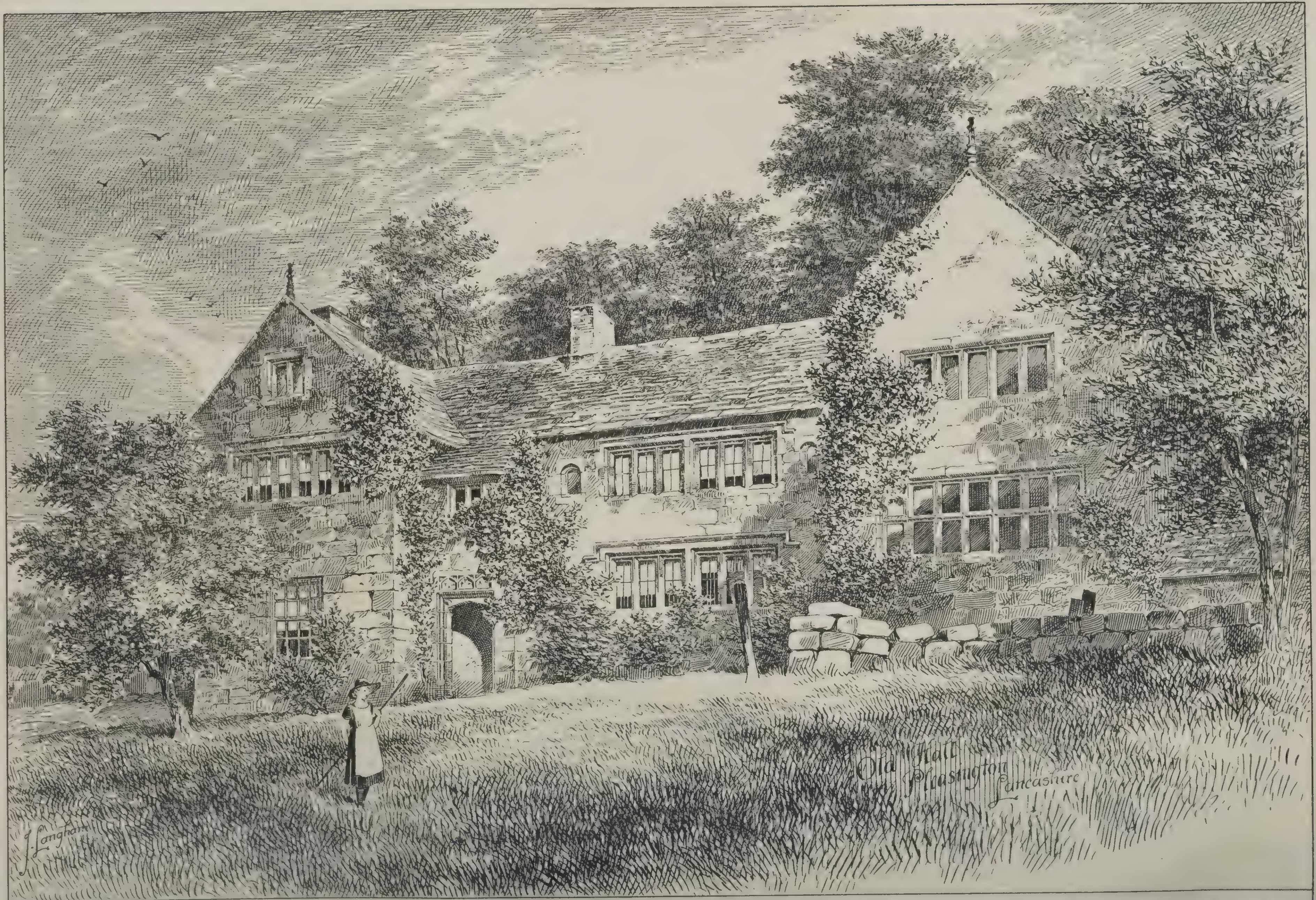
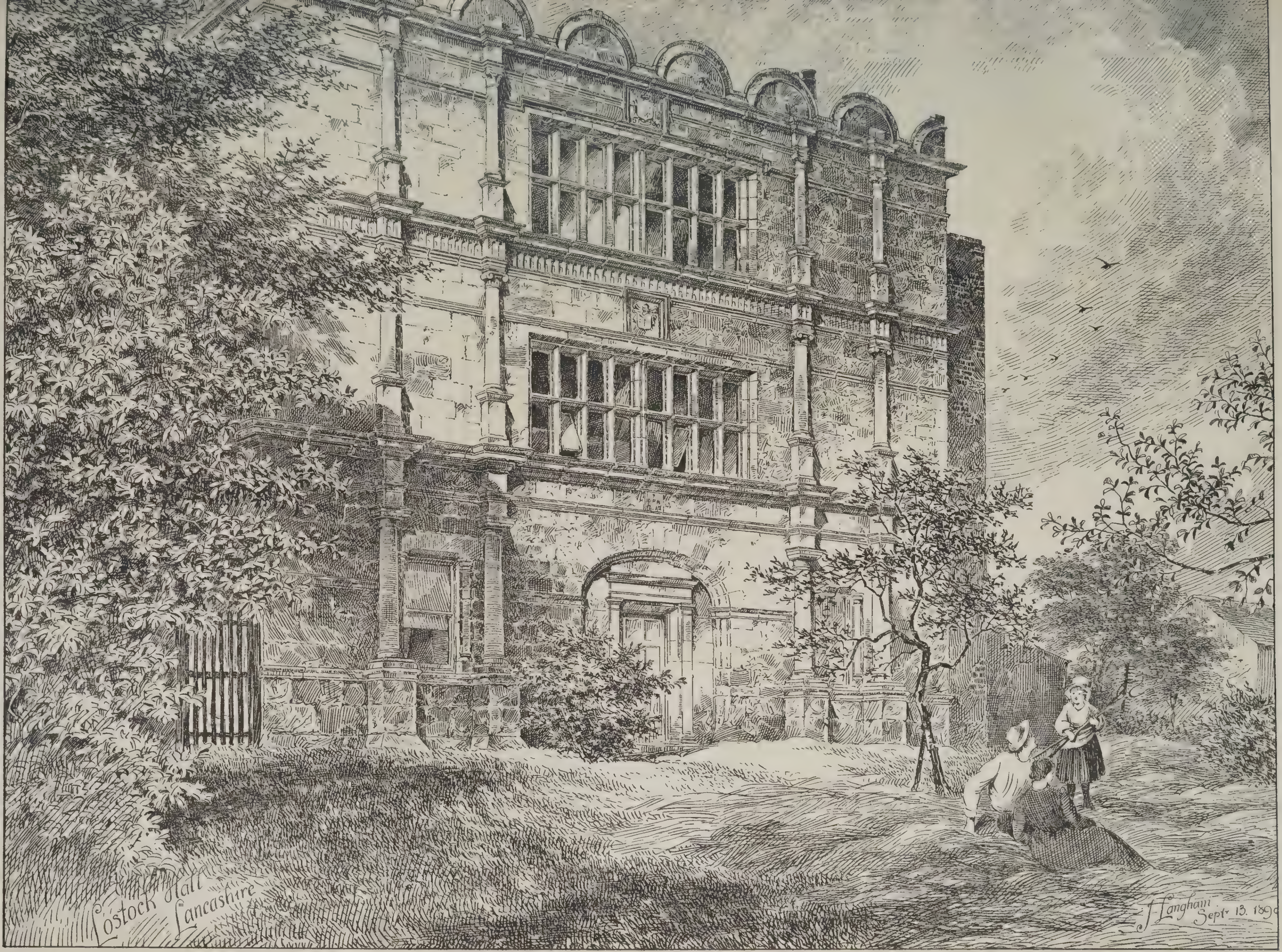
ROYAL·ACADEMY·GOLD·MEDAL·COMPETITION·
DESIGN·BY·ALEXANDER·MACKINTOSH·


Old Hall
Pleasington
Lancashire
J. Langham



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UNIVERSITY OF ILLINOIS

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXII.—No. 1939.
FRIDAY, MARCH 4, 1892.

FLOOR AREA AND CUBICAL SPACE.

A COMMON misconception prevails as to the value of capacity or space in buildings. In the following remarks we do not propose to enter into any mathematical or abstruse views of the question, but merely to point out the importance of the two elements of area and cubical capacity as they affect buildings. The principal way in which the ordinary architect and builder regard the matter is that space is an element of cost beyond which they do not care to go. To them the cubical contents is a matter of £ s. d., and the object of the promoter or builder of residential flats, hospitals, or houses is to reduce as far as possible the cubical space contained within the walls and roof. This consideration for economy is certainly not reprehensible. It is wasteful to cover in more space than absolutely required for the number of inmates, but this view of the question is not the one which concerns us now, nor does it rightly represent space as open. The estimator's cubic foot is a merely arbitrary unit of cost, and depends mainly on the intricacy and amount of workmanship of the structure which fills and incloses the space, for we may readily understand that the larger the empty space inclosed, as that of a great shed or drill-hall, the lower the price per unit. It is not, in fact, the air space, but the class of structure inclosed, and, therefore, we see how unscientific and incorrect is the assumption that cost increases in proportion to the cubic capacity of a building, an idea which appears prevalent even among professional men, who, in reducing the size of their buildings, imagine they are reducing cost *pari passu*, whereas, in fact, there is no definite relation between cost and space.

The other view of cubic capacity which regards it as space, the quantity of air contained within a given cube is of more consequence as it concerns the accommodation and health of inmates. In this sense we have a direct relation between space and health. Yet we find much misunderstanding current. The size of a room or its floor area is considered the chief requirement. Accommodation is regarded as the principal thing; thus, if a sleeping room or ward is large enough to provide so many beds, however low it may be, it is concluded that it is spacious enough. The consequence of this opinion is that often the ceiling is so low as not to allow sufficient air space for the inmates. Thus, if we allow for each bed 6ft. by 10ft. = 60ft. of floor area, and the height of room is only 7ft., it will give only 420ft. of cubic space, which is much less than is desirable for persons in a sickly state of health. The Local Government Board state that the minimum amount of space per bed for sick persons in sleeping wards is 600ft., or a floor space of 60ft. by a height of 10ft., a cubical space far in excess of many of the rooms let out for sleeping accommodation in London. A strong temptation exists amongst builders to cut down the height of rooms, though in so doing they diminish the breathing space, and to that extent reduce the number of individuals who can dwell in them, In this sense every room has a certain height which becomes necessary from a sanitary point of view. What this height is will depend on the dimensions of the room, or the number of persons which it can comfortably hold. For it ought to be clearly understood that a room only accommodating two persons comfortably ought to be quite as high as one accommodating a dozen, if the breathing space of each individual is to be equal. Shortly stated, if hygienic laws only are consulted, the small room requires a relatively greater height than a large one, and will be in direct proportion to the superficial area per individual. Suppose we take as the unit of cubic space 600ft. per bed (or 6ft. by 10ft. floor, and 10ft. height), a room of 12ft. by 10ft. would be large enough for two beds, and we should simply have to double the area for a four-bedded room; but if the same space had to be provided in a room of half that area, it would have to be double the height, or 20ft. Other things being equal, the smaller the superficial area of room, the greater must be the height, and *vice versâ*.

The hygienic law above expressed is not observed in the majority of buildings, for we generally notice that small rooms are low-pitched, while additional height is given to large ones. This law of proportion is dictated by architectural considerations, which do not necessarily clash with hygienic conditions. The chief point is to adopt a rule as to height of rooms like dormitories and sitting-rooms, which should be adequate to give the cubic space required. There is a minimum limit, beyond which the architect may go if he desires imposing proportions. All we need point out is the relation that should be kept in mind between the floor area and the height if ample air space and ventilation are to be insured. All height or excess of space beyond is a question of architecture. An excessive height is useful in a public hall or assembly-room, where sometimes a crowd collects; but for ordinary sitting-rooms and offices it requires a large heating power to render the air tolerable in cold weather. Besides, a large space of air above the head often creates cold currents, and may become stagnant and unfit for respiration. One authority has pointed out the uselessness of any greater space than can be cleared of its air every hour or two by ventilation, an argument that may be used against excess of height in wards of hospitals and in dwellings for the poor. The question bears very intimately on the construction of ordinary dwelling-houses. Speculative companies and builders have been trying to get as many stories as possible within a certain limit of elevation, and to interpret the term "topmost story" to suit their own convenience. With regard to the height of the topmost story and sleeping rooms, it has been the practice to reduce it to an extreme limit. In London, the height of habitable rooms under the Act is generally fixed at a minimum of 7ft. Every such room constructed in the roof of every building is "to be at least 7ft. in height from the floor to the ceiling throughout, not less than one-half the area of such room," according to sect. 23, a rule which practically makes the room only available for half its area. In other towns the rule appears to vary. By the by-laws recently made for Manchester, any dwelling or sleeping room not in the roof is to be at least 9ft. in height in every part, and every such room in the attic, or roof, is to be "7½ft. in height at least from the floor over one-third the superficial area of such room." This rule gives, too, a very inadequate space for sleeping, as only about a third of the room is available. By the memorandum issued by the medical officer and architect of the Local Government Board under the provisions of the Public Health Amendment Act, 1890, sect. 23, and of which we gave the gist in our last issue, it will be seen that the minimum height for rooms in general is to be 8ft. over the total area of room, and for those under the roof in which sloping rafters occupy a portion of the area a mean height of 8ft. is to be observed. Even this rule will not prevent overcrowding by placing low bedsteads under the sloping roof where the wall has to be a minimum height of 5ft. According to the diagrams published, the mean height of 8ft. for attic rooms is obtained by regulating the horizontal part of the ceiling. In the first example given, one-half of the ceiling is made 9ft. high; in the second, three-fifths are made 8ft. 9in. high; in the third example, five-sixths of the flat ceiling are made 8ft. 4in. high; in each case the sloping part of the roof is so adjusted in proportion to the horizontal portion as to give an average of 8ft., but in all cases the height of 5ft. is required for the walls from which the sloped roof springs.

Fortunately the Public Health Amendment Act, 1890, gives power to make by-laws as to the height of rooms used for habitation, and it would be desirable, if sanitary authorities saw fit, to fix the minimum for attic rooms at 8ft., or even, as our correspondent Mr. Fraser, of Llandaff, proposes in another column, as much as 8ft. 6in. It appears necessary, therefore, that in sleeping rooms a minimum height should be determined with reference to the number of beds to be accommodated, as the desire is to overcrowd rooms of large area in towns. As Dr. Russell, the medical officer for Glasgow, has shown, the room represents a uniform scale of space, and the death-rate is found to advance, *pari passu*, with the number of persons per room.

UNSTABLE CHIMNEYS.

THOUGH we are constantly being reminded by shocking catastrophes to structures causing serious loss of life, we are generally behind-hand in applying vigorous measures of prevention. The warning comes too late, we are wise after the event, and again drifting into apathy are as unprepared for the next emergency. So the mischief is repeated. The other day we were startled and shocked by the sudden fall of a chimney, which destroyed a factory and many lives at Cleckheaton, repeating in its suddenness, and almost in the extent of its horror, the disaster at Bradford in December, 1882, when the Newlands Mill chimney fell, causing the death of upwards of 50 persons, and serious injury to about 150 more. It would have been imagined that, after the fearful loss of life caused by the collapse of the Newlands Mill chimney, the warning would have been heeded, and some practical measures taken to insure the safety of all chimneys of great height that would have rendered another disaster of the kind impossible. The Newlands Mill chimney was 240ft. high, and the evidence at the time showed that its fall was partly due to cutting, aided by a strong wind; that the structure had been in an unsound condition; and that it had been "straightened" some years before. In one place the shell of masonry had left the "hearting" of rubble, which was 5ft. thick, coarse and fractured, and the "through" or bond stones were broken. Other defects were pointed out at the Board of Trade inquiry. At the Cleckheaton mill precautionary measures were being carried out, and repairs were actually in progress when the chimney fell; indeed, from what we read, some misgivings as to its condition were entertained, for the proprietors asked the workmen engaged whether the structure was in any danger, and received a reply in the negative. In both these cases no danger was apprehended; the owners had done all in their power to render the structures safe. We have, therefore, to look rather to the circumstances of the building of lofty shafts, to the condition of the law under which they are erected, at the regulations that are in force. In the Bradford case Lieut.-Col. Seddon reported that beyond fixing the minimum height for factory chimneys no regulations were in force at Bradford or Leeds to insure their safe construction, and suggested that some regulations like those in the Metropolis are required. In his official report he attributed the fall of this chimney to the damage done to the structure in the operation of straightening many years previously by cutting slices out of the shaft on the opposite side to the leaning, which process, of course, caused the joints of masonry on the opposite side of shaft to open, which ought to have been filled in by wedging. The rocking mass of over 2,000 tons in the course of years weakened this portion of the shaft between the cuts in the masonry, and caused the collapse. We have, as things are, no reliable assurance of the structure or history of these tall chimneys, whether they have been constructed according to approved principles under proper supervision, or in what manner they have been tampered with by chimney straighteners or subsequent alterations. What is necessary is a by-law regulating their construction in the first instance, and providing that all future repairs or straightenings should be done under local authority, so that the whole record of these structures should be under control. Of course, such a record can only be maintained by periodical inspection undertaken by a Government inspector or local authorities. In very many cases these structures, as in the case of Newlands, are bad in design; in others the process of straightening has weakened them, or repairs have been made tending to weaken the structure. When we consider that all lofty chimneys rock during high winds, and that a severe gust may at such time cause a structure to lose its equilibrium and be overturned, it is imperative that the outer shells of masonry or brickwork should be perfectly sound. The local by-laws in operation in the manufacturing districts of Lancashire and Yorkshire are insufficient to meet the requirements; they do not insure a periodical inspection of erections of this kind, or a careful supervision of repairs when they become necessary. After every severe gale chimneys should be inspected, those especially which have been erected many years, and which have shown indications of weakness.

THE WILES OF THE HEATING CONTRACTOR.

ONE of the hardest things an architect has to do is to get his buildings properly heated. That is, if they are public buildings such as churches, town halls, or concert halls. Dwelling houses, which depend for warmth mainly on stoves, and only in a secondary degree on hot-water pipes, are more easily dealt with. But when we come to larger works, a book might be written—and an amusing book, too—on the tricks and the blunders, the shuffles and the dodges which the architect who means to do his duty has often to contend with. Often, not always, for the trade of heating engineer, like most others, contains many honourable and honest practitioners. Yet, as competition increases, one cannot but fear that they are becoming a smaller and smaller minority. It is as much to their advantage as to that of the public in general, that the ways of their unscrupulous rivals should be exposed, so that every one who has to deal with them may be on his guard, and know what to expect.

It was under the pressure of competitive tendering, perhaps, that Mr. Wriggle (as we may call our typical specimen of the shady heating engineer) first developed his peculiar system. But having once got hold of it, he finds it far too useful to be kept only for emergencies. When his contract is low in price, it saves him from loss, and when it is high it doubles his profits. Yet there are times and seasons when prudence forces him for the moment to modify it a little. Nobody can get along without some rag of a reputation, and once in a while even Mr. Wriggle thinks it expedient to do what he contracted to do, and to turn out a piece of work which he can point to as satisfactory. Let us first watch his course in one of these exceptional cases.

He takes his contract at a reasonable price—not very high, and not very low. It is in a town where business is brisk, and where he may hope for future commissions. In such a case there is every inducement for a man to do his best, and to make his scheme a thorough success. The scheme, too, is entirely his own. The arrangements are left to him, and the one thing he has to do is to make sure that the heating apparatus will raise the internal temperature, say, 25° above that of the outside air whenever the latter is at or below 40°. This is specified to be done without overdriving the apparatus; the testing is to be done by the heating engineer and at his expense, and the ventilators are to be closed when it is going on. The boiler is to be fixed on the floor of the chamber provided for it in the basement. A certain part of the contract money is not to be paid till the architect has certified that the conditions have been fulfilled. It all seems clear and plain enough; but the people most concerned do not yet know the resources of a Wriggle.

Mr. Wriggle's men have not been at work long before they discover that on his scheme the pipes fall where they should rise, and rise where they should fall. As the water would not circulate at all under these conditions, he makes a munificent offer to the owners of the building. If they will do, at their own expense, all the extra digging and brickwork and trench-making which the alteration involves, he, on his part, will put his pipes the right way up instead of the wrong. Of course, he does not say that the scheme will break down utterly unless it is altered; he states the matter in a more attractive way. If the alteration is agreed to, there will be so much more heat, and a much quicker circulation, and a more satisfactory state of things altogether. Tempted in this way, the contractees agree to what he wishes. He proceeds a little further, and then finds that the boiler-room is not quite high enough for the peculiar form of boiler he intends to use. Without consulting the architect, he has the floor lowered—of course, at other people's expense. Then he puts in the boiler, in happy ignorance that he has sunk it below the sewer level, and that in every storm the ground-water will rise and put out the fire.

The work is finished, and the winter comes on. The apparatus is no sooner wanted for use than it proves a failure. The architect goes down and tests it. Instead of raising the internal temperature 25°, it barely raises it 12°. The architect reports accordingly to Mr. Wriggle. That gentleman explains that, according to contract, he was only bound to produce a rise of 25° when the external air was at or below 40°, whereas when the architect conducted the testing, it was at 42°. This difference of 2° outside, Mr. Wriggle explains, will fully account for the deficiency of 13° inside. This the architect refuses to admit, but takes advantage of a sharp frost to ask Mr. Wriggle to go and test for himself. Mr. Wriggle declines to do so. He says the walls are damp, and no fair test can be made for two or three years. He winds up by asking at once for the balance of his contract money. The architect points out that the contractor, according to his contract, has to test within six months of completion. Mr. Wriggle writes back to say there is a crack in the ceiling, and no fair test can be made while this exists. The answer is that the crack was stopped months ago, and that the ceiling is quite sound now. Then Mr. Wriggle complains that the boiler-flue does not draw properly. As it is 70ft. high, and 18in. by 14in., and as there are plenty of people to testify that the draught, which can be examined at the soot-door, is strong enough to carry a man's hat up, this excuse has to be abandoned. Mr. Wriggle now says he is informed, on good authority, that there is dust on the pipes. No pipes will throw out heat when there is dust on them, and until the dust is removed, he declines to test. The pipes, which had about as much dust on them as might be produced by a man walking quickly along them and shaking a pepper-cruet, are cleaned, and again the temperature is tried. There is, as might be expected, no difference, even of half a degree. Then Mr. Wriggle declares that he does not believe a word about any deficiency of heat, and that he will not go down to test the apparatus unless his expenses are paid beforehand. But, to avoid unpleasantness, if his balance is sent him by the next post, he will return £5, on condition that he is released from all further liability. The architect writes back to decline the offer, and to assure him that the heating is really a failure; and he replies by threatening the architect with a prosecution for libel.

By this time the winter is nearly over. The occupants of the building have spent three months in misery and discomfort, while Mr. Wriggle has been giving one reason after another for not doing what he undertook to do. Now the wet weather comes on. The water rises in the boiler-room, and threatens to put out the fire. If any heat is to be kept up in the building, the floor, where Mr. Wriggle sunk it, has to be pumped dry, day and night. The proprietors' patience is exhausted, and they give Mr. Wriggle formal notice that they are about to call in somebody else to set the work right, and will pay him for doing so out of the balance. Mr. Wriggle comes down at last, sees that they are in earnest, tests the apparatus, and caves in. He does then what he ought to have done at first, and finally leaves it in something like working order.

The case is otherwise when he is dealing with weaker people. He goes through the same series of performances as in the other case, except that the *finale* is different. There is his usual deficiency of twelve or fifteen degrees, to begin with. Then, in his accustomed order, he attributes this to the crack in the ceiling, the damp on the walls, and the dust on the pipes. He condemns the boiler flue, as before. He explains that it is impossible to make any sort of test if the external temperature happens to be a few degrees above that specified. If he can manage to avoid testing during a frost, this serves him with an excuse to postpone the test all through the winter, and again from one winter to the next. He then denies that there is any deficiency of heat whatever, and threatens the architect with his customary action. He makes his usual offer of five pounds to be released from all liability, and when it is not accepted he threatens to issue a writ for his balance. Nothing succeeds like impudence, and impudence, as often as not, brings Mr. Wriggle bravely through his failures. But the result that is satisfactory to him is simply ruinous to the architect and the building owner, and the first question that both of them will ask before they accept a heating tender in future will be, whether or not it comes from a member of the great family of Wriggles.

SOMETHING ABOUT CHIMNEYS.—II.

By F. DYE.

IT can be very readily understood that as the draught, the up-current in a chimney, depends entirely upon the air and gases which enter being heated, and the chimney itself being warm (as explained in the last paper), that any form of grate or fireplace which admits of a free ingress of air which is not acted upon by the fire at all, and enters at its coldest temperature, must go to lessen the efficiency of the draught, though not necessarily to ruin it.

It sometimes happens that we can well afford to slacken the draught in a chimney. With a close stove, if properly fixed, it is almost always necessary to close the damper to some extent, or the fire would burn much too fiercely. We, however, can never afford to reduce the passage of air through the fire to such an extent as happens with the old pattern open range, or with the dog-grate. With these two appliances the proproportion of air (cold) which passes into the wide-open mouth of the chimney without being affected by the fire is quite out of proportion with that which is heated, and ill results consequently ensue. If we take the average open range (and there are very many still existing in large resisidences in London as well as in the country), we find that there is a 24in. to 28in. space between the top firebar and the chimney-breast above it. If this space is left open, the smoke from the fire will show great reluctance to pass up the chimney, and in quite 80 per cent. of such cases some of the smoke will ooze out into the kitchen, and the range is said to smoke. The remedy for this state of things is the introduction of a blower, a sheet of metal placed so as to reduce the space just referred to, and the inflowing air is caused to come more within the influence of the fire. This is effectual for the simple reason that it prevents or, at least, reduces the free passage into the chimney of air that is absolutely cold. As just stated, the capacious mouth to the chimney with an open range permits of such an unreasonable inflow of cold air, that the chimney itself is chilled, and the presence of the cold air greatly interferes with the warmed air and gases that are really making an effort to travel in the right upward direction. The introduction of a blower (of sufficient depth) across the opening causes the inflowing air to come nearer the fire as it passes in, and so more of it becomes rarefied, sufficiently so to make the up-draught strong and to successfully overcome any resistance caused by the lessened quantity of cold air that now enters.

An instance once came to the writer's notice in which one of these old-pattern ranges had to be retained in the kitchen, although it was noted for its rarely ceasing its, till then, incurable habit of smoking. An ordinary blower was of no avail—that is to say, it did not wholly remedy matters, although it effected a little improvement. An effectual cure was made in this case with a specially-made blower, which reached down to the level of the top fire-bar as Fig. 3.

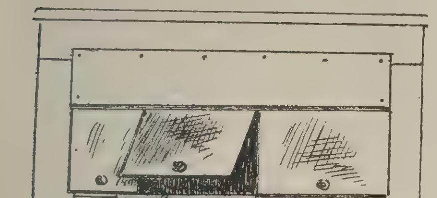

FIG. 3

This had its lower part in sections which could be raised to admit of the introduction or withdrawal of the cooking vessels. It will be seen that by this arrangement the open range was almost converted into a close-fire kitchener, so far as its shutting out cold air from the chimney was concerned.

It must not be forgotten that when we increase the efficiency of the draught in a chimney the keener passage of air through the fire makes the fuel burn more briskly; this causes a greater heat to be evolved, and consequently a small fire will do the work of a larger dull burning one. This more perfect combustion of the fuel is also economical in another sense. The smaller the quantity of soot in a chimney the smaller the quantity of fuel wasted; for soot is nothing more or less than unused coal. The open range is undoubtedly the pioneer as a soot producer, and in many ways it is a barbarous contrivance for present-day requirements. Although there is a slower rate of combustion in the fires of these compared to close-fire ranges, they are the more extravagant, for to get results at all effective for any purpose, a quantity of fuel some six times as great as is required with the latter appliance must be got into a brisk state of combustion. A small fire is of no use in an open range; one reason alone is sufficient to account for this—viz., that without a draught through the fuel the coal must be in a fairly large mass to maintain itself in a state of combustion at all. Occasionally the blame for open ranges smoking is attached to the shape or size of the chimney. It is, however, exceedingly rare that this is the cause of the trouble. In the majority of cases, if a piece of paper or wood is fastened across the top of the opening (to form a deep temporary blower), it will be found that the smoking trouble ceases, and the chimney will do its work in a normal manner.

With dog-grates the smoke trouble, when it occurs, is caused by precisely the same conditions as with the open range. These grates are usually fixed in a roomy opening which is tiled round, and the result, so far as appearance is concerned, could not be better. The spaciousness of the opening is, however, what ruins the efficient working of the chimney and the grate, by reason of the abundant presence and inflow of cold air as just lately described.

It is rather an odd thing that blowers are not applied to these openings, to obviate or cure the sluggish action of the draught in carrying the smoke away. The writer does not remember seeing one, yet the idea is very feasible. It would not be necessary to use a tin contrivance like that which is adapted to the openings of open ranges. A brass, or better still, glass strip would do just the same, as Fig. 4. With glass either a piece of bevelled plate, or ordinary sheet in a brass frame, or coloured leaded glass would look and act excellently. This would overcome, the smoking assuming it proceeded from the cause under discussion (and this is most probable); but it would not make the grate any more effective or economical, and certainly these firebaskets are as primitive in this respect as the old open range. The dog-grate, however, and the mode in which it is fixed, gives every opportunity for the display of artistic effect. Enough has now been said to make it clear what the governing principles are with draughts in chimneys, and a new subject can be entered into.

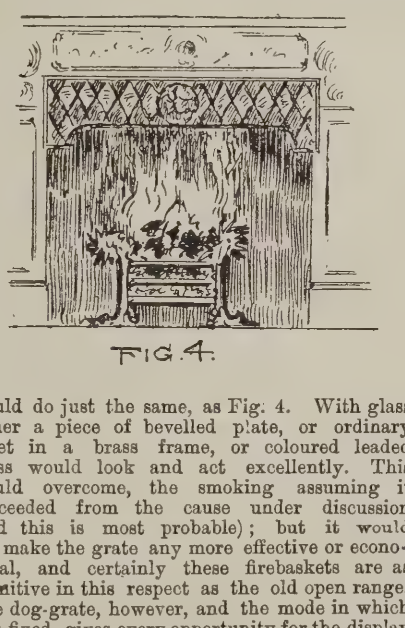

FIG. 4.

PIPE CHIMNEYS.

No one can deny that for certain purposes a great convenience is effected by the use of sheet-iron pipe for the conveyance of smoke from a stove, or from a portable cooking-range, &c., in instances where a brick chimney is not conveniently near. It may be that the pipe is carried the whole way as far as is necessary for it to constitute a chimney of itself; but more often this pipe is used to connect the stove with some existing brick chimney not far away; in the same or next room, perhaps.

As an instance, let us suppose a fair-sized stove is obtained, and, to get the fullest and most equable results, it is decided to stand it in the middle of the room. This is a plan commonly adopted in schoolrooms and shops, with good results, as no heat is lost. All parts of the place get heated more equally than if a stove or grate is at one end of the room only, and the heated pipe itself goes to increase the temperature. In such a case as this, a sheet-iron pipe is carried from the stove to the brick chimney which doubtless exists in the room, and this is all that is necessary, provided it is done correctly.

It is considered a very simple matter to fix up a stove in this way: we have to provide a suitable non-inflammable base, fit the pipe on the nozzle of the stove and carry it to the chimney-breast, there inserting it in a hole prepared to receive it. The simplicity of the job is correct provided the workman knows his work; but, strange to say, there are more blunders made in erecting a few pieces of sheet-iron pipe than one would first imagine. In the first place, as to the size of the pipe. It is important that it be large enough, and numbers of failures have been due to error in this direction. The writer has never yet known an instance in which pipe of too large a diameter has been used, and he feels a deal of confidence in saying that no one else has; but the reverse is far from being the case.

It might be supposed that the person erecting the work would choose the size of his pipe by the size of the nozzle on the stove; but this is not always done. In one instance a fair-sized stove was fitted up, and the makers had provided a round nozzle of 9in. diameter at the back, this size being quite necessary, as the stove was one that could be converted from close fire to open fire, and *vice versâ*. These convertible stoves require full-sized chimneys, as if the fire were always open; it is to all intents and purposes an open grate, and every builder provides a 9 by 9 flue for these at least. In this the fitter, instead of using a piece of 9in. round pipe to connect the stove with the brick chimney, actually had a sheet-iron reducing piece made to fit on the 9in. nozzle, and made use of a length of 4in. cast rain-water pipe for the connection. It is needless to say this was an utter failure. There was no excuse for the man whatever, for the chimney was only a few feet away behind the stove. When pipe has to be carried any distance in conspicuous places, it is common to use the smallest pipe that dare be erected, as the larger the size the more unsightly the whole affair is.

This man fell into an error that seems to be unfortunately very prevalent amongst workmen —viz., that smoke pipes need never be large. His only defence was that he did not know the stove required a large pipe. Nothing could be more incorrect, for what is a 9in. pipe equal to after all? It is of the same area as an 8in. by 8in. square chimney, and every builder puts this or a larger size for his smallest attic fireplaces. Nothing less than a 9in. pipe should be used for stoves of fair size.

Stoves that are always closed—that is to say, cannot have the fire opened except for feeding or stoking—can generally be worked successfully with a smaller-sized chimney (whether pipe or brick) than open grates, but of course a man should never fall into the error of making his chimney of less size than the nozzle provided on the stove by the maker. With stoves, the whole of the air passing into the chimney has to pass through the fire and become heated and rarified. This by itself is sufficient to bring about a keen draught. Further than this, there is a total exclusion of cold air, and so the chimney itself is not chilled; and altogether, we as a rule get a draught with a stove that needs to be checked and controlled carefully by means of dampers. Now, the keener the draught the less size the chimney may be to work effectively. This explains why stoves may have smaller pipes, when of the close description, than any form of open grate or convertible arrangement, which permits air to pass into the chimney without being heated.

With any form of stove that is of a portable character, fixed out in a room, but works with an open fire (under the conditions of an open grate), the pipe that may be used with it should never be less than 9in., and even larger than this is necessary if the stove is actually of large size. They really should have pipes equal in size to the chimneys provided by a builder when he builds a house—viz., 9 by 9, or 14 by 9 square.

It is not actually rare for it to be discovered that the nozzle provided on a stove by the maker is too small—not too small for ordinary conditions, but tending to make the stove work inefficiently when the chimney to which it is connected is a sluggish working one. From various causes, chimneys are sometimes rather wanting in draught (as will be referred to presently), and in one instance the writer converted a poor-working stove into an efficient one by drilling off the nozzle provided on the stove and substituting a larger one, which was made in wrought iron and screwed on.

It must not be thought that an occurrence of this kind is at all common, and great care should be used, and every possible remedy tried, before resorting to this. In this case, however, the chimney was old and faulty, and the draught was poor. As already explained, the less keen the draught, the larger the smoke-way (the chimney) must be, and it is no good having a large chimney in this way if it is choked at some point. In this instance the brick chimney was roomy enough, but the nozzle on the stove was only 5in. A 5in. pipe would have been barely large enough under any circumstances, but, to make matters worse, the nozzle-opening had some projecting pieces cast in it, as Fig. 5. These were provided to prevent fuel working into the flue, for the stove was one of the kind that could be filled right up with coke to last a number of hours without attention. These projecting pieces reduced the passage through the nozzle to an area of 12sq.in. This would be about the same as making a clear nozzle of 4in. diameter only. Makers might well make the nozzles larger, it would be practically impossible to make them too large, and, up to a certain point, the stoves would be decidedly benefited. If an instance occurred in which the pipe had to be carried very conspicuously, it would then be time enough to reduce the size to the least limit by means of a reducing piece.

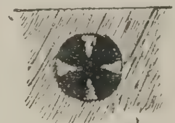
FIG. 5.

A correspondent has called the writer's attention to an error, or, rather, a blunder, he committed in Art. I., in having described the atmosphere as being composed of two gases—oxygen and hydrogen—in a state of chemical union. This mistake is really inexcusable; but the writer would like to explain that he must have fallen into error through his intention of showing how experiments could be conducted with water, for the description he has given of the atmosphere applies to water exactly.

The atmosphere is composed of two gases—oxygen and *nitrogen*—which are not in chemical union, but in a state of admixture. The writer regrets this mistake exceedingly.

NOTES ON TERRACOTTA.

DRYING.

TERRACOTTA, unlike bricks, cannot be dried in the open air by the influence of sunshine or by natural air currents, the risk being too great, and the progress too slow. In this respect we differ from the ancient Egyptians, of whose work much was sun-dried and never baked. The difference lies in the equable climate and dry atmosphere of Egypt on the one hand, and the variable climate and humid atmosphere of England on the other. Warmed air or artificial heat has, therefore, to be resorted to. There are two methods—one by the use of exhaust steam; the other by radiation. In the former 1½in. to 2in. steam-pipes are carried round the drying sheds, either at the floor level or a few inches above it. In the latter case they are fixed to the walls and intermediate piers, if the shed be a large one subdivided into smaller ones, with necessary provision to facilitate expansion and contraction, and repairs of defective joints. It is always advisable not to bury the pipes in the floors on account of the extra expense of doing so, the loss of heat, and the difficulty of getting at them in the case of repairs or alterations. Racks are used for the drying of small wares; in these the steam-pipes are carried round the walls at varying heights to suit the levels of the racks. Sufficient exhaust pipes at suitable points should be provided to prevent back pressure on the steam-engine, and to reduce the friction that would otherwise be increased between the inside of the pipes and the exhaust steam. Before placing the terra-cotta blocks in the drying shed, it is well that they should at least stand a clear 24 hours in the moulding and finishing room, to admit of their surface moisture being taken up by the process of ordinary evaporation before subjecting them to an abnormal heat, with the possibility of development of fine surface cracks. There need never be any difficulty in the way of this, for the moulder has generally a sufficient number of blocks in hand requiring finishing after they have left the moulds to make this delay of their transmission to the drying shed almost a necessity. The phrase "abnormal heat" is used in the above lines with some latitude, for in terracotta works generally there is at all times a more or less degree of warmed air present throughout the building. We are now arrived at the stage at which so much care and watchfulness is required to insure the successful desiccation of the blocks. The blocks are generally turned out of the moulds, each on to a small platform, as it were, of suitable size, made up of batten widths (7in.) conncted with and screwed or nailed on to cross fillets of about 2½in. by 2in., to admit of raising the platform, and of an air-space between the bottom of the platform and the heated floor of the drying-shed. From this platform the block should not be moved until it has been in the drying-shed sufficiently long to admit of handling without damage. The hole in each panel end of the block is formed after it has left the mould, for the double purpose of the admission of air in the process of drying and firing, and to admit of handling while in the clay state. It will be seen that the faces of the blocks nearest the steam-pipes will receive a greater amount and degree of heat than those faces furthest from the pipes, leading to unequal drying and shrinkage, causing the blocks to warp and twist, and sometimes to develop cracks. For this reason the blocks should for the first few days be kept well removed from the steam-pipes, after which they may with safety be brought nearer; but the relative positions of the faces of the blocks to the steam-pipes should be changed from day to day to insure an equable process of drying. It is a great mistake to force or hurry the work in the drying. As soon as the block is sufficiently dry and firm to admit of dispensing with the platform, it should be removed. The platform arrangement is altogether a very unscientific mode, as the friction existing between the wood and the block interferes with the free contraction of the clay particles, exerted in an inward direction towards a common centre. The platform should be clean wrought on the upper surface, to minimise the friction, instead of being rough boards, as it more frequently is.

When the heated-air method of drying is adopted the floors of the drying shed are specially constructed for that purpose, which is not necessary when drying with exhaust steam with the pipes above the floor. All ground damp should be carefully excluded by draining with agricultural pipes the ground underlying the floor space, and the surface-earth outside the building made to slope or fall away from the exterior walls. Six inches of lime-concrete should cover the site overlying the agricultural pipes. Horizontal flues, about 9in. by 9in., or 9in. by 6in., are formed and carried under the entire length of the floor, the number varying with the area of the floor. In some instances these are grouped, running centrally through the shed, with a brick or half-brick division between each pair of flues. A system which recommends itself in preference to this, we think, is that of keeping the central portion of the floor solid for a barrow run, and for purposes of general traffic, reserving the sides for the flues, and for the stacking of the clay blocks.

The tops of the flues are covered over with 12in. by 12in. "quarries" (heavy paving tiles, and known by that name in the trade).

The disposition of the flues should be such as to get an equal distribution of heated air as far as practicable; but however carefully this may be attempted, there will always be what are known as "warm" and "cold" spots in the drying shed. The roof should be kept low, and of a flat pitch, to economise the heat, formed with open or naked timbers, and covered with untorched tiles on open battens.

There should be as few doors as possible communicating with the outer air, and these should be furnished with rising butts or other self-closing hinges, for the exclusion of cold draughts. The shed should be lighted preferably from the roof, with hinged skylights, opened and closed by means of lever gearing, each light being in its action quite independent of the others. More glazed surface than is necessary to light the shed has the effect of lowering the temperature during the winter season. The "quarries" covering the flues should be bedded in daub—3 parts road-drift and 1 part loamy clay—to prevent smoke discolouring the blocks while drying. The flues are supplied from furnaces kept constantly going at perhaps some remote part of the works, the various flues, or groups of flues, converging to the main chimney-shaft, with which all works are provided, and emptying into a common cross-chamber connected to the large chimney-shaft with a single inlet flue. In some cases the heated air from the cooling-kilns is made to pass through the flues of the drying-sheds, finding an exit through the main chimney-shaft of the works, instead of through the extract flues of the kilns as so much heated air wasted. In drying-sheds as just described, the clay blocks should be kept off the floors. A plan advocated by some persons is, when sufficiently firm, to place them on a layer of clay-dust intervening between the blocks and the floor, the dust being a non-conductor of heat, and affording the blocks a freedom of shrinkage not otherwise obtained, but which is recognised as being so essential to the production of true-shaped wares. Blocks that are crooked when placed in the kiln will not be straight when they are burned. The positions of the blocks must be varied from day to day to prevent one side or face drying faster than another, and so being drawn out of a straight line, for if one side be dried first, no matter how dry the block eventually become, it will remain crooked. For this reason the work should be dried slowly. The blocks should remain in the drying-shed until *white* dry—that is to say, until all mechanical moisture is expelled the clay. The blocks will then be found to be very little indeed larger than they will be required after burning, there being very little shrinkage in the firing of a thoroughly dried block. Blocks that are not perfectly dried when placed in the kiln whiten on their faces, and are often coated with a scum-like discolouration.

During the period of drying, the blocks become more or less surface-coated with fine dust and other foreign matter, which, having come into contact with the moist clay of the blocks, firmly adhere to their faces. To remove these, and bring forward the natural colour of the clay when fired, the exposed faces are rubbed with water and a brush just prior to going into kiln. When the brush is applied with too much vigour, the brush marks can be very distinctly seen on the terracotta after the process of firing, which is a decided defect in appearance.

(*To be continued.*)

NEW STABLING IN THE CITY.

AN excellent example of city stabling has lately been erected in Queen-street for Messrs. Pickford and Co., the carriers. The building is a spacious one, including a large van-yard about 80ft. square, a loading platform on the ground floor, and floors for luggage, &c., above. The ground floor of van-yard has a substantial floor, supported by three-ring brick arches between wrought-iron intermediate girders, carried by box girders resting on iron stanchions, concreted and laid with wood-block flooring; the floor over is of one-ring brick arches on wrought-iron joists, concreted and boarded. The main feature of the building is, however, the stable, in the basement, which is 56ft. long by about 25ft. wide. These are approached by a stone-pitched stepway for horses, forming a gentle incline. There is accommodation for 13 horses, the mangers are plain and massive. We notice that the whole paving is of Claridge's patent asphalte, and put down 2in. in thickness and grooved. The squares are about 5in. between the grooves, which latter carry away all the liquid, and form an admirable self-cleansing and draining surface, besides a good foothold for the horses. Running down the centre longitudinally is a wide centre gutter, slightly sunk, which will facilitate the removal of the urine and refuse. We have seen numerous forms of stable clinkers and vitrified paviors, with V and semicircular grooves, and several patented pavings; but the great objection to them is the difficulty of truly moulding them, laying them evenly, and grouting them. They frequently permit the washings and urine to soak into the foundations. Ordinary brick paviors wear unevenly and absorb the moisture, and the vitrified surfaces become slippery. From these objections Claridge's patent asphalte is free; the material itself is impervious and non-absorbent of the moisture, and can be laid to a uniform level and the V-joints made perfect. The surface is slightly gritty, and even, unlike that produced by warped bricks burned in a kiln, and the material has the further advantage of resisting the constant tread and pounding of heavy horses with iron-shod hoofs. The stable is well lighted by iron frames with pivoted lights in the centre. The building has been erected, under the immediate supervision of Mr. Stansby, by Messrs. Pink, Fryer, and Co., of Westminster, the foreman to the latter being Mr. Bowles, and the work is substantially executed.

"AN EXPLANATION OF THE LONDON WATER QUESTION."

THE adjourned discussion on a paper bearing the above title, and read before the Surveyors' Institution on February 15th, was resumed at the ordinary general meeting, held at 12, Great George-street, on Monday evening last, by Mr. C. K. Bedells, who said that he thought everyone would agree with the author in thinking that some modification of the present position and powers of the great water companies was urgently necessary. So great were those powers, and so arbitrary was the way in which they were exercised, that instances of positive hardship inflicted on the consumer were frequent. He referred more especially to the case of "Elgar v. Chelsea Waterworks Company," which had been brought before Mr. Curtis Bennett, at the West London Police Court, so lately as last week, and in which the facts were so flagrant as to elicit from the magistrate the following remarks, which he thought were well worthy of consideration by anyone attempting to deal seriously with this question of the London Water supply. Mr. Curtis Bennett on that occasion was reported to have said:—

> Legislation is imperatively needed to give the consumers some set off against the present powers of the water companies, who supply that which is absolutely essential for health and life, and without which people cannot live in the Metropolis. At present, although persons have duly paid all rates demanded from them—say in October up to Christmas—on Dec. 26, or on any subsequent date, before another payment the companies have power, without any notice, to cut off the whole of the supply to London. I believe that a short Act would in a great measure meet many of the difficulties, and I suggest the following: "That it shall not be lawful for any water company to cut off the supply at any time existing to any premises for non-payment of any water rate without at first leaving, either with the owner or occupier thereof, or affixing on some conspicuous part of such premises, a notice stating the amount due to them for any water rate, and giving fourteen days for the payment of such amount; and if any dispute should arise between the parties as to the amount due, either party within the said fourteen days may apply to any court of summary jurisdiction for a summons against the other party to hear and determine what amount is due; and should any water company cut off any water supply to any premises contrary to this provision, the company shall forfeit the penalty of £20, and the further penalty of £5 for every day during which such supply is so cut off. Provided always that if the Court shall be satisfied that the water has been cut off solely on account of any necessary repairs to the works, or mains, or pipes of the said company, then the company shall not incur any penalty for cutting off the water." But, in my judgment, the power of cutting off the water supply to any premises for non-payment of water rates should be absolutely taken away from the companies, for that which to life and health is essential should not be so dealt with. The remedy should be that if the water rate is unpaid fourteen days after having been demanded, the companies should have power to recover the amount due in a court of summary jurisdiction in the same way as poor rates are now recoverable. And within the fourteen days of the demand the person from whom the rate is demanded should have the power to dispute the same by a summons in a court of summary jurisdiction.

Mr. Bedells proceeded to quote from the article by Sir John Lubbock in the *Nineteenth Century* to prove his assertion, which was also confirmed by the report of the Duke of Richmond's Commission that the water supply of any large town should undoubtedly be in the hands of a central municipal body rather than in those of private companies, and he also showed, from the same sources, that there was, among experts, some considerable doubt whether the drawing of water from a chalk basin, as advocated by Mr. Grover in the paper, did not tend to decrease *pro tanto* the supply to the springs and streams of the district. He should not propose so much to buy up the undertakings as they stood, but rather to bring them all under one efficient municipal control, and he should certainly advocate that the London County Council should have the exclusive right to all sources of supply not now appropriated under the different companies' Acts of Parliament.

Dr. Evans (visitor) said the first question to be considered was, Is the present supply sufficient? and the second was, From whence can it be supplemented? Mr. Grover pointed out a source of supply as being available for the purpose; but on that question he differed from Mr. Grover *in toto cælo.* The question had been referred to a Royal Commission, and it was perhaps a little premature to suggest remedies until that body had reported. Mr. Grover put the rainfall over the Colne Valley at something like 260 million gallons per day, taking an average of about 26in. per annum; but as from various causes not more than 2in. or 3in. could be reckoned on as always available, the supply from that source could not be calculated at more than an average of 20 million gallons per day. Could this quantity be taken away from "the mouth of the bottle" without affecting the level in the bottle itself? He (Dr. Evans) lived in the "bottle," and so was considerably interested in the answer to this question. If there were an impervious stratum, through which it was utterly impossible for the water to pass, this might be possible, but he rather regarded the whole subterranean area of such a district as one great cistern from which water could not be drawn without affecting the surface level. If 20 million gallons were abstracted from the Colne at Rickmansworth by pumping from the chalk (as he believed would be the case), it was so much less to flow into the Thames above the intake of the water companies, so that the gain was only one of getting chalk water instead of river water. A gentleman near Rickmansworth had been for some time pumping water from a well and returning it to the river, and had found that the level of the river was not lowered! But, of course, this could prove little. In 1840 experiments were made under the direction of the Court of Chancery in connection with a case against a canal company, in which a well was sunk and springs in the neighbourhood were laid dry; the well was then puddled all round to a depth of some 70ft., but when pumping was resumed the springs were still affected as much as ever. The springs which supplied the streams represented, he believed, the overflow of the reservoir on which Mr. Grover proposed to draw, and if by pumping the level were reduced, this overflow must cease, and the springs be affected. There could be no more water in any district than fell from heaven, minus the loss by evaporation and vegetation.

Mr. A. G. Rickards (Associate) said that, having had the honour to be the leading counsel in favour of the Metropolitan Water Supply Bill promoted recently by the vestries, two points in Mr. Grover's arguments had struck him as worthy of notice. He was aware that his opinion, from a geological or engineering point of view, would be valueless; but it struck him that the author hardly made a sufficient allowance for the effect of continual pumping, thereby not quite sufficiently debiting himself on the side of the difficulties which must be encountered; while, on the other hand, he had failed to credit his account with the very considerable saving which could certainly be effected, as it had been and was constantly effected in some of the northern towns which controlled their own water supply, by constant pressure and by strict attention to fittings and connections. Instead of 32 gallons per head, or, as had been said by a witness before Sir Matthew White Ridley's Committee, 20 gallons per head, now supplied to London, it had been found practicable, by attention to such details as he had alluded to, to reduce the consumption to 12 or 15 gallons. The Duke of Richmond's Commission, appointed in 1866, and which reported in 1869, dealt with the purely scientific aspect of the question, and found that the quality of the London supply was good, and that the Thames and Lea, supplemented by the deep wells, would give a sufficient supply for the near future. Dr. Frankland said that since that date the quality of the supply has been greatly improved; but the growth of London had been so much greater than was contemplated by the Duke of Richmond's Commission that the question of quantity had now again to be seriously considered. The quality of the suggested supply from Leatherhead and Rickmansworth was undoubted, but whether the quantity would be sufficient, or whether injury would be done to local interests by obtaining it, was for experts, more learned in the matter than he, to decide. Sir William Harcourt's Commission had dealt mainly with the cost of acquiring, and the method of compensation for, the various companies' undertakings, and Sir M. White Ridley's Commission had proceeded on the postulate that the present companies must make way for one central municipal control. The former Commission declined altogether to hear evidence as to a competing supply, holding that, in face of the immense amount already expended on the distributing mains of the existing companies, it would be little short of ruinous to attempt to do all the work over again. The cause of the rejection by Parliament of Mr. Edmund James Smith's scheme was, he thought, because that gentleman had allowed too much for unearned increment, and too little for the expense of new and additional sources of supply. The compensation to be paid would, he believed, be best determined by arbitration, not under the Lands Clauses Acts, but by a board of arbitrators, consisting of one person nominated by the Local Government Board, one by the Surveyors' Institution, one by the Civil Engineers, and one by the Bankers' Institute, before which the principles to be applied and the methods of assessment to be adopted could be threshed out and brought into such a form as would be applicable to every one of the eight great companies. The basis of calculation of value would probably be the market value of the shares, regard being taken to the quality and quantity of the supply, and the amount of capital which must be expended in the immediate future to put that supply on a satisfactory and sufficient basis to meet all demands as they arose. Then it was necessary, he thought, that the municipal authority should acquire the undertakings within a reasonable time, in order to save the ratepayers having to pay for the enormous growth of the value of the companies. Since 1871 the market value of the stock of the eight great companies had increased from £14,500,000 to £33,500,000, while the additional capital raised during the same time had only been £4,500,000. So that every year's delay meant an enormous increase of cost to the ratepayers, which should by all possible means be avoided.

Mr. T. W. Wheeler, Q.C., said he thought one of the most important points to be considered was—taking it for granted that some change in the present system was necessary—into whose hands should the control of the water supply of London be committed? London had become so vast that it had long ceased to be a mere town, or even a capital city, but was, in population and wealth, almost a nation in itself, and almost too great for the whole control to be placed in the hands of one body. Nature had seemed to indicate that there should be two cities, one on the north bank of the Thames, and one on the south. Then the multiplication of trusts and representative bodies was a thing scarcely to be contemplated with equanimity, and if it went on at the rate threatened, would at length reduce London management to one colossal bumbledom. Previous speakers had, he thought, rather exaggerated the power of the companies, representing them as being almost beyond the reach of the law; but he instanced a case in which, proper legal advice having been taken, a company had been promptly brought to its senses, and heavy fines inflicted for a breach of their Act. In the recent case before Mr. Curtis Bennett, the decision had turned on the purely technical point whether legal tender had been made, and had nothing to do especially with the powers of the companies.

Mr. H. Wilkins, vestry clerk of St. James's, said that from the very small number of cases of the kind referred to which came before the public, it would seem that the companies exercised their undoubtedly great powers with a good deal of moderation. In handing over the water supply to any new central authority it must not be forgotten that, while the population of the London county was some four and a half millions, there were still some one and a quarter millions in the outer ring supplied by the water companies, and that while the area under the control of the London County Council was about 125 square miles, the statutory powers of the companies extended over about 500 square miles, and the outer ring was increasing in proportion much more rapidly that the inner. Would it then meet the views of a resident in the outer ring to place his water supply under the control of a body in whose election he had no voice, or would it be fair to purchase the present companies' undertakings and raise the money by a loan, to be repaid in 60 or 90 years, by which time the existing proportions of population would be changed if not reversed? Every committee had recommended that the governing authority should be "representative of the consumers." Would the London County Council meet this requirement? The low death-rate of London showed, he thought, that there was not much ground of complaint as to the quality of the supply.

Mr. E. K. Burstal said that the argument that anyone might dig a well to supply his own needs if he chose had a curious light thrown upon it by the recent attempt of the London corporation to supply some artisans' dwellings by this means. After paying working expenses and interest on capital expended, &c., the cost per annum was rather more than three times the annual charge made by the water company.

Mr. E. H. Stevenson said that he thought, before seeking a fresh supply to meet the demands of London, it would be well to try if some economy could not be effected in the supply already available. In the large provincial towns the authorities who controlled the water supply were not content to leave it, so to speak, at the consumers' doors, but made a careful inspection from time to time of all internal fittings, with the result that the consumption had been reduced, by reduction of waste alone, to 12 or 15 gallons per head, as against the 25 or 30 used in London. At this rate the present available sources would be amply sufficient for a population of 7½ millions, which need scarcely yet be provided for.

Mr. W. Whitaker, speaking as a geologist, said that anyone who would examine a geological map of the districts from which it was proposed to draw the additional supply, would see that the great chalk beds were overlaid in places by impervious patches of various kinds, which considerably reduced the area over which the rainfall was available as a source of supply through the chalk. In considering this question, few persons thought how much water was taken from the chalk by private wells in the London district. The quantity was probably not less than ten million gallons per day.

Mr. J. Lidiard agreed with previous speakers that if any change in the present system were to be effected, it was of great importance that it should not be delayed, as every year's delay must necessarily increase the price without raising the actual value of the undertaking.

Mr. Grover, having briefly summed up the discussion, and explained, by means of diagrams, his theories of the possibility of a sufficient supply from the chalk, and his practical experience in obtaining such a supply in the Rickmansworth district, the meeting adjourned.

HISTORIC HOUSE ARCHITECTURE.

[WITH LITHOGRAPHIC ILLUSTRATIONS.]

M. CHARLES GARNIER, the distinguished architect of the new Opéra, and Prof. A. Ammann have just published a great work entitled "L'Habitation Humaine,"* illustrated by nearly four hundred drawings, which represent typical examples of the dwellings of man from prehistoric times to the modern days in all parts of the world. The programme indicated in these few words immediately strikes one by its comprehensive character, which is replete with interest to all who care to know how our ancestors lived in past ages, and ascertain, with some degree of accuracy, how, in various countries, man has made his home and contrived his dwellings under the varied circumstances of time and place. It will be evident, therefore, that we are scarcely able to do more than briefly indicate for our readers in this place a general idea of the nature of the book to which it is desired we should draw attention. By the courtesy of Messrs. Hachette, we are enabled to print herewith a selection which we have made from the plates and woodcuts in the volume before us. These will serve to show in what style the illustrations have been rendered, and also the type of subject chosen by the authors. Their review carries us back to the ages of primitive barbarianism, when men found their shelter in rocks and trees, huts, lake dwellings, and hovels of various shapes and materials. Their weapons of flint and rudely-cut wood are familiar, like much that is generally known of their habits and customs; but the pages of Messrs. Garnier and Ammann, by the aid of learned maps, curious plans, and graphic details, supplement mere sciolism, and add erudite information to previous knowledge. The Historic period, of course, most interests the general reader, and M. Garnier's specimen houses, erected in connection with the Paris Exposition of 1889, go a long way to practically illustrate the subject. Turning now to the examples represented on our lithographic double-page, it will be seen how eminently diverse they are. The famous, or rather familiar, Council-house at Shrewsbury in half-timber ranks as a thoroughly representative specimen of the Salopian style. The kindred character of a homely kind in brick is seen at Amsterdam in the street view herewith chosen, while in the Hôtel d'Ecoville at Caen we are furnished with a very beautiful and refined example of the best period of the French Renaissance, similar to the well-known Hôtel du Bourgthéroulde at Rouen, which has perhaps a more Gothic mannerism about its details. The Château d'Azai-le-Rideau, which likewise figures on our sheet, is of the same famous period in Normandy, which is represented by such houses as the Manoir d'Ango, near Dieppe, and the châteaux of Chenonceaux, de Nantouillet, and the house of François I. at Moret, to say nothing of the very numerous existing dwellings of that date in France. The Anamite house from Monkay, Tonquin, has much of the characteristic quaintness of Chinese building more massively carried out, and the dwelling itself follows the same lines. More crude still is the Negro house of the King of Sego at Yamina in Africa—a solid and almost Egyptian type of building, with big buttresses carried out and cut short in a singular fashion peculiar to the white mud houses of the Soudan.

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HANDBOOK OF GREEK ARCHÆOLOGY*.

A HANDBOOK of Greek archæology for English readers and students was much wanted, and Mr. A. S. Murray, LL.D., F.S.A., Keeper of Greek and Roman Antiquities in the British Museum, has brought out a volume of reasonable size which will to some extent meet the wants of a large class of students. To his Rhind Lectures in Edinburgh for 1887 he ascribes the origin of the book. The author has endeavoured to group together facts and to deduce general truths rather than to multiply details, and his work will on this account become a useful guide to the materials and collections to be found in the British Museum. In the first chapters the primitive period of the artistic products of Greece is treated, especially the early stages of pottery, gem engraving, glass, bronze, and the precious metals, and these objects are illustrated by a large number of vases of the primitive and Mycenæ types, of the Geometric type, gems in the British Museum, in most of which sculpturesque animal and human forms predominate. Then follows the archaic period, in which the imagination of the artist takes the place of mere handicraft, illustrated by many fine examples of pottery. The remarks on vase painting are of value in drawing attention to an important branch of pottery decoration. The black and red figure vases are illustrated by some very beautiful examples in amphora—Plates VI., VII., VIII., X. Many typical changes of costume are found on the vases. An Assyrian design can be traced in many early vases, which have bands of Oriental animals. Mr. Murray says the principal sources of these Greco-Asiatic vases are Rhodes and Naucratis in Egypt; this ornamentation was invented in those places, and adapted, with modifications, by the Greeks. This Orientalising influence is seen also in the painted animals placed in a row on vases or in geometrc bands. Then the human figure was introduced, as in the fine vase or œnochoë, illustrated p. 80, which has a band or frieze of armed men, with a second lower band of animals, with rosettes on the vacant spaces. The figures are black on a drab ground. Incised designs in bronze are described in chapter IV.; they belong to a period not earlier than 400 B.C., and chiefly to Corinth, where bronze work was manufactured. Etruria also yielded incised bronze mirrors and cistæ. A beautiful bronze cista is in the British Museum, and is engraved on p. 136. Figures of Aphrodite and Pan, Perseus cutting off the head of Medusa, and other myths, are engraved in these bronzes. Engraved gems, scarabs, cameos are illustrated by photogravures of intaglio gems, a fine sardonyx cameo of the daughter of Augustus in the same Museum. Next, the subject of sculpture in relief is taken up, as being allied to gem-engraving and vase-painting, and, of course, the character of Assyrian and Egyptian art is stamped in the relief sculpture of the early Greeks. The bas-relief was the form generally found; the outline was everything, to which the details were subordinated, and this character is to be found in Greek sculptural relief. This chapter is illustrated by the elevation of the Doric Temple at Assos in the Troad, as restored according to Mr. Thatcher Clarke. The frieze and metopes are immediately above one another, and the relief is low. Some fine examples of the Pedimental sculpture—Acropolis of Athens, executed in stone (poros), the figures brightly painted—are shown, the background being the stone. A plate illustrates the sculptural relief of west pediment Olympia; another a slab of the Parthenon frieze. Statuary forms the next subject, and this is illustrated by several well-known examples, as Theseus, the Hermes of Praxiteles, statue of Demeter, groups from the Parthenon pediments reproduced by photography, and several wood engravings. Terracottas, painting, and architecture are also separately treated, the latter rather inadequately. The illustrations we have seen in Fergusson's "Handbook." A few plans of the types of temples, and an explanation of such details as intercolumniation and other arrangements of columns and domestic buildings, would have been useful. The hypæthral roofs are barely touched. The Handbook, as affording a general and popularly-written exposition of Greek archæology and references for further study, should be in the hands of all students.

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CHIPS.

The employés of Mr. J. Andrews, builder, of Thornford, partook of supper to the number of fifty on Wednesday week, at the Mermaid hotel, Yeovil, under the presidency of Mr. Andrews, the occasion being the coming of age of the employer's son, Mr. Wilfred Andrews.

A new side altar was unveiled at St. Alexander's Roman Catholic Church, Bootle, last week. The altar is of Caen stone and marble. The altar table is supported on two columns, having a carved panel underneath representing St. Francis in the act of blessing the town of Assissi. The reredos is divided into two panels, with a niche containing a statue of the Sacred Heart in the centre. The work has been carried out by Mr. J. Geraghty, of Bootle, and the architects were Messrs. Sinnott, Sinnott, and Powell, of Liverpool.

At Tuesday's meeting of the London County Council it was resolved:—"That the Council refuses to consider a lower payment than 6d. an hour as a fair rate of wages to be paid to labourers by the contractors for the works of the Blackwall Tunnel, and as complying with the declaration made in their tender that they pay the rate of wages generally accepted as fair in the trade."

A provision-shop at the corner of Market-street and Factory-road, Eastleigh, collapsed on Thursday in last week. The building was being altered by Messrs. Wright and Sons, and just as the workmen had left an iron pillar fell outwards, bringing down the bressummer and the brickwork above. No one was seriously injured.

The will of Mr. William Henry Punchard, of the firm of Messrs. Punchard, M'Taggart, Lowther, and Co., of 151, Cannon-street, engineers and contractors for public works, who died on Dec. 25th last, at Norbiton, Surrey, has been proved, the value of the personal estate amounting to £19,000.

The Willesden local board have decided to provide three public libraries in the district, one at Willesden-green, another in Harrow-road, and a third to be combined with fire-engine station and coroner's court in Kilburn. For the first-named institution six architects have been invided to submit designs in competition.

The will and three codicils of Mr. Henry John Castle, C.E., late of 40, Chancery-lane, who died on November 27 last at Brighton, has been proved, the value of the personal estate amounting to upwards of £20,000. The testator bequeaths his share of the goodwill and fixtures of his business, and the copyright of his book, "Castle on Rating," with the copies, to his son William Henry Baldwin; the copyright of his books "Castle's Engineering Field Notes," and "Castle's Textbook," with the copies, to his son Edward James, Q.C.

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* L'Habitation Humaine. Par Charles Garnier et A. Ammann. Paris and London: Hachette and Co. 1892.

* Handbook of Greek Archæology. By A. S. Murray, LL.D., F.S.A. London: John Murray.

CONTENTS.

Floor Area and Cubical Space 329
Unstable Chimneys 329
The Wiles of the Heating Contractor 330
Something About Chimneys.—II. 330
Notes on Terracotta.—VIII. 332
New Stabling in the City 332
"An Explanation of the London Water Question"... 333
Historic House Architecture 334
Handbook of Greek Archæology 334
Our Illustrations 335
The BUILDING NEWS Directory ... ... xv.
Building Intelligence xvi
Wayside Notes 354
Building Trades' Evidence Before the Labour Commission 354
City of Coventry Public Baths Competition... 355
Competitions 355
Architectural and Archæological Societies 356
Correspondence 356
Intercommunication 357
Legal 357
Legal Intelligence 358
Parliamentary Notes 358
Water Supply and Sanitary Matters 358
Our Office Table 359
Meetings for the Ensuing Week 359
Trade News 359
Tenders 360

ILLUSTRATIONS.

MOSAIC EXECUTED BY DR. SALVIATI AT THE CHURCH OF THE ANNUNCIATION, CHISLEHURST.—HISTORIC HOUSE ARCHITECTURE.—THE NEW POST-OFFICE, LEEDS.—ST. SILIN CHURCH, LANSILIN.—MUNSTEAD CORNER, GODALMING.—SECOND PREMIATED DESIGN FOR NEW BATHS AT COVENTRY.—FONTS AND FONT-COVERS AT KIPPAX AND FEWSTON CHURCHES.—MODERN ENGLISH FIREPLACES.

Our Illustrations.

MOSAIC BY DR. SALVIATI.

A SHORT time ago we drew attention to a mosaic panel recently fixed in the Church of Annunciation at West Chislehurst. We have since viewed the work more particularly, and now give briefly a fuller description of it. Our illustration, although, of course, it does not give anything like the beautiful detail in expression, and consequently the grand effect of the blending of colour, which is such a feature in the work itself, will convey a fair idea of the artistic treatment which this mosaic has received at the hands of Dr. Salviati, of Venice, and Regent-street, London, to whom it was intrusted. The original cartoons for the work were painted by Mr. N. H. J. Westlake. The mosaic is in the spandrel over the chancel arch. It covers a surface of about 380sq.ft. The subject is the Adoration of Christ by the Saints: Christ, the central figure, is seated on a throne, surrounded by angels; on either side are grouped the Twelve Apostles, while in front of the central figure is that of St. Michael the archangel. The figures of the Virgin Mary and St. Joseph also appear, arranged on either side of the Christ a little in the foreground. The background of the mosaic is of gold, which throws up the figures and adds greatly to the effect, which effect can only be produced in mosaic.

HISTORIC HOUSE ARCHITECTURE.

(FOR description, see p. 334.)

LEEDS—NEW POST-OFFICE.

THE construction of this building is now being commenced on a site near the Midland Station and the present Post-office. It will, towards the streets, be faced with Haworth stone. The doorways will have steep granite architraves, and the columns will be of grey Aberdeen. Generally, the building will be of three stories and a basement, but for the present the stories above the ground floor towards Quebec-street will not be erected. This will be done when demand arises for increased space. The front building will be surmounted by a large flêche covered with lead, containing a ventilator and a clock. The centre of the front building ground floor is occupied by the public office, and on the left will be the sorting-office, and on the right the postmaster's offices, with those of the engineer in the mezzanine over. The parcel office is situated towards the rear in Infirmary-street. On the first floor there will be accommodation for the staff, returned letter office, &c., and on the second floor will be the instrument-room, battery-room, and refreshment department. The basement will be used for engineers' stores, telegraph delivery, and boys' rooms, men's kitchens, engine and boiler rooms, and other similar purposes. Offices for the Inland Revenue Department will be provided at the west end of the Infirmary-street buildings. The lighting throughout will be by electricity, and, generally, the building will be of fireproof construction. Mr. Henry Tanner, F.R.I.B.A., of H.M. Office of Works, is the architect. We shall give some details of the building shortly.

ST. SILIN CHURCH, LLANSILIN.

A GOOD illustration of the historical value of church restoration has been afforded in the work carried out at Llansilin Church, during which a number of interesting discoveries were made. The removal of the plaster ceiling in the chancel revealed a very fine late 15th-century panelled roof. Behind the modern west gallery was found the original Jacobean gallery, with a letter, dated August 6th, 1645, from Sir John Watts, commander of the Royalist troops, to Mr. Jarvis, the minister of Llansilin. Beneath the floor were fragments of the rood loft, the 15th-century seats, and a portion of the stone altar. As the church now stands, with its dedication to the British Saint Silin, and his holy well in an adjoining field, the nave arcade pillars similar to those at Valle Crucis Abbey, which was founded in 1199 by Prince Madoc, whose first cousin lived in the parish; and also the evidences of the renovations following the destruction wrought during the rebellion of Owen Glendowr, the Reformation, and the Civil War—a continuous record of all the leading events in the history of the church from the 6th to the present century is preserved. If the recommendations of that very misnamed body the Society for the Preservation of Ancient Buildings had been adopted, it would have remained in its veiled condition, and allowed to continue a sufferer from present decay and to risk the chance of future destruction. The work of restoration has been carried out by Mr. Bernard Clarke, of Birmingham, from the designs of Mr. Arthur Baker, F.R.I.B.A., of Kensington.

MUNSTEAD CORNER, GODALMING.

THIS house, now approaching completion, at Munstead, about one mile from Godalming, is built of Bargate stone, with a red, local-tiled roof. The first floor is half-timbered. There are nine bedrooms, bath-room, &c. Messrs. Mitchell Bros., of Shalford, are the contractors, and Mr. Edwin L. Lutyens the architect.

CITY OF COVENTRY PUBLIC BATHS COMPETITION—SECOND PREMIATED DESIGN.

(A DESCRIPTION of this design will be found on page 355.)

FONTS AND COVERS AT KIPPAX AND FEWSTON CHURCHES.

"CHEPESCH" of Domesday, or Kippax, is of more particular interest to the antiquary than the architect. W. Wheater has it on record that "in the Anglo-Norse days the whole of Kippax extended from the Roman Rig (Castleford to Tadcaster), including Osmandthorpe, but finished at the modern township of Leeds." The village stands on a bold and elevated site, and the church tower is a marked feature in the landscape, and forms a prominent land-mark for miles around. The church, although very much "wasted" by successive restorations, has still many indications of its antiquity, and to those initiated in the signs, they will not be slow to detect the herring-bone walling in the tower, "bits" of Norman enrichment, walled-up slit lights, &c. Architecturally the subject of my drawing is the most interesting item. The design of the upper portion is worthy of remark, in its having a strong resemblance to a crown. May this be taken as an indication of an attempt on the part of the workmen to work in the idea of Church and State? The subject of my second drawing, although not so unique, is, from its quaint simplicity, of marked interest. The church was burnt down in 1696, and rebuilt in 1697, which date is over the south porch. An interesting record, made at Pontefract Sessions, 1696, gives:—"The vallue of the losse of Fewston Church, viewed and vallued by substantiall workmen, whose names are hereunder written:—Imp., the vallue of the stoneworke, plastering, leading, and glasse, £355; for the roofe, £249 18s.; sleepers, boards, and seats in ye church, £110; ye pulpit, reading-box, and bannisters betwixt ye church and quire of four doores, £9 0s. 9d.; the whole losse is £723 18s. 9d. Thos. T. Paper and Mayer Shutt, masons; Thos. Chippendale and Constantine Gill, carpenters. The justices sent an address to the Lord Keeper of the Great Seale respecting the great and sudden fire at Fewston Church, through the negligence of the Plummer who was repairing the leads." Fewston is the "Foston" in Domesday, and the church was one of the three original churches of the Forest of Knaresborough. Edward Fairfax, the poet, and a member of the great Yorkshire family of that name, was born at Newhall, near Fewston. His translation of Tasso was first published in 1600. He died in 1632, and was buried at Fewston Church. The church is beautifully situated on rising ground, and overlooks the extensive reservoirs of the Leeds Waterworks system.—F. MITCHELL. [P.S.—Kindly allow me this opportunity of correcting an error of date which has crept into the drawing. The date of the Fewston registers is 1504, and not as given on the drawing. It is one of the pre-1536 registers, of which there are several in Yorkshire, and about forty in all.—F. M.]

MODERN ENGLISH FIREPLACES.

ONE of the chimneypieces shown in this sheet comes from the establishment of Messrs. George Jackson and Son, of Rathbone-place, and is made in the fibrous plaster for which this firm is justly celebrated, and of which we have before given good examples. No material lends itself more readily to really good and effective work at moderate cost, and by no makers is the architect surer of having his designs ably and faithfully interpreted. The other chimneypiece is in the banking room of the Lancashire and Yorkshire Bank at Manchester, of which Messrs. Heathcote and Rawle are the architects. It is executed in Blanc Clair marble, and in the frieze the arms of Lancashire and Yorkshire are introduced. The hearth kerb is of Rouge Jaspé marble. The walls of the chamber are faced also with marble —Rouge Jaspé in broad bands alternating with narrow courses of Pavonazzo—the frieze over being formed of the same marbles in panel and pilaster work. The work has been executed by Messrs. J. and H. Patteson, of Manchester.

CHIPS.

The Toxteth board of guardians have finally adopted revised plans for a new workhouse hospital, prepared by Messrs. C. O. Ellison and Son, of Liverpool, and estimated to cost £32,700 in execution.

The Camberwell board of guardians have accepted the tender of Messrs. Higgs, of Loughborough Junction, at £61,000, for the erection of a new workhouse on Champion-hill.

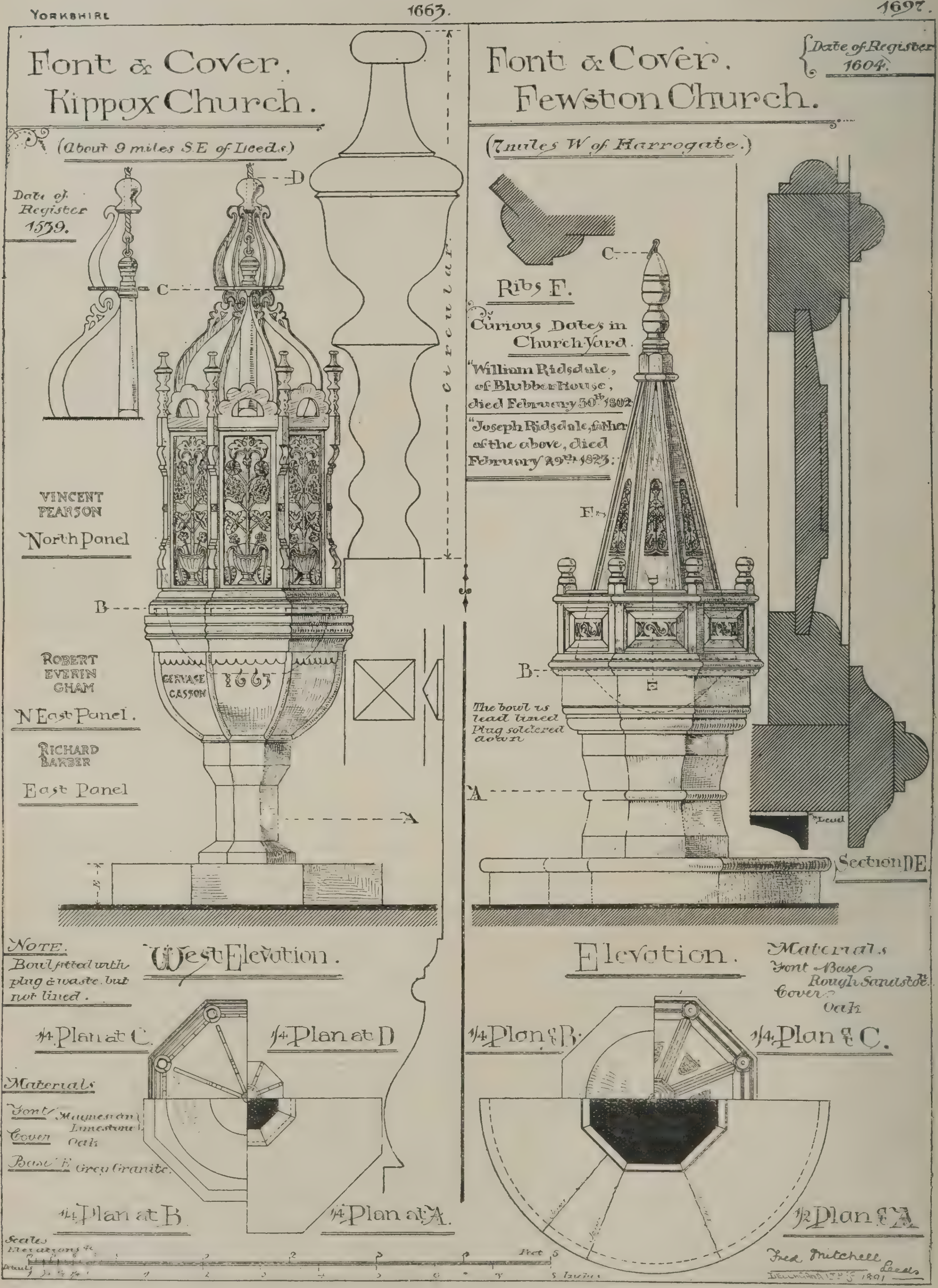
The owners of upwards of twenty houses were summoned to the Woolwich Police-court recently to show cause why orders should not be made to close them, the buildings having been condemned by the medical officer of health. The magistrate decided to view some of the property; three summonses were withdrawn, and the others were adjourned for the owners to repair their premises. Two hundred and twenty houses in the district have been condemned by the medical officer of health.

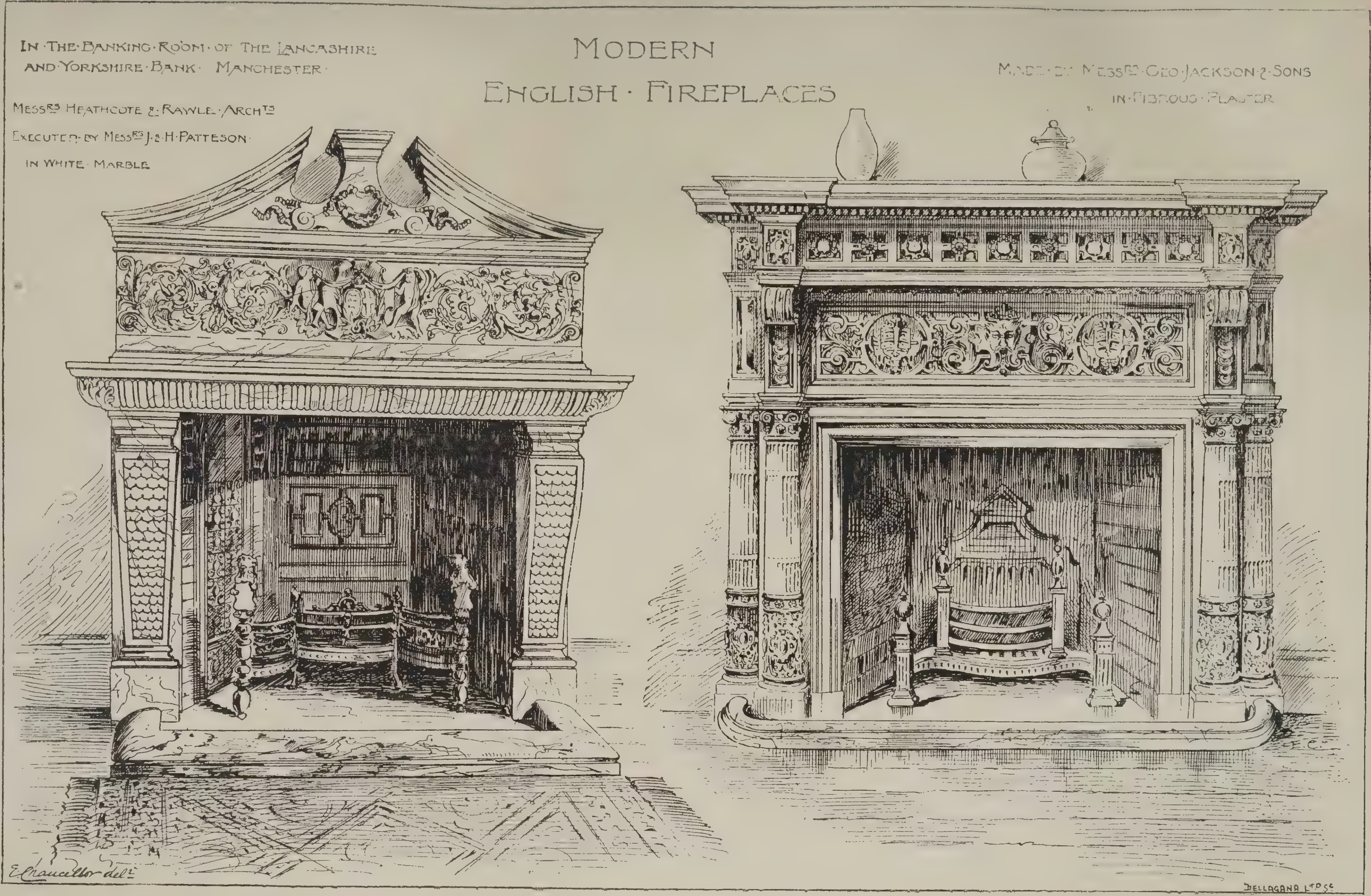
A new police-station has been erected at Headingley, Leeds, and special attention has been paid to the ventilation, which is carried out on the Boyle system.

The North Bierley Joint Hospital, Low Moor, which is being erected from the design of Mr. W. Longley, architect, Bradford, is ventilated throughout by means of Shorland's patent exhaust roof ventilators and fresh-air inlet tubes, the same being supplied by Mr. E. H. Shorland, of Manchester.

Mr. James Mansergh, C.E., the engineer to the water scheme of the Birmingham Corporation, has prepared his Parliamentary estimate of the expense of this undertaking, which, including all works and contingencies, he sets down at £5,851,000. The cost of constructing the $3\frac{3}{4}$ miles of railways in Wales is put down at £26,950.

Negotiations for a site for a new Post-office for Weston-super-Mare have just been concluded, the Government having agreed to purchase of Mr. H. A. Forse, builder, of Bristol, who is building the new Arcade, Verandah House, situate in High-street. The new office will cost about £6,000, exclusive of the site, and the work will commence as soon as possible. The new office will be approached by a road from High-street 40ft. in width.


YORKSHIRE
1663.
Font & Cover.
Kippax Church.
(About 9 miles S.E of Leeds.)
Date of Register 1539.
D
C
B
A
circular
VINCENT PEARSON
North Panel
ROBERT EVERINGHAM
N East Panel.
RICHARD BARBER
East Panel
GERVASE CASSON
1663
NOTE. Bowl fitted with plug & waste, but not lined.
West Elevation.
1/4 Plan at C.
1/4 Plan at D
Materials
Font Magnesian Limestone
Cover Oak
Base Grey Granite.
1/4 Plan at B
1/4 Plan at A.
Scales
Elevations &c.
Details
Feet
Inches
1697.
Font & Cover.
Fewston Church.
Date of Register 1604.
(7 miles W of Harrogate.)
Ribs F.
Curious Dates in Church Yard.
"William Ridsdale, of Blubberhouse, died February 30th 1802.
"Joseph Ridsdale, father of the above, died February 29th 1823.
C
F
B
A
The bowl is lead lined Plug soldered down
Lead
Section DE.
Elevation.
Materials
Font & Base Rough Sandstone.
Cover Oak
1/4 Plan at B.
1/4 Plan at C.
1/2 Plan at A.
Fred Mitchell Leeds
1891



MODERN
ENGLISH · FIREPLACES

IN · THE · BANKING · ROOM · OF THE LANCASHIRE
AND YORKSHIRE · BANK · MANCHESTER ·
MESSRS HEATHCOTE & RAWLE · ARCHTS
EXECUTED · BY MESSRS J. & H. PATTESON ·
IN WHITE · MARBLE
MADE · BY MESSRS GEO · JACKSON & SONS
IN · FIBROUS · PLASTER
E. Chancellor del.
E.C.
DELLAGANA LTD SC

WAYSIDE NOTES.

In the forthcoming election of County Councillors for the "County of London," I should like to see a return of such gentlemen as are likely to proceed with more or less of the schemes for Metropolitan improvement that have long been on the stocks. Contemplated alterations to existing and inconvenient portions of the City have been so persistently shelved to make time for the discussion of the purchase of tramways and other projects, that a little novelty would be a wholesome change. To neglect proper municipal business is absurd, whether caused by the ardour of "Progressives," or the obstinacy of "Moderates."

People complain of the way things tend nowadays, and the development of what they are pleased to call "ultra-radical principles." Much is their own fault. The inertness—to use a mild and inoffensive term—of the upper and middle classes is responsible for very many effects and results in electoral matters. If electors will be too lazy to go to the poll in Parliamentary and municipal elections, they may sit and grumble to their hearts' content; but, in common fairness, they should not expect things more to their taste whilst neglecting to throw in their own votes. Many will say that the London County Council should do this and that—make improvements in existing thoroughfares, keep to questions of a purely municipal character, and leave tramways and other outside matters alone—and all the time will take care to absent themselves from the polling stations to-morrow. Let anyone, then, with an honest desire for a really honest and efficient County Council, bestir himself to-morrow, and not stay at home like a coward.

The Council has at any rate had excellent chairmen, and its accomplished works, or undertakings promoted and commenced, should be accredited to it. Sir John Lubbock, in the course of a reply to a vote of thanks offered by the Council to their chairman on Tuesday, summarises the tangible works done by the Council as the completion of Rosebery-avenue, the commencement of the Blackwall Tunnel, and the completion of the Northern Main Drainage Works at Barking. Further, in a few weeks the works at Crossness will be ready for opening, and when in action will do much to purify the Thames. The Council has also done much towards enlarging and beautifying the parks. The sum total of works accomplished is modest enough, and it is to be noticed that all are merely the carrying-on of schemes projected by the "late lamented" M.B.W., the Council not having had the boldness required to launch on new undertakings of any magnitude.

There are various ways of spending a bank holiday. Mr. Dixon-Hartland, asking in Parliament, on Tuesday, for a Royal Commission on the doings of the London School Board, is reported to have said that when the question of sites was raised in the Board, it transpired that an architect's clerk had spent the whole of a bank holiday destroying papers which might be detrimental to certain parties. It is to be hoped that this poor unfortunate individual received extra pay for his extraordinary service, or at least that it happened to be a "Wet Monday," and he had no longings to be a-boating or fishing.

Mr. Dixon-Hartland puts down the amounts paid to architects and others connected with the department up to a certain date—ten years, and presumably to the end of the Great Bad Building Dynasty—as £117,855. This seems a lot, but would probably be found to be but a fraction of what should have been received by the architectural fraternity if the buildings had been sufficiently "architected" at 5 per cent.—if, that is to say, the work had been put out to general competition. I do not fancy that any complaint can fairly be made nowadays about money expended on the architectural department, which is efficiently managed and well ordered. What may have been the case on other occasions I am not in a position to say. Anyhow, Mr. Dixon-Hartland's very trenchant speech is calculated to make those concerned "sit up." We shall probably hear more of the matter.

It seems probable that a joint committee of Lord and Commons will be appointed to consider the best method of dealing with the new light electric and other railway schemes for London. One of the proposed subjects of inquiry is whether such railways are calculated to afford sufficient accommodation for the present and probable future traffic. This is certainly a point needing early attention. I have occasionally to go in a direction that renders the City and South London Railway Company's line very convenient. The awful crush to get seated in the train at King William-street about 6—7 o'clock has always impressed me. We all know that an English crowd has a selfish impetuosity that no reasoning in the world will hold in check. It does not want a theatre fire to show up this spirit vividly. Watch the attempt of about two hundred men to get into these trains as quickly as twenty. There is a frightful "congestion"; women and children have to look after themselves—it is all the same to those struggling in. It is no exaggeration to say that the would-be occupiers of the cars behave more like beasts than human beings. And yet here is a thoroughly democratic railway—only one class, sweep and city prince must go together. Watching this nightly scene, one can understand why true socialism fails, why Owen and others have laboured in vain, and why it is folly to dream of social revolutions when the competitive system is ingrained in the flesh, and man is ruled rather by nature than grace. Any inclined to waste their time on these questions might save themselves all their trouble by early taking an object-lesson at the King William-street terminus of the C. and S.L. Railway.

All of which has reference to Mr. Whitmore's proposed "Joint Committee of Lords and Commons." The trains of this pioneer electric railway are undersized, and are the reverse of being too long and too loose. One enters at the ends, on the Pullman or tramcar principle. Here, then, is a matter for the consideration of the proposed committee. Is the arrangement the best that can be devised? Here, too, is a matter which a true municipal councillor would find a more profitable subject for discussion than tramway confiscation. In one way the arrangement is excellent, an electrical railway being a dangerous place of promenade, the conductors have their passengers well under their control. They cannot leave the cars except when the end doors are opened; but whether this advantage outweighs all obections is a point for inquiry.

A good number of ***A.A. Notes*** to hand for March. Mr. T. F. Bumpus has some useful notes on "The Cathedrals and Churches of Northern France," that will be read with interest by students contemplating a tour that way this summer. Mr. Owen Fleming continues his suggestions on "Some Artistic and Hygienic Problems in London," and Mr. F. M. Simpson writes of "A Thirteenth-Century Town"—Figeac in the South of France, which the writer's guide-book averred to possess "deux cents maisons environ du XIII.^{e} siècle." Mr. Simpson cannot now affirm that these two hundred houses exist, but he says that he had "never before grasped so thoroughly what a town was probably like in the 13th century." In the "Notes" we read that a decided improvement in the attendance at the ordinary meetings has been observable during the past month, so I shall take to myself the honour of having helped this desirable end to, say, the extent of one per cent. of the increased attendance, which is so modest a claim that I am sure no one will grudge it. I read that the poor fellow who recently met with such a terrible death at Kensington Court-place, was a member of the Association, and last year admitted to the Lower School of the Royal Academy. He was generally liked, and showed considerable promise for the future.

The general committee of the Association received a petition asking that smoking should be permitted in the studios during working hours. There could, of course, be only one answer to such a request, and I, though a "blower" of "'bacca" in a moderate way, am glad to see that the committee—albeit composed mainly of smokers—have decided to uphold the prohibition. There is a time and place for all things. (P.S.—I note there is a pipe by my desk, and it is scarcely cold!)

Goth.

* * *

BUILDING TRADES' EVIDENCE BEFORE THE LABOUR COMMISSION.

The Royal Commission on Labour received, on Friday, evidence from representatives of the building trades. Mr. J. Beveridge, of Glasgow, secretary of the Associated Carpenters and Joiners of Scotland, claimed on behalf of the workers the right to refuse to work with non-unionists. He admitted employers had an equal right with workmen to keep a black list. Mr. F. Chandler, of Manchester, secretary of the Amalgamated Society of Carpenters and Joiners, and Mr. G. J. Davies, formerly chairman of the same society, were called together. They said that the society was one of the strongest in the country, its membership being 30,693, and its assets £66,359. The average hours were 51½ in the summer, and 47 in the winter, and the average wage 8d. an hour. The men had greatly improved their condition of late years, and the employers recognised the society when it was strong. Mr. Davies urged that some alteration should be made in the Employers' Liability Act, in order that employers should not be able to get rid of their legal responsibility. Contractors were too often men of straw, and not able to pay an award when obtained. The short period of notice during which claims for compensation could be made should be extended, and there were too many qualified conditions, which rendered the Act inoperative. The only just mode of settling the question was to place it under the common law, and to say there should be no compensation except such as was awarded by a jury. Mr. W. Knox, of Liverpool, secretary of the National Association of Master Builders, stated that the association included every branch of the building trade, and embraced all the large contractors of the country. The hours of labour had decreased during the last 20 years, and wages were much higher than they were 30 years ago. Sub-contracting worked very well. There were no stoppages or deductions of any kind. Everything was payment by the hour and notice by the hour. There was a good feeling between masters and men. The men were never asked whether they belonged to the union, and the masters discouraged black-listing. Witness denied that insurance made the employer careless. Mr. P. Lynskey, representing the Amalgamated Carpenters and Joiners of Dublin, said they numbered 1,100 in Dublin, and were affiliated t the English Association. The general wages wer 34s., equal to the average in England. A present the understanding between employer and employed was good. There was a strike i June, 1890, which resulted in a reduction o hours from 60¾ to 54. It lasted four weeks, an was settled by mutual conference. Unionist were, he thought, right in refusing to work wit non-unionists. Mr. R. S. McNamara, chairma of the United Building Trades of Cork; Mr Otley, general secretary of the Plasterers' Asso ciation, numbering 5,600 members; and Mr Dew, secretary of the London United Buildin Trades' Committee, were also examined.

* * *

At the half-yearly meeting of the West Metropo litan Tramways Company held on Monday, it wa announced that a tender had been accepted £13,000 cash, for the reconstruction of the main li from Hammersmith to Kew by a double line.

It has been decided to restore the parish church Ewell, Surrey, and to lengthen the structure by a extension of the chancel eastwards. Over £3,5 has been promised towards the scheme, the plans f which were prepared by Mr. Thomas.

The English Benedictine Monastery at Ampl forth, near Helmsley, is about to be rebuilt on more extensive scale, and a monastic church a preparatory school are among the fresh feature Mr. C. Walker, of Grey-street, Newcastle-on-Tyn is the architect.

An inquiry was held on Wednesday week General Carey, an inspector from the Loc Government Board, at Thornhill, touching application by the sanitary authority for sanction borrow £26,346, to defray the cost of carrying o sewerage works and works for sewage dispos The witnesses examined were Mr. J. H. Dyso clerk to the board, and Mr. Haller, C.E., t board's surveyor.

CITY OF COVENTRY PUBLIC BATHS COMPETITION.

[WITH LITHOGRAPHIC ILLUSTRATIONS.]

SECOND PREMIATED DESIGN.

THIS design, submitted by Messrs. Giles, Gough, and Trollope, under the motto "Experience," was placed second by Professor T. Roger Smith in a recent competition. The first place was given by the assessor to Mr. Burgess, of Queen-street, Cheapside, who, acting in conjunction with Messrs. Spalding and Cross, is now carrying out the work. There are ten first-class men's baths, ten second-class men's baths, and on the first floor, over the first-class men's baths, are placed the ladies' baths, and over the ten second-class men's baths the remaining ten required. To the rear of this block are placed side by side, lengthways, the two first-class baths, and beyond these the second-class bath, and at the extreme end the boiler, washhouse, drying-horses, &c., with yards, with entrances for coal and materials. For the sake of convenient description we call the swimming-baths first class, second class, and third class. The first-class swimming-bath is 90ft. long by 35ft. wide in the clear, and 104ft. by 50ft. in clear of walls. The depth of water is 3ft. 6in. at one end, and 7ft. at the other, when the bath is full. There is an ample supply of dressing-boxes, and a gallery running over them on all sides of the bath for spectators, with two distinct stone staircases entering from the corridor, and one from the bath itself. The roof of this bath is of pitch pine, of special design and strength, for attaching apparatus so that it can be converted into a gymnasium in winter. The second-class swimming-bath is 90ft. long by 35ft. wide, and 104ft. by 50ft. in clear of walls. This bath has a sufficient number of dressing-boxes provided of the size required. The depth of water is the same as the first class. The third-class bath is also 90ft. long by 35ft. broad and 102ft. by 48ft. in clear of walls. The depth of water is the same as the others. There is a "soap hole" or plunge bath, 10ft. by 8ft. 6in., and a shower-bath is suggested in the corner of this bath if desirable. To all these baths the necessary urinals and w.c.'s are provided. The ends of baths are rectangular with rounded corners, and all steps, &c., are recessed into the walls, and there is no fixed obstruction below water in either case. The first-class men's private baths are provided on the left-hand side of centre of building; they are each 7ft. by 6ft. 6in., with a waiting-room, attendant's room, w.c., &c., in connection. On the first floor over these are placed the ten ladies' baths, four of which are first class and six second class, also with separate waiting-rooms, w.c.'s, &c. The ladies' baths are approached from Priory-street by a separate and distinct entrance, with ticket-office attached. In the exact centre of the front block in Priory-street is placed the superintendent's office, with ticket-office adjoining. On the left of this centre is the entrance for first-class men's baths, and on the right the entrance for second and third class men's baths. The ticket-office is so arranged that all men's tickets are supplied from it; but the two entrances are perfectly separate and distinct, and the second and third-class baths are entirely shut off from the first class. On the extreme left of the front block is placed the ladies' entrance to their private baths on the first floor. This entrance is also arranged to communicate with the first-class swimming-bath by means of a corridor at the back, so that this bath can be available for the use of ladies when desired, and yet be completely and entirely shut off from men on those days. On the extreme right of this front block is placed an entrance or exit for the third-class swimming-bath when required. It is thought that this exit would be very useful in case of a crush, and might be arranged with a turnstile, so that it could be only used for exit, or there might be occasion when it would be desirable to use it for an entrance. The superintendent's residence is placed exactly in centre of front block, and has a good, well-lighted staircase, approaching the private rooms from the first-class men's corridor. In the basement are kitchen and offices. The superintendent's office is on ground floor. On the first floor is a sitting-room with bay window, and a bedroom (or second sitting-room if desired) of similar size, a w.c., housemaid's sink, and store-room. On the second floor are two good bedrooms, and a servant's bedroom and box-room. It will be observed that the rooms of the residence are conveniently situated, easy of access, and well lighted, and the central position gives complete supervision over all parts. There is a separate entrance for tradesmen to basement provided for delivery of goods, &c. To the rear of the third-class swimming-bath is placed the boiler-house, with provision for heating "at least one of the swimming-baths" as required, but the authors have provided for space and power to heat more than this without difficulty should it be required. A washhouse, with the necessary hand machinery, is provided, with a sufficiency of drying-horses heated by steam from the boilers. A large coal store, with boiler-house yard and laundry yard walled in, are also shown. The materials proposed to be used are local red bricks for the general walling. The fronts to be faced with pressed red bricks, and the dressings, mouldings, &c., of red Corsehill or other approved stone. The walls of swimming-bath would be pointed. The swimming-baths would all be lined with glazed bricks set in cement below the water-line. The curb all round baths would be grey York stone, and the floors in front of boxes laid with tiles. The private baths would have fireproof floors laid with tiles and tiled dadoes. The floors of all corridors would be of hard-pressed tiles. It was proposed to lay wood-block paving except to upper floors of house, which would be tongued boarding on joists. The roofs of two swimming-baths would be wrought iron with cast-iron struts, &c., and covered with slates and boarded on inside. The heating for at least one swimming-bath and private baths is proposed to be effected by two boilers placed in position in boiler-house. These would be 16ft. long by 5ft. diameter, Lancashire boilers, with Galloway tubes and all latest improvements. Each boiler arranged to work steam or hot water. Water in the swimming-bath would be heated by a pipe taken direct from the boiler to the shallow end of bath, with a branch to the deep end, also entering boiler. Boilers arranged with two valves so as to work steam or hot water as required. The hot-water supply to private baths, &c., would be by a super-heater heated by steam, and a cold-water tank in the reof would be provided in connection with this, containing about 5,000 gallons. The baths would be porcelain for the first class, enamelled iron for second class. The swimming baths would be ventilated through skylights in roof, the side lights of which would be able to be opened at will as much as desired by a lever in bath-house, and also by side ventilators, as shown. The smaller rooms, private baths, &c., would have inlet ventilators and outlet ones for exhaust, on Boyle's or other approved principle. As regards estimate, the authors were satisfied that their design could be carried out in a good substantial manner, including the engineer's works and fittings, &c., complete, for about the sum of £13,000.

◆

CHIPS.

In an action brought on Tuesday by a working builder named Ford, living and carrying on business in Torrington-mews, against Messrs. Shoolbred, of Tottenham Court-road, £150 was recovered as damages for injuries to the head sustained by plaintiff's son, aged four, alleged to have been caused by the negligent driving of a van by one of defendants' men.

The committee for the restoration of St. Mary's Church, Warwick, decided on Tuesday to adopt the report of Mr. J. A. Chatwin, the architect, for taking down the galleries and removing the organ at a cost of about £3,000.

On Tuesday morning an accident—so far attended without loss of life—occurred on the Overhead Railway at Liverpool. A scaffolding, on which some 17 men were working, at a recently-erected bowstring bridge, which crosses the approach to the Landing-stage, suddenly collapsed. The men were precipitated to the ground, and twelve of them were more or less seriously injured.

An inquiry was held at the local board offices, Watford, on Friday, before Colonel Luard, R.E., one of the Local Government Board inspectors, into an application by the local board for permission to borrow £3,000 for works of water supply, £700 for street improvement, £300 for furnishing their offices, and for consent to apply the unexpended balance of a loan of £2,000 raised by them for works of sewerage to the execution of works of water supply.

At a meeting on Saturday of the Shropshire County Council, Mr. Alfred H. Carrell, district surveyor to the Norfolk County Council, and Mr. Henry John Hawkins, surveyor to the Stratton Highway Board, North Cornwall, were appointed divisional surveyors to superintend the main roads of the county.

COMPETITIONS.

Aston Manor, Birmingham.—Proposed Technical School.—At a meeting of the general committee of the above, held on the 29th ult., the designs under *nom de plume* "Science and Art" were accepted, and the author of them, Mr. Geo. H. Cox, of Birmingham, was appointed architect for the new buildings.

Beaumaris Pier. — The town council received, on Tuesday, designs for the proposed new promenade pier submitted by A. Sutter, C.E., Edinburgh; C. H. Beloe, C.E., Liverpool; T. Geddes, Leytonstone; J. Gillespie, Darlington; W. Gregory, Cheltenham; G. Ramage, Glasgow; R. Lethbridge, Tapscott; A. Steadman, Manchester; R. G. Thomas, Menai Bridge; C. P. Fowler, Preston; C. F. Bamford, C.E., Liverpool; Mayoh Bros., Manchester. A sub-committee was appointed to examine and select a plan, and to report to a special meeting on the 16th inst.

Birmingham General Hospital. — Mr. Alfred Waterhouse, R.A., the assessor in this competition, commenced the examination, on Monday, of the eleven sets of plans sent in, which are hung in the mayor's drawing-room at the council-house. The hospital is to accommodate 117 medical and 156 surgical in-patients of the ordinary class, besides 31 beds for special cases, making a total of 304. The full-sized wards are to contain 24 beds each. It is required that the out-patient departments shall be separate from the in-patients except for a communicating corridor, but that there shall be but one entrance. For the out-patients a central waiting-room is needed capable of seating 400 people, with casualty rooms, consulting rooms, and a dispensary suitably disposed in connection with it. In addition to the foregoing, provision has to be made for the various administration offices, for a lecture theatre, and domestic accommodation for the resident staff, which, including 80 nurses, extends to nearly 130 persons. The estimate of cost suggested by the committee is £80,000. All the competing architects have concurred in pointing out that a larger sum of money will be needed to provide the requirements than this estimate. Some of the designs, in an endeavour to keep within the stipulated sum, are so severely treated as to be suggestive rather of a workhouse or barracks than of a hospital. The whole of the designs are for brick buildings, with either red or buff terra-cotta dressings. The Queen Anne style, or some modification of it, is adopted by the majority of competing architects, evidently, the *Birmingham Post* suggests, for the reason that this style affords a façade in which large square windows, embellished by very simple mouldings, are a predominating feature. The site of the new hospital is almost square, having frontages to Steelhouse-lane on the south-east, to the Weaman-row side of St. Mary's-square on the north-west, while Whittall-street and Loveday-street will be the boundaries on the two other sides. Most of the designs show an administrative block and out-patient department fronting to Steelhouse-lane, and a long main communication from Loveday-street to Whittall-street, with wings projecting to the right and left of it, either opposite to one another or alternating, first a wing to the left and then one to the right. The wings, in some instances four in number, terminating towards St. Mary's-square, are treated more or less picturesquely. In several designs two of the wards on the St. Mary's-square side are circular or oval, the object being to secure as much sunlight as possible. In all the designs most of the buildings are in three stories, giving wards on the ground and first floors, with domestic accommodation on the second floor. In the administrative block, however, a larger number of floors is shown in many designs. One design is worked out so as to harmonise in style with the Victoria Courts, and another design is Scottish Gothic in character.

Shrewsbury.—The battle over the plans for the new police-station was resumed at a recent special meeeing of the town council, when a vigorous attempt was made to reopen the whole question with the view of obtaining for one of the competing and unsuccessful architects a chance of amending his plans in accordance with the requirements of the council. This was urged on the plea that there had been some dubiety in the decision of the professional umpire, as well as some misapprehension as to what the council had really desired from the architects competing, but an overwhelming majority, averse to any reversal of a preceding resolution, again decided the issue in favour of "Well Considered" (Mr. John Johnson, Queen Victoria-street, E.C.), who was further appointed architect for the new buildings, subject to the approval of the Home Secretary. The discussion was interspersed with indirect attacks upon the council's choice of a site, but the decision to build in Scotland-yard, College-hill, was adhered to.

Sunderland Lunatic Asylum.—In this competition it transpires that the authors of the design which received the second premium are Messrs. Hine and Odgers, of Plymouth, whose motto was "Turpi Sincernis Honestum." As we stated last week, the town council, on the recommendation of Mr. C. H. Howell, the referee, awarded the first premium to Mr. G. T. Hine, of Westminster, and the third to Messrs. Giles, Gough, and Trollope, of Charing Cross.

Wandsworth.—The Asylums Committee of the Middlesex County Council have advised the adoption of the design by Messrs. Stock, Page, and Stock, of London Bridge, for the new idiot annexe, near Tooting. The cost of the buildings will be from £30,000 to £40,000. There were six competitors invited who sent in plans. Further consideration of the matter is postponed till the next council meeting.

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ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

Edinburgh Architectual Association.—This association visited, on Saturday afternoon, St. Nicholas' Church, Dalkeith. Mr. Hippolyte J. Blanc, who conducted the party, described it to be one of the collegiate churches, so many of which were founded in Scotland during the 15th century. A few were erected at the end of the 14th century, of which he noted that at Dalkeith as one. Mr. Blanc traced the various changes which the fabric had undergone, explaining in detail the characteristic features in the door, windows, and buttresses. He also illustrated his exposition by a series of drawings prepared from measurements of several other collegiate churches built during the 15th century, and which all show the characteristic detail found at St. Nicholas'. The party subsequently proceeded to Newbattle Abbey. Mr. Archibald Macpherson acted as leader. The abbey stands on a site of a Cistertian monastery founded by David, 1140. The excavations made by the directions of Lord Lothian several years ago exposed the foundations of the church and some remains of the walls of the conventual residence. The church which measured 239ft. by 57ft., consisted of nave with aisles, short transepts, and square-ended apse. Newbattle was burnt by Richard II. of England, but was restored in the 14th century. The party afterwards visited the mansion house.

Leeds and Yorkshire Architectural Society.—On Monday Mr. A. Beresford Pite, F.R.I.B.A., of London, read a paper on "The Architecture of Michael Angelo." After describing the early life and training of the great architect, sculptor, and painter, the lecturer said Michael Angelo did not undertake architecture until he was forty years of age. He was born in 1474, and died in 1563, at the age of 90 years, having spent 70 years in working. He was the contemporary of Raphael, Bramante, and St. Gallo, who all died before he had begun his work at St. Peter's. Bramante began St. Peter's in 1502, and Michael Angelo followed him in 1540. The church was not completed till the next century. His work was characterised by great originality, breadth of treatment, majestic form, and vast scale. He was a dangerous example to weak men, but stimulated with enthusiasm any who desired to emulate his originality. His artistic life was a trouble to him on account of the rivalry of his friends, as well as jealous foes. Some of the best of his work was done for the Medici family, for whom he built the celebrated tomb at Florence. It was under the patronage of this family, as Popes, that he was employed at St. Peter's.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. Passmore Edwards.

TERMS OF SUBSCRIPTION.

One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 0d. (or 6dols. 30c. gold). To France or Belgium, £1 6s. 0d. (or 33fr. 30c.) To India, £1 6s. 0d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minumum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front Page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No front page or paragraph Advertisement inserted for less than 5s.

Situations.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is One Shilling for Twenty-four Words, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., L., LI., LIII., LIV., LVIII., LIX., and LX. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

Received.—O. S. R.—M. T. P. Co.—Oliver.—J. G. W.—N. and T. S. Co.—Semper Fidelis.—B. T. and Co.

"BUILDING NEWS" DESIGNING CLUB.

Drawings Received.—"Ich Dien," "H" in a circle, "Excelsior," "Yorkshire Tradition," "Nobut-a-yun-un," "Gargoyle," "Wyandotte," "Ilex," "Van Demon," "Glencoe," "Tyro," "Unitate Fortior," "Point Dexter," "B" in a circle," "Excelsior" (Oldham), "Westward Ho," "Cruiser," "The Idler," "La Cigale," "Jap," "Hardwick," "Smilash the Goth," "Phœnix," "McGinty," "Signor C," "Boreas," "Ray" (we cannot undertake to return any particular roller), "Compass Box," "Toiler of the Sea," "Baluster," "G" in a circle," "Norman," "Red Lion," and "Flute."—For Cottages: "Jean" (too late), "Sweet Auburn" (ditto).—For Post-office: "Alphal," "Vulcan" (your drawing was received).

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Correspondence.

REGISTRATION WANTED.

To the Editor of the Building News.

Sir,—In your issue of the 26th Feb. a letter appeared under above heading. As a provincial architect in a good position, I trust you will allow me to suggest that the present state of things in the profession is a disgrace to every architect, and unless the social position of architects is to rank somewhere on a level with those who adopt the title of architect, something must quickly be done. If the R.I.B.A. is to rank as a "select London Club," all well and good; *if not*, it is their duty to help us in this matter to obtain Registration. This latter is the most important matter that has ever been brought forward since the Institute had their Charter, yet they not only stopped the Registration Bill, but refuse to give us anything in its place, thereby deserving little support at the hands of any provincial architects. A provincial F.R.I.B.A. told me, only a few weeks ago, that "in his town there is a sweep whose name and trades appear as 'Sweep and architect' over his door." I know in my own town of several carpenters, builders, &c., several of whom can hardly sign their own names, practising as architects, and their name appearing as such on buildings they "drew out plans" for—the latter they obtain from books, and *design* (?) elevations to fit these, ignoring all the laws of design and construction, heavy brick and stone parapets surmounting wooden oriels, &c., gables being finished with "*ornaments*" in wood or cement, which I can only compare to "distorted looking-glasses," independent of the injury done to "*other*" architects. I studied architecture, from an artist's point of view, in John Ruskin's drawing school, and I am sure such buildings tend greatly to deprave the public taste, and are perpetual monuments of disgrace to our leading architectural bodies, and practically an *everlasting* annoyance to the eyes of every educated Englishman. Surely our R.I.B.A. cannot be wilfully blind to this sort of thing? They have done nothing, however, to lessen and prevent future competition from carpenters, sweeps, jerry builders, &c., practising as architects. I recollect Mr. Cates once saying "that tradesmen and the public generally would soon learn to appreciate the qualification of members of the Institute," and this would check such people practising. This is theory only, and "won't work." I have seen far more of provincial practice than Mr. Cates, and I maintain that tradespeople and the middle-class general public will continue to do as their fathers did before them, and go to the cheapest market for their plans, as they do for their goods. Registration is necessary, if only to protect such people "*against themselves*," and is equally necessary for architects as for lawyers and doctors. In conclusion, I shall be only too pleased to subscribe towards a fund to help procure Registration, and I am sure my brother provincial architects will do the same; if they do not agitate and combine for their own interests, be sure no one else will.—I am, &c.,

Feb. 27. S.

BLACKBURN NEW PAUPER LUNATIC ASYLUM COMPETITION.

Sir,—On the 31st October, 1891, instructions to architects practising and having offices in Blackburn were issued by the town clerk for the above competition. In clause 10 are the following words:—

"Each set of plans and drawings and description must be marked by a motto or device which has not been previously used by the competitor, and be accompanied by a sealed envelope, bearing the same motto or device, and containing the name and address."

On the 29th February (the day for sending in the designs) the borough surveyor sent one of his assistants round to the various architects in the town to ascertain the size and number of the framed drawings they were that day sending in, ostensibly that he might get the packing-cases made for sending each competitors' drawings off to Mr. Hine, architect, Plymouth, on the following day, to be reported upon by him as referee. Now, Sir, as the size of the mounted drawings for such a large building is left to the discretion of each competitor, and will doubtless be of various sizes, is not this plan of the borough surveyor likely to prevent clause 10 being kept? We might just as well have added our respective names to the designs, for the measurement of the drawings being known to the borough surveyor would place it in his, or his assistants', power to disclose that which should be kept secret; and although we have no reason to think that all is not fair and above suspicion in the conduct of this competition, we would suggest that, in the interests of the eleven competing architects, also to prevent any suspicion of collusion between the referee and the borough officials, the designs should be sent on from Plymouth to the Local Government Board for their opinion as to which is the best before the Building Committee give their award.—I am, &c., A. Competitor.

WHAT IS SUPERINTENDENCE?

Sir,—Your leading article in this week's issue, headed "What is Superintendence?" points so directly to a case in which I am personally interested (Rogers *v.* James) that I hope you will excuse me for again intruding myself before your readers.

I need not traverse again the points of the case—they are so clearly rendered in your leading article; but I wish to reiterate your last paragraph, in which you say: "There should rtainly be issued by authority a clear and efinite statement of what architectural superntendence really ought to be. We commend ie matter to the attention of the societies which epresent the profession."

Allow me to say that I have placed this case efore the R.I.B.A., and I have been informed y their secretary that the council consider "it is ndesirable to take any action."

Perhaps now that attention has been called to he matter and its serious consequences to the rofession by your powerful pen, some more nfluential member will endeavour to do what I ave done ineffectually. My efforts to obtain ustice from Judge and jury have landed me in a rushing load of debt, which I can never hope to ecover.—I am, &c. FREDK. ROGERS.

29, Freelands-road, Bromley, Kent, March 1.

THE MINIMUM HEIGHT OF ROOMS.

SIR,—I was surprised to read in your issue of the 26th inst. the remarks made by Professor Banister Fletcher at a recent meeting of the Society of Architects, and his opposition to the proposed minimum height of rooms being raised from 7ft. to 8ft. Professor Fletcher said: "Surely to be logical the height should depend upon the size of the apartment and its purpose; the 8ft. minimum was mere arbitrary guess-work, unsupported by medical or scientific data, being merely theory and not practice." This language by Professor Fletcher may sound well in the ears of some people, but to me it does not appear to be based on either theory or practice. Let a room be ever so extensive in its floor, and the vitiated air will accumulate near the ceiling, and if proper means of ventilation is not adopted (which is hardly ever the case) will, in a short time, cause a room with a low ceiling to become extremely unhealthy. I have known myself hundreds of cases where bedrooms ranging (as many of them do) from 6ft. to 7ft. in height, have been the cause of generating typhoid and many other diseases, and as a result my own Board, whilst amending their building by-laws under the powers conferred upon them by the adoption of the Public Health Acts Amendment Act, 1890, have asked the Local Government Board to fix the minimum height of all habitable rooms at 8½ft. I am certainly of opinion that the fixing of a minimum height for habitable rooms is of far more importance than an unlimited floor area.—I am, &c.,

W. FRASER, A.M.I.C.E., &c.,
Surveyor City of Llandaff and Cardiff Union.
February 29.

DRAINAGE REGULATIONS.

SIR,—In your report of the meeting of the Society of Architects, held on Tuesday, the 23rd inst., I am made to say that there are no drainage regulations at "Holloway"; this should have been "Holborn."

Kindly insert this correction, as Holloway is in the district of Islington, I believe, where there are drainage regulations more or less efficient.—I am, &c., EDWARD TIDMAN.

Connaught Mansions, Victoria-street,
Westminster, S.W., Feb. 27.

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The guardians of the St. Olave's Union approved the designs for a new dispensary to be built in Bermondsey. The estimated cost of the building is £2,000, and the architects are Messrs. Newman and Newmam, of 31, Tooley-street, London Bridge.

The Oxford-street Schools, West Hartlepool, which were built two or three years since for about 600 children, are now found too small for the district. The board have, therefore, intrusted the architect, Mr. J. P. Pritchett, of Darlington, to carry out an upper grade school for about 500 more children on adjoining ground.

The Infectious Diseases Hospital, Norwich, is being warmed and ventilated throughout by means of Shorland's patent Manchester stoves with descending smoke-flues, the same being supplied by Mr. E. H. Shorland, of Manchester.

Alterations have been made to Lloyd's Bank, Cardiff, embracing the ventilation, which is now carried out on the Boyle system, the latest improved form of the patent self-acting air-pump ventilator being adopted for the extraction of the vitiated air.

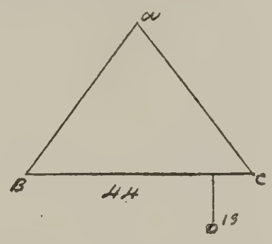
Mr. Silvanus Trevail, architect, of Truro, has just been returned unopposed as the representative in the Cornwall County Council for the Eastern Electoral Division of that city. Mr. Trevail's return in the first County Council for the same division was also unopposed.

Intercommunication.

QUESTIONS.

[10734.]—**Gothic Architecture.**—May we assume that the terms "Gothic architecture" and "Christian architecture" are synonymous; and may we take it as a fact that no Gothic architecture existed prior to the Christian era?—HENRY R. CLIFTON.

[10735.]—**Statics.**—A uniform beam, weight 44lb., is suspended at the point *a*, by two strings of equal length, from its extremities B and C. At the point D a weight of 13lb. is suspended. Determine the equilibrium of the beam. Will any reader explain the solution of this and similar problems?—ASPIRANT.



[10736.]—**Bridges.**—Will someone inform me what is the number of arches, with their span and height, supporting the stone bridge over the Tiber at Rome? Also the same particulars of the stone bridge over the Aire at Ferrybridge, Yorkshire.—R. A. H.

[10737.]—**Tenant's Fixtures.**—A tenant has erected during his term of 21 years' lease several buildings constructed of timber, and covered with corrugated iron, on a low brick foundation; in one case a school dormitory connected with the main building, and in another a chapel, attached to same by a corridor. I presume that both these erections would undoubtedly come under the head of Fixtures, and could not be removed by the tenant at the end of his lease. Am I right in my supposition?—H. E. W.

[10738.]—**Sheet Glass.**—Will someone kindly inform me how to detect the difference between (sheet-glass) a good quality of third, and a poor quality of second? Also, as sheet glass varies in thickness in one sheet, how can I tell what it should measure, or what it should weigh?—CHAS. PITTS.

REPLIES.

[10705.]—**Ventilation of Stables.**—If your correspondent in your issue of Jan. 22nd will communicate his address, we will forward him a copy of our "Notes on Stable Ventilation." We had intended replying to his question before, but have been prevented by press of other matters. There is, however, little in his proposed system of ventilation with which fault should be found. We are taking the opportunity of forwarding you one of our new stable catalogues.—HAYWARD BROTHERS AND ECKSTEIN, 187, Union-street, Borough, S.E.

[And a most useful and comprehensive catalogue it is—one which should be in the hands of all architects, builders, and others interested in this class of buildings and their fittings.—ED. B.N.]

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CHIPS.

Some damage was done by fire a year ago to St. Benet's Church, Paul's Wharf, used by the Welsh community, and the City Commissioners of Sewers, being dissatisfied with the work of restoration, erected a scaffolding round it. This was afterwards removed, but the Commissioners claimed to be recouped £51, the outlay upon the work. As this was refused, they threatened to sell the church. The dispute was brought on Friday before Mr. Justice Charles, who granted an injunction restraining the Commissioners from carrying out their threat.

The Dover corporation decided on Saturday to adopt a plan for street improvements in the borough, including a new drive from the rural part of the town on to the Marine-parade, opposite where the promenade pier is being constructed, and the widening of part of the main artery of the town. The cost of the work, which is part of a larger scheme, is set down at £40,000.

A new cottage hospital is about to be built at Willesden, from the designs of Messrs. Newman and Newman, of 31, Tooley-street, London Bridge. The accommodation to be at first provided is for nine beds, with the necessary offices; but the plans provide for the future extension of the building to accommodate eight males and eight females, with a separation ward.

A new parish room is to be built at Wormley, Herts, from the designs of Messrs. Newman and Newman, architects, of 31, Tooley-street, London Bridge.

Mr. Passmore Edwards has sent to the Rev. S. A. Barnett a cheque for £6,454, to defray the whole estimated cost of building the Whitechapel Free Library. The sum already received will pay for the site, the fittings, and the books, so that the whole amount of the rate will be available for working the library.

Legal.

LESSEES' LIABILITIES.

THE legal liabilities of a lessee are various and numerous, and when the property leased is situated in a crowded thoroughfare, and sublet to all sorts of tenants, these liabilities may seem to be very much increased. A lessee of a house having a cellar-flap opening on to or in the pavement of the highway, would, for instance, be responsible in damages for any accidents arising from its use, if it were in itself so dangerous as to be regarded in law as a nuisance. If, however, it were not in itself dangerous, then the lessee of the whole premises could not be made liable in damages for injury to a stranger arising from its use, unless negligence can be proved against him or his servants, and the person legally responsible would be any under-tenant using the cellar-flap negligently. This is of course, not a new point, but it was very well illustrated in the recent case of "De Boos v. Collards" (*Times*, 17th Feb.), which was an action in the Mayor's Court, London, wherein the plaintiff sued Collard's, of Cheapside, for injury to him while passing along the highway, caused by the sudden opening of a cellar-flap in front of their shop. It appeared that the defendants were lessees of the whole house, and they occupied the ground floor and back basement; but they did not occupy the front basement or cellar beneath, which were, in fact, used by some of their under-tenants of the other floors.

At the trial it was proved that the accident arose from the sudden opening upwards of the cellar-flap; but no evidence was given of it having been raised by any servant of the defendants, and, in fact, it appeared that they had not used the cellar for some years. An inspector of pavements was called to prove that the flap, if opened upwards without warning, would be dangerous to persons passing by at the time, which, indeed, is obvious enough; but he did not consider it dangerous in itself, or he would have interfered with it as a nuisance. On these facts defendants submitted that there was no case; but the judge holding there was, left it to the jury, who gave a verdict for plaintiff with £55 damages. This ruling a Divisional Court have now promptly reversed, on the ground that there was no evidence whatever of any negligence on the part of the defendants or of their servants, who, in fact, did not use the cellar or the flap. The Court also held that the flap was only dangerous when opened suddenly, and without warning, and so was not a nuisance for which the lessees of the whole premises could be made liable. At the same time, it must be admitted that these flaps opening upwards and outwards in the very footway of a crowded thoroughfare, are so dangerous as to need great care in their proper use, and it would be well if some better method could be devised, so as both to prevent accidents and save litigation.

FRED WETHERFIELD, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

NOTE.—All questions for reply in this column must be headed "BUILDING NEWS," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

INQUIRER.—SHOP FRONT.—LIGHTS.—I do not see that A can in any way prevent B from putting up the shop-front as stated in the plan. But probably the consent of the local authority would first have to be obtained. As to A's right of light in end shop-window, it does not appear to have been opened for 20 years. Even if it has, moreover, it is not a real front light at all, and could hardly be reduced by B's building. If there is anything in this point, it could be got over by B's putting glass window here instead of wall.

W. E. D.—CARRIAGE OF GOODS.—OWNER'S RISK.—Something may depend on the form of the risk note signed. But, broadly speaking, a railway company can contract itself out of all liability for damage caused by negligence, short of such gross and obvious negligence as amounts to misconduct on the part of their servants. In this case, the fact showing how and where the damage was done, would practically decide the issue.

H.—ANCIENT LIGHTS.—NOTICE.—It does not appear to me that the outbuilding erected by A does, in a legal sense, substantially reduce B's light and air. Then there is the difficulty that B bought his house with notice of A's building, which was put up some time before, and so I see no ground for action.

A. B.—LOAN SOCIETY.—Yes; each surety is liable for the whole loan, and they can proceed against you—leaving you to get back what you can from the other sureties or from the principal debtor.

LEGAL INTELLIGENCE.

Damages against a Building Firm.—On Monday, the 22nd Feb., a jury case, of interest to the trade, was heard at Bow County Court, before Judge Prentice, under the Employers' Liability Act, by which Charles Phillips, labourer, of 7, Croydon-road, Plaistow, sought to recover £100 from Messrs. Atherton and Latta, builders and contractors, for injuries sustained through defective plant. On November 28th last plaintiff was engaged at buildings in course of erection in Farringdon-street. He assisted in lifting granite blocks on to rollers by an automatic jack. After two had been lifted 10in. in height, the jack would not descend, in consequence of the thumbscrew being out of order. On resuming work next morning, plaintiff called the attention of the foreman, Thomas, to the jack, who replied, "Do the best you can; if we send the jack to Manchester, it will be three weeks before we get it back, and the work must be hurried on." In consequence, plaintiff put a quantity of wooden padding between the rollers and the jack, and raised the jack a second 10in., when it suddenly came down, the wooden padding struck plaintiff, who was a yard and a half distant from the jack, violently on the right leg, and fractured the main bone in two places. He was removed to St. Bartholomew's Hospital, where he was an in-patient for seven weeks, and was still an out-patient. He earned 35s. per week. Plaintiff's statement was corroborated by three of his fellow workmen. For the defence, it was contended that the accident was the result of plaintiff's own negligence, but no evidence was called. The jury returned a verdict for plaintiff for £50, and his honour certified for costs.

Extra Work. — A difference having arisen between the contractors, Messrs. Staines and Son, and the owners of some buildings in Marylebone, the matter was referred to Mr. Henry Currey, and after a careful investigation of the facts, he made an award giving the builders a very small sum over the amount offered, and condemning them to pay four-fifths of the costs. Messrs. Franklin and Andrews were surveyors for the plaintiffs, and Mr. Henry Lovegrove was surveyor for the defendants.

Surveyor's Fee for Negotiating Purchase.—This was an action in the Mayor's Court, Guildhall, brought by Mr. Henry Lovegrove, of 26, Budge-row, City, against Messrs. Truman, Hanbury, and Co., the well-known brewers. Mr. Lewis Glyn (in the unavoidable absence of Mr. Edward Boyle), instructed by Messrs. Angrove and Bromwich, appeared for the plaintiff, and Mr. Paul Taylor, instructed by Messrs. Hawbury, Hutton, and Whitting, appeared for the defendants. Mr. Lovegrove stated that in the autumn of 1889 he was acting for the defendants' lessees in Fetter-lane, and when at the brewery on a day in November of that year the acquirement of an adjoining slip of land was discussed, and Mr. Fraser requested the plaintiff to try to purchase the property. After this, for some weeks, the plaintiff was in communication with the vendors, and eventually purchased the land conditionally on giving up some rights of light. The defendants' evidence proved that such an interview took place; but they considered that plaintiff was acting on behalf of their tenant. The judge, in summing up, pointed out that the land was conveyed to the defendants, and afterwards sold by them, and it was evident that the plaintiff, and nobody else, had arranged the matter. The jury gave a verdict for the plaintiff for the amount claimed and costs.

Commissions from Builders' Merchants.—At the Bow County Court, on Friday, before Judge Prentice, Thomas Jones, a builder's traveller, of Clapton, sued Messrs. Young and Marten, builders' suppliers, of Stratford, E., for £21, commission on building materials sold. Plaintiff's case was that on Saturday, Nov. 21st, he introduced Mr. Hollands, architect, to the defendant's manager, and Mr. Hollands selected goods and building materials to the value of over £69, for Messrs. Joscelyne and Young, builders. His commission on that would be at the rate of about 23⅓ per cent., the commission to be paid at the end of two weeks. Plaintiff made six applications for the commission, but was put off with excuses; but in the last letter defendants wrote that they should pay Mr. Hollands the commission, although Mr. Hollands told defendants when he selected the materials that, as an architect, he never accepted any commission, and that it should be paid to plaintiff. Mr. Hollands corroborated this statement, and said he was "very clear and emphatic" when he selected the goods to tell defendants that any commission was to be paid to Jones, excepting the 10 per cent. to the builders, Joscelyne and Young. Defendants always paid 33⅓ commission, 23⅓rd to the party who brought the order, and 10 per cent. discount to the builders when the account was paid. Mr. Ogle, for the defendants, raised three points—firstly, that plaintiff was paid as a weekly servant at the time the order was given; secondly, that as the order was given by Mr. Hollands the commission could only be due to him, and Mr. Hollands could please himself as to giving Jones a sub-commission; and, thirdly, that no commission was due until the account was paid. On this Saturday Jones had notice to leave as their weekly traveller, and would have left. Defendants' works closed at two o'clock, and the order was brought between one and two. Hollands was told that the commission would be paid to himself. He further asserted that defendants had applied to Messrs. Joscelyne and Young, the builders, four times, for a settlement, but had never received a penny of the account. William Edwards, defendants' manager, corroborated the defence. His Honour gave judgment for defendants on the third point, that a commission could not be due until the account was paid, and he certified for costs.

District Surveyors' Fees.—At North London Police-court, last week, Mr. Haden Corser decided a case in which Mr. F. R. Meeson, district surveyor for North-East Hackney, claimed £1 3s. 3d., surveyor's fees, in respect of alterations made at a butcher's shop at 9, Five Elms-terrace, Lower Clapton. The defendant disputed the bill on two grounds—(1) That the surveyor had never surveyed the work, and, therefore, was not entitled to the money; and (2) because there had been no structural alterations as far as external or party-walls were concerned. Mr. Corser said, with regard to the contentions of the defendant, the Act said, "Any alteration, addition, or other work made or done for any purpose except for necessary repairs, in or upon any building, shall be subject to the regulations of this Act." If anybody wanted to make any alteration except for necessary repairs, they could not do so without giving notice to the district surveyor two days before the work was commenced. Then, with regard to the actual survey, the Act said that, in the absence of the required notice, "Any work being observed by, or made known to, the surveyor" he was entitled to charge his fees. The surveyor, in passing, observed alterations to defendant's shop-front, which, admittedly, were alterations. They might be trifling; but the law said "any alteration." He must find against the defendant. The defendant: If I alter the colour of the paint, is that an alteration? Mr. Corser: No. The defendant: If I put in a cupboard or a sideboard, is that an alteration? Mr. Corser: You had better ask the surveyor. You have altered your shop-front, and cannot deny it. The defendant: Yes, altered the fixtures. Mr. Corser: It does not matter, structural or not, you have made an alteration, and must pay the fee with 2s. costs.

Width of "New" Streets.—The case of the Wallasey Local Board *v.* the Gandy Belt Manufacturing Co. was heard on the 16th ult., in the Queen's Bench, before Mr. Justice Lawrance and Mr. Justice Wright. The case was an appeal by the local board from the decision of the justices with regard to an alleged infraction of the bylaws of the board with respect to the width of new roads and streets. In June, 1891, the defendants erected a row of buildings in Wheatland-road, near Birkenhead. Up to 1885 the bylaws of the local board provided that all new roads made should have a width of 36ft. But in 1885 new bylaws were made which provided that the width of any road exceeding 300ft. in length should be 45ft., and when the defendants proceeded to the erection of the buildings referred to, in 1891, the local board disapproved of the plans. The buildings, however, were completed, as the defendants held that they were only completing and not laying out a new road, and then the local board summoned the defendant company for that they did unlawfully lay out a certain street with less than the width of 45ft. as required by the bylaws of the local authority. The local justices decided that the defendants did not lay out a new street in such a manner as to bring them within the bylaws. The Local Board of Wallasey appealed, but their lordships now held that the appeal must be dismissed with costs.

Sewerage Difficulties at York.—In the Queen's Bench Division of the High Court of Justice, on Feb. 24th, Mr. Justice Mathew gave judgment in the case of Bottoms v. the Corporation of the City of York, tried before his lordship without a jury a fortnight since. Mr. Justice Mathew said this was an action brought by the plaintiff against the Corporation of York for breach of a contract which had been entered into by them with him in March, 1891, for the construction of sewerage works at York, and also to recover damages for an alleged wrongful seizure of his plant. The Corporation employed as their engineer, Mr. Mansergh, and he had prepared plans and specifications and the bill of quantities, upon which the tenders were invited. The specification contained no description, and no undertaking in respect of the soil. It was left to those who tendered to ascertain for themselves what the nature of the soil was. The specification was in the usual form, although in some respects a great deal more stringent as against the contractor than such documents ordinarily were. The plaintiff's tender worked out at something about £55,000, and was the lowest by £10,000. Mr. Mansergh's estimate was £5,000 higher than the amount of the plaintiff's tender. He (Mr. Justice Mathew) confessed he regretted that the Corporation allowed itself to be tempted to accept the tender of the plaintiff under the circumstances. The Corporation, however, accepted plaintiff's tender, and the work was proceeded with. Plaintiff soon found himself in difficulties owing to the sub-soil, and stated that he was ordered to reconstruct work time after time. Eventually the plaintiff, not being able to have any point decided in his favour by the engineer, appealed to the Corporation. The Corporation refused to grant plaintiff's application, gave him notice to proceed, and, on his refusal, took possession of the works. He did not see his way to relieving the plaintiff from his contract. His judgment therefore must be for the Corporation. At the same time he thought the plaintiff had been hardly used, and he expressed his regret that the Corporation did not do what they were entitled to do, that was to refuse the lowest tender. He gave them judgment, but it must be without costs.

PARLIAMENTARY NOTES.

Architects' Registration Bill.—The Bill for the Registration of Architects was introduced into the House of Commons by Mr. L. Atherley Jones, member for North-west Durham, on Wednesday afternoon, and was duly read a first time.

WATER SUPPLY AND SANITARY MATTERS.

Bexhill-on-Sea.—On Wednesday, the 24th ult., an inquiry was conducted at the Local Board offices, Bexhill, by Mr. Arnold Taylor, one of the inspectors of the Local Government Board, with reference to an application to borrow £1,520 for works of sewerage and sewage disposal. Mr. H. Bertram Nichols, C.E., of Birmingham, the consulting engineer, explained the scheme, and gave evidence in support of the application.

CHIPS.

Mr. Henry Poole, for many years Master Mason of Westminster Abbey, died on Friday in last week, the 26th ult., at the advanced age of 88 years.

The Richard Jefferies memorial will be inaugurated in Salisbury Cathedral on Wednesday next. The memorial—a bust—is by Miss Thomas, who executed the bust of Fielding for the Shire-hall, Taunton.

A Local Government Board inquiry was held at Bournemouth on Tuesday week, before Col. Hasted, into an application from the corporation of that town for sanction to borrow £24,000 for works of sewerage. Mr. F. W. Lacey, borough surveyor, produced the plans and explained the scheme.

Professor T. Roger Smith, F.R.I.B.A., was elected a member of the council at the annual meeting of University College held on Monday.

James Jelly, a joiner, fell from scaffolding outside a house in course of erection on the Castle Mona building estate, Douglas, on Friday, and was killed.

St. John's Church, Birkenhead, has been re-opened this week after internal decoration, carried out by Messrs. G. H. Morton and Son, of Liverpool.

Mr. F. J. Williamson, sculptor, of Esher, has submitted to the Queen, at Windsor, a bust of the late Duke of Clarence and Avondale, which he has been commanded by Her Majesty to execute.

On Saturday Sir John Lubbock, M.P., opened a new fire station for Wandsworth. The station, a building with a tower, is situated on the West-hill, and has cost £9,000.

The statue of Cardinal Newman will not be erected at Oxford, owing to the opposition made by the college dons. The committee are seeking another and more appropriate site for the monument.

In the House of Commons, on Tuesday, it wa agreed to support a Joint Committee of Lords and Commons to consider the best method of dealing with the various Electric and Cable Railway Bills, and to report whether such railways constructed underground will afford sufficient accommodation for traffic; and also whether the Bills propose satisfactory lines of route.

The first of the course of lectures on "Hygiene," under the auspices of the Technical Instruction Committee of the Essex County Council, was given by Mr. Edward Tidman, C.E., F.S.I., M.S.A., in the corporation schools at Harwich, on the 25th inst The lecture was fully illustrated by diagrams and the lantern, and was fairly attended.

At the meeting of the Preston Town Council o Thursday in last week, authority was given to the Ribble Committee to borrow a further sum o £61,000 for the purpose of the dock undertaking. At the close of a discussion on the position of the scheme it was stated that water would be let into the new dock on the 31st of March.

Our Office Table.

THE list of candidates nominated for the ndon County Council, the election to which kes place to-morrow (Saturday), includes the mes of three architects—Colonel R. W. Edis, S.A., who seeks re-election for South St. ncras; Walter Emden, M.S.A., a candidate the Strand; and Arthur Cawston, A.R.I.B.A., North Camberwell. Two civil engineers er themselves:—Henry Ward for Hoxton, d C. H. d'Avigdon for Whitechapel. Half-lozen builders come forward:—John Mars-ad, in Walworth, and R. Roberts, in South ington, seek re-election; while W. Goodman nds for West Islington, J. W. Dixon for rth Islington, F. Flexman for Hammersmith, d Alfred S. Bird for Bow and Bromley. enry J. Powell, glass manufacturer, is a lwich candidate, and Nathan Moss, whole-e cabinet factor, seeks re-election for Shore-ch. The labour candidates include John rns, the engineer, who again stands for ttersea; Joseph J. Chapman, street mason, Walworth; and Edward F. Cary, pavior, in lwich.

SIR JOHN COODE, K.C.M.G., the eminent gineer, died, on Wednesday, at Brighton, ed 75 years, after a long illness. He under-nt a severe operation in Italy last September. John began his engineering career under ndell, and for a short time was employed on Great Western Railway. As early as 1847 was appointed resident engineer at Portland rbour and breakwater, and, on the death of ndell, engineer-in-chief, in 1856, he con-ued in charge until the completion of this eat work in 1872, when he was knighted. In 6 he was appointed a K.C.M.G. He was for ny years consulted by the Board of Trade d other Government departments on matters nnected with harbours, docks, rivers, and inage. Among the important works carried t from his designs was the great breakwater d docks at Cape Town, the breakwater at lombo, the improvement of the river Ban Ireland, the harbours of the Isle of Man, d similar works elsewhere. He was a mem-r of the Royal Commission on Harbours Refuge in 1858-59, and of the yal Commission on Metropolitan Sewage scharge, 1882-83. The harbour of refuge w in progress at Peterhead, and the new rbour works at Dover, for which the Act was tained last Session, are from the designs of mself and his firm. Sir John persistently vocated the construction of a national har-ur at Filey, on the Yorkshire coast. He was esident of the Institution of Civil Engineers the years 1889 and 1890, was one of the yal Commissioners for the Colonial and dian Exhibition of 1886, and acted as presi-nt of the engineering section of the Inter-tional Congress on Hygiene, which held its tings in London in August last.

A METROPOLITAN meeting of the members the Incorporated Association of Municipal d County Engineers will be held on Friday d Saturday in next week, the 11th and 12th t. On the afternoon of the former day a sit will be paid to the Electrical Exhibition the Crystal Palace, under the guidance of . Carr, the engineer to the Crystal Palace Co. turday's meetings will take place at Ken-gton. These will open at 11 a.m. at Ken-gton Town Hall, where Mr. William Weaver, Inst.C.E., chief surveyor of Kensington, will d a paper on "Kensington: its Progress and ork," to be followed by a discussion. In the ernoon the members will proceed by brakes view the Recreation Ground, Notting Dale; nsal Wharf; Warwick-road and Pembroke-d depots; Electric Lighting Station, West ompton; the Salopian Wharf, Chelsea (the fuse Disposal Company's works); Wharf, ts-road, Chelsea; and the Kensington Court ectric Lighting Station. This long round of pection completed, the members will dine gether at the Holborn Restaurant.

THE new Brighton pier now in progress ll be 1,700ft. in length, or 500ft. longer an the West Pier. The promenade will be ft. in width, and at the head is a large vilion with side verandahs designed in the iental style, and capable of accommodating 00 persons. It will be used for concerts and other purposes, and will be 170ft. long by 80ft. wide, round it externally being sheltered seats and a promenade. In addition dining and grill rooms, smoking and reading-rooms are to be erected. There will be a landing stage for Channel and other vessels to land passengers at all states of the tide. The piles will be of cast iron, and carry lattice girders to support the promenade. Mr. A. Woodhouse, of Newport, Mon., is the contractor, and the design is by Mr. R. P. George Moore, Assoc.M.I.C.E. The engineer who is carrying out the work is Mr. A. Mayoh, of Manchester. The plan shows four square recesses, having an area of 5791sq.ft. each, with roofed structures for seats in the recesses. The head covers an area of 48,062sq.ft., and is an elongated octagon in plan.

THE annual spring exhibition at Southport was opened in the Atkinson Art Gallery in that town on Monday. The pictures number 721, of which nearly 200 are contributed by lady artists. Among the notable pictures are "The Violinist," by J. B. Burgess, R.A., now hung for the first time; the late Keeley Halswelle's "Banks of the Ouse," Henrietta Rae's "La Cigale" (shown at the Academy last year), "After an Entomological Sale" (containing portraits of Academicians), by E. Armitage, R.A., and "The North Terrace, Windsor Castle," by F. Goodall, R.A. Other works of interest are "The Mouth of the Dee," by J. T. Watts; "Pythia," by the Hon. John Collier; the well-known portrait of a pair of bloodhounds, entitled "Veterans," by J. S. Noble; and "Milan Cathedral," by T. Greenhalgh.

THE members of the Bath Master Builders' Association held their annual dinner at Fisher's restaurant, Northgate-street, on Feb. 23rd, when an attendance, which numbered about forty, including several honorary members from Bristol, was presided over by Mr. J. B. Mercer. Both Mr. J. Hayward, the president, and Mr. Jacob Long, vice-president, were prevented from attending through ill-health. After the usual loyal toasts had been honoured, Mr. J. W. Knight proposed the "Army, Navy, and Reserve Forces," to which the chairman suitably responded. Mr. Budgett, of Bristol, gave the toast of the evening, the "Bath Master Builders' Association," which was enthusiastically received, and also acknowledged by the chairman. The other toasts were the "Officers of the Association," the "Architects and Surveyors of Bath," and the "Visitors." Songs were contributed by Messrs. Mercer, West, J. W. Knight, Cross, Warren, and others, and a humorous recitation by Mr. Perren, of Bristol.

THE annual meeting of the registered plumbers of the district of which Manchester is the centre was held on Saturday afternoon at the Technical School, Mr. John Holden, F.R.I.B.A., president, in the chair. The report showed that there had been a considerable increase in the number of plumbers registered during the present year, showing that the advantages of the movement are becoming more widely appreciated. The chairman called attention to the Registration of Plumbers Bill, introduced during the present session by Mr. Knowles Lee, M.P. A resolution was passed giving a general support to the Bill, but reserving the right to press for amendments in committee designed to secure that only qualified craftsmen should be registered under the measure. A sub-committee was appointed to watch the progress of the Bill, and prepare the desired emendations to be moved in committee.

A REPORT just published by the Stores Committee of the Directors of the Manchester Ship Canal Company shows that some remarkable economies have been effected since the system of purchasing stores by private contract has been superseded by the system of public tender. Tenders were invited by advertisement under eighteen headings, and 358 replies were received, the chief competition being for the supply of iron and steel (61 tenders) and paint (45 tenders). The committee exercised the utmost care to avoid the substitution of inferior articles for those already in use. Under the specification, samples were taken in all cases from the bulk of the stores in use upon the works at the time, and in many instances the successful competitors have tendered to their own samples, and are now supplying the goods at considerably reduced prices. Where there might be doubt as to the identity of the article to be supplied with the sample of the article already in use, the additional precaution was taken of requiring samples to be tested before the tenders were accepted. The difference between the prices paid under the contracts which have been made, as compared with the prices paid on the last preceding accounts, come out in various percentages, metals being 35, paints 31, bolts 14, and iron and steel 10 per cent. less.

MEETINGS FOR THE ENSUING WEEK.

MONDAY.—Society of Engineers. "Electrical Traction," by Stephen Sellon. 7.30 p.m.
Royal Institute of British Architects. Business meeting. 8 p.m.
Liverpool Architectural Society. "Pre-Historic Rome," by Damar Harrison. 6.30 p.m.

TUESDAY.—Society of Architects. "Early Christian Architecture in Ireland," by W. Law Bros. St. James's Hall. 8 p.m.
Institution of Civil Engineers. "Petroleum Engines," by Prof. W. Cawthorne Unwin, F.R.S. 8 p.m.
Sheffield Society of Architects and Surveyors. "How they Built in Shakespeare's Time," by J. A. Gotch.

WEDNESDAY.—Society of Arts. "Experiments on the Durability of Modern Pigments," by A. T. Laurie. 8 p.m.

THURSDAY. — Edinburgh Architectural Association. "Heraldry in Relation to Architecture," by J. Balfour Paul. 8 p.m.

FRIDAY.—Association of Municipal Engineers. Visit to the Electrical Exhibition at the Crystal Palace. Train from Victoria (High-level), 4.45 p.m.; Ludgate, 4.50 p.m.
Dundee Institute of Architecture. "The Evidence of Scientific Knowledge in the Remains of Ancient Architecture and Engineering," by T. Claxton Fowler. 7 p.m.
Royal Institution. "Motion of the Ether near the Earth," by Prof. Oliver Lodge. 9 p.m.

SATURDAY.—Association of Municipal Engineers. Meeting at Kensington Town-hall, 11 a.m.; to be followed by visits of inspection. Dinner at Holborn Restaurant. 6.30 p.m.

The Architectural Association.—March 5th, Third Spring Visit, at 3 p.m., to St. Savour's, Southwark, by kind permission of Sir Arthur W. Blomfield, A.R.A.

ERNEST S. GALE
F. T. W. GOLDSMITH } Hon. Secs.

Trade News.

WAGES MOVEMENTS.

DUNFERMLINE.—The operative plasterers in Dunfermline struck on Monday in consequence of the employers refusing to raise the rate of wages from 7d. to 7½d. per hour, and to pay weekly instead of fortnightly. The men obtained an advance of a halfpenny per hour at the beginning of December last, and at the same time gave notice of their present demand.

INVERNESS.—As the forthcoming season is an exceptionally busy one in the building trade, the workmen in the various sections are pressing their demands for an increase of pay. The carpenters have given three months' notice of application for a rise from 6½d. to 7d. per hour, and the slaters ask for a similar advance, with a rearrangement of working hours. The painters and masons are also dissatisfied with their present rate of wages. The former have resolved to petition for a rise of 1d. on their present rate—6d. an hour.

Holloway's Pills strengthen the stomach, increase the appetite, and rouse the sluggish liver. For bowel complaints they are invaluable, as they remove every primary derangement, thereby restoring the patient to the soundest health and strength. Indeed no ailment of the digestive organs can long resist their purifying and corrective powers.

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TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

Burnley.—For alterations to the Kendrick Fever Hospital, for the corporation:—

Robinson and Son (accepted)	£311	5	0

Cardiff.—For alterations and additions to the Cottage, Fairwater, near Llandaff, for Mrs. W. G. Cartwright. Mr. Henry Picard, Llandaff, architect:—

Cox, W. (accepted)	£1,575	16	0

Batley.—For public baths, Batley. Mr. Walter Hanstock, A.R.I.B.A., architect:—

Accepted tenders.

Mason:—			
Nelson, I., Birstall	£4,050	0	0
Engineers:—			
Bradford and Co., Manchester	1,293	0	0
Joiner:—			
Brooke, H., Batley	910	0	0
Fireproof flooring:—			
Greenwood, G., and Sons, Halifax	724	16	5
Plumber, &c.:—			
Walshaw, J., Batley	305	0	0
Ironfounders:—			
Bagshaw and Sons, Limited	257	10	0
Slater:—			
Thornton, J. M., Heckmondwike	252	0	0
Plasterer:—			
Parker, W., Heckmondwike	98	18	0
Patent glazing:—			
Helliwell, T. H., Brighouse	84	16	4
Painter:—			
Ramsden, N., Dewsbury	75	10	0
Total	£8,051	10	8

Batley.—For the erection of four houses, boundary walling, &c., in Clerk Green-street, on the Clayfold Estate, Batley. Messrs. Page, Spicer and Son, Batley Carr, architects. Quantities by the architects.

Accepted tenders:—
Mason:—Briggs, T., Batley.
Joiners:—Richardson, J. and Sons, Staincliffe.
Plumber and glazier:—Walsham, J., Batley.
Plasterer:—Parker, W., Heckmondwike.
Slater:—Hargreaves, G., Dewsbury.
Ironfounders:—James, W. and Sons, Dewsbury.
Painter:—Lodge, J., Batley Carr.

Bristol.—For the erection of the Bedminster Bridge school, for the Bristol school Board. Mr. Gough, of Bristol, architect:—

Davis, J. E.	£9,175	0	0
Wilkins, R. and Son	9,170	0	0
Easterbrook and Sons	8,977	0	0
Cowlin and Sons	8,975	0	0
Walters, E.	8,950	0	0
Church, W.	8,498	0	0
Howell, E. and G.	8,495	0	0
Humphreys, G.	8,470	0	0
Perrett, J.	6,274	0	0
Hayes, C. A.	8,270	0	0
Beaven, A. J.	8,190	0	0
Rossiter, H. J. (accepted)	7,740	0	0

Architect's estimate, £7,100.

Finsbury.—For executing repairs to the school buildings and furniture in groups 1 and 2 of the Finsbury Division for the London School Board:—

Johnson and Co., Watling-street, E.C. (accepted)
15 per cent. addition to schedule.
(Contractors for this district for past three years.)

Dudley.—For additions to Tunnel Foundry, for Mr. J. H. Helliwell. Messrs. John G. Wright and Son, 28, Wolverhampton-street, Dudley, architects:—

Love and Flint, Dudley (accepted)	£498	0	0

Eltham, East Kent.—For the erection of cottage homes, for the Eltham board of guardians. Mr. J. Gardner, Folkestone, architect:—

Webster, R.	£2,110	0	0
Prebble, G.	2,100	0	0
Moody, H. M.	2,100	0	0
Mercer, H. R.	2,100	0	0
Hayward and Paramor	1,969	0	0
Couzens, W., Canterbury	1,897	0	0
Tunbridge, T.	1,850	0	0
Brooks, W.	1,835	0	0
Holdom, W. H. (accepted)	1,760	0	0

Rest of Folkestone.
(Architect's estimate, £1,500.)

Guildford.—For the execution of sewerage works, for the Guildford rural sanitary authority, contract No. 1 being for the construction of high and low level intercepting sewers, and contract No. 2 for sewage outfall works, pumping station, &c.:—

	No. 1.			No. 2.	
Peattie and Axtell, S. Kensington	£26,215	0	0	£10,848	0
Hayward, J., Eastbourne	24,195	0	0	10,581	0
Roles, M. W., London	14,800	0	0	6,915	0
Finnegan, R., Northampton	35,500	0	0	12,167	10
Cook, R., and Co., Battersea	21,990	0	0	10,289	0
Neave, J., Forest Hill	24,689	0	0	12,488	0
Bentley, Leicester	25,756	3	11	12,335	0
Band, J., Wisbech	29,440	0	0	9,850	0
Morgan and Co., Southampton	18,486	0	0	10,934	0
Dixon, J., St. Alban's	26,566	0	0	13,282	0
Peters, Horsham	36,483	0	0	10,695	0
Geen, G., Newport, Mon.	36,000	0	0	—	
Cunliffe, Kingston-on-Thames	18,517	0	0	8,785	0
Nichols, W., Wood-green	20,186	0	0	10,831	0
Stephens, Bastow & Co., Bristol	38,526	0	0	12,126	0
Hall, T. P., Southsea	26,000	0	0	14,000	0
Osenton, G., Westerham	25,174	0	0	12,319	0

Hackney.—For executing repairs to school building (only) in groups 1, 2, and 3, of the Hackney Division or the contract schedule of prices:—

Knight and Son*	25 per cent. addition.
Killby and Gayford	17½ „ „ „
Mowlem and Co., Westminster (accepted)	15 „ „ „

* Contractors for this district for past three years.

Hull.—For the proposed new Catholic Schools on th Hessle-road Boulevard, Hull. Messrs. Smith and Brodrick and A. Lowther, joint architects:—

Drury, J.	£2,287	1	0
Houlton, G.	2,271	0	0
Hockney and Liggins	2,125	0	0
Blackburn, F.	2,094	19	0
Harper, M.	2,087	2	0
Vickers, H.	2,030	0	0
Jackson, G., and Sons	1,979	0	0
Colley and Levitt (accepted)	1,946	15	0

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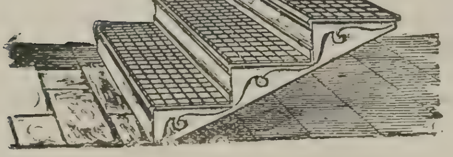

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Birmingham
Bishopsgate
Blackfriars
Blackfriars Bridge
Blake Street, Sutton Coldfield
Blaydon-on Tyne
Bletchley
Bolton
Bolts Bridge
Bombay, India
Bow
Bowdon Central
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Bristol
Broadfield
Broad Street
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Burdett Road
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Burton
Bury
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Canonbury
Camden Road
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Charing Cross
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Cheetham Hill Junction
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Clayton
Clifton
Clitheroe
Crewe
Crooked Billet Level Crossing
Cross Lane
Crumpsall
Cullercoates
Cannon Street
Dalston
Daubhill
Daybrook
Denholme
Derby
Droylesden
Drighlington
Dudley
Dudley Port
Dundee
Ealing Common
Ealing Terminus
Earl's Court
Edgware Road
Failsworth
Farringdon Street
Farrington
Fenchurch Street
Finchley Road
Firsby
Forest Gate
Forest Road Level Crossing
Fulham
Geedley
Gloucester Road
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Grantham
Greenwich
Hackney
Haggerston
Hammersmith
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Highbury
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Kilburn
Kilsby
King's Cross
King William Street
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Latimer Road
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Leamington
Leman Street
Leyland
Leyton
Leytonstone
Lichfield
Limehouse
Lincoln
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Liverpool Road, Manchester
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Llandudno
Long Buckby
Loudoun Road
Ludgate Hill
Mark Lane
Maidstone
Manchester
Manchester, Exchange
Manchester Road
Mansion House
Mildmay Park
Millhill
Milverton
Monkwearmouth
Moorgate Street
Monument
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New Cross
Newport
Newton Heath
North Brentford
North Bridge
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Nottingham
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Woolwich
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Schools, &c.
Belfast Methodist College
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Clapham
Colchester
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Hanway Place
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Haverstock Hill Orphan Working School
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Poplar, Byron & Bright Streets
Southsea, Church Path
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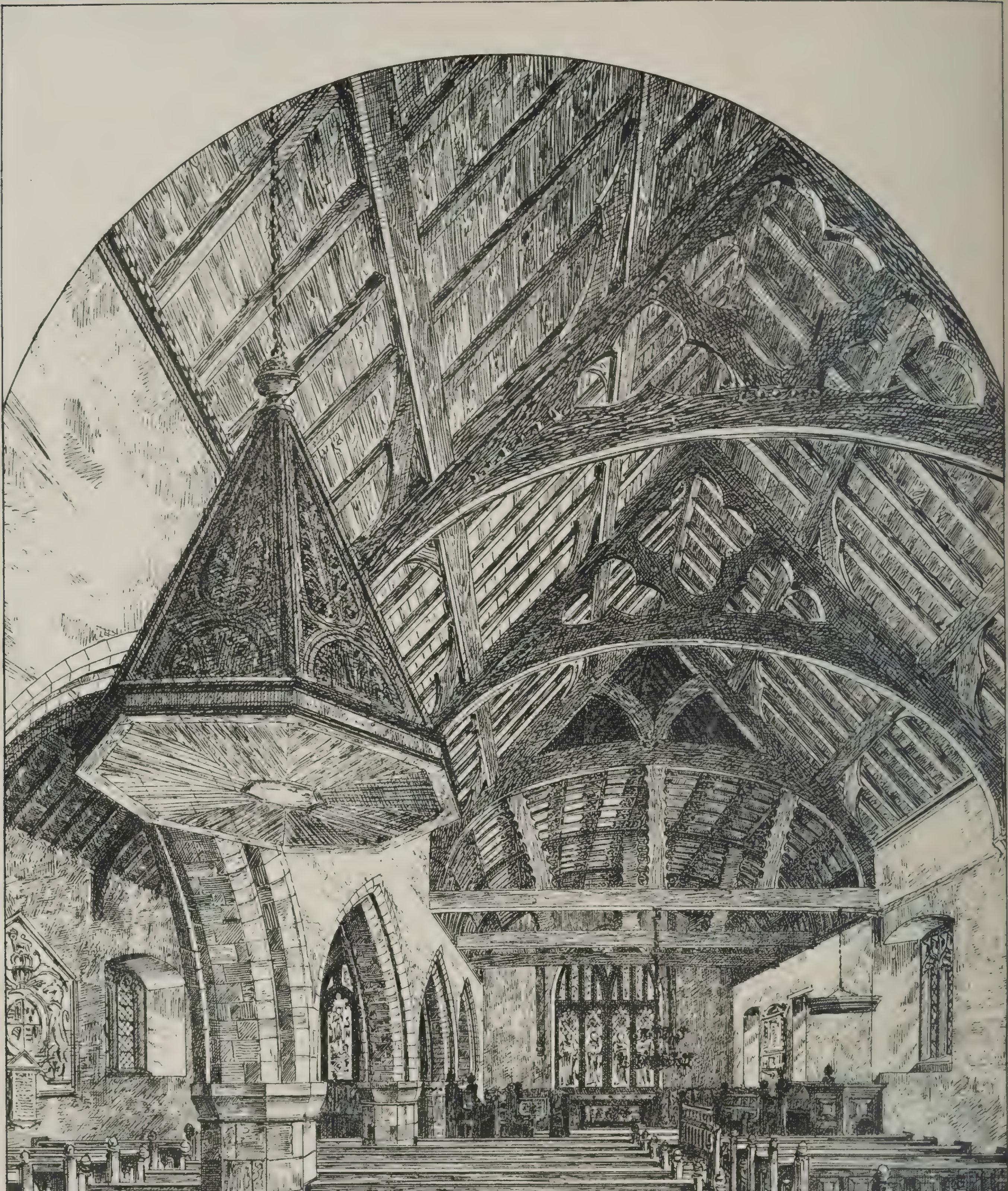

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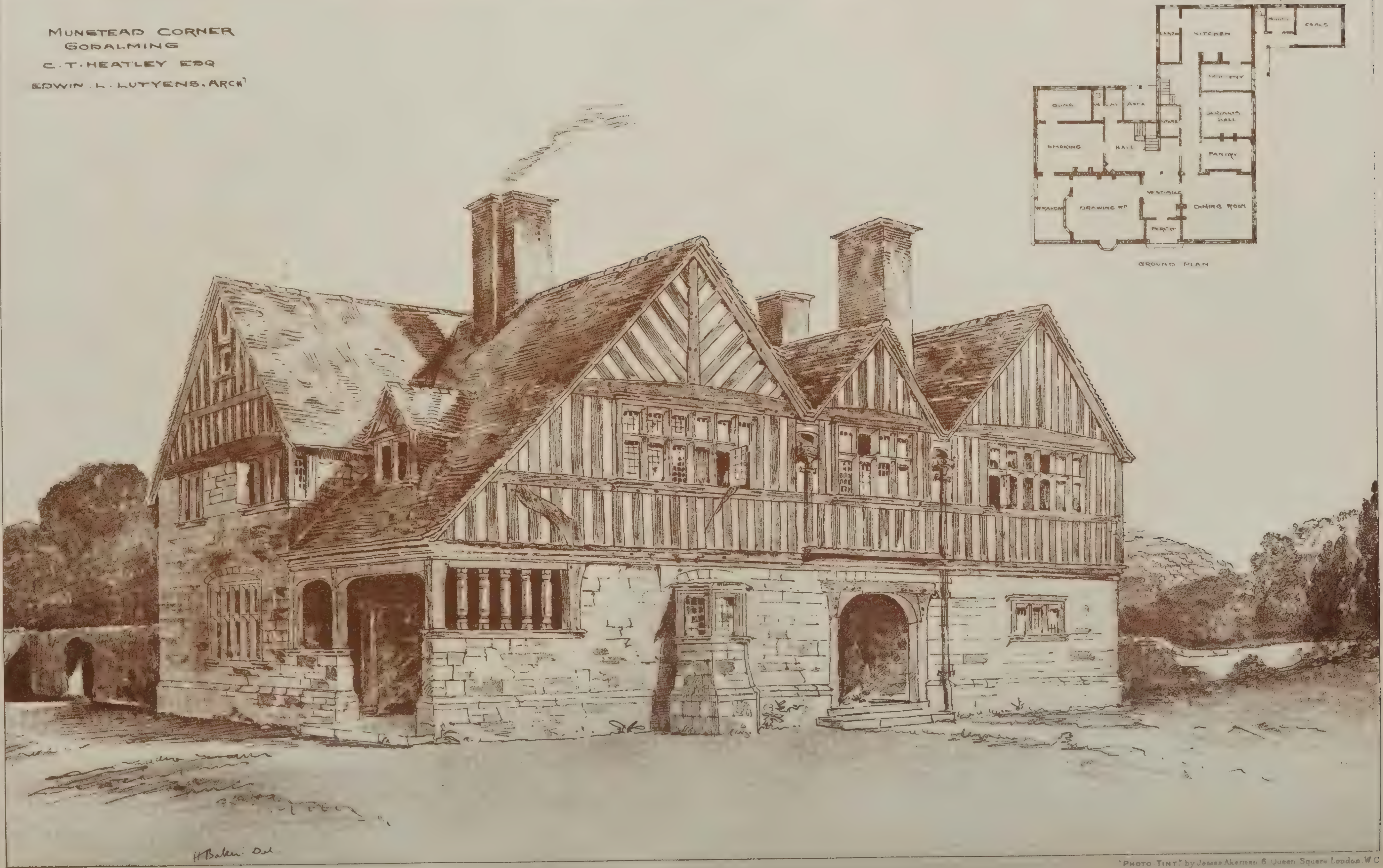

GROUND PLAN

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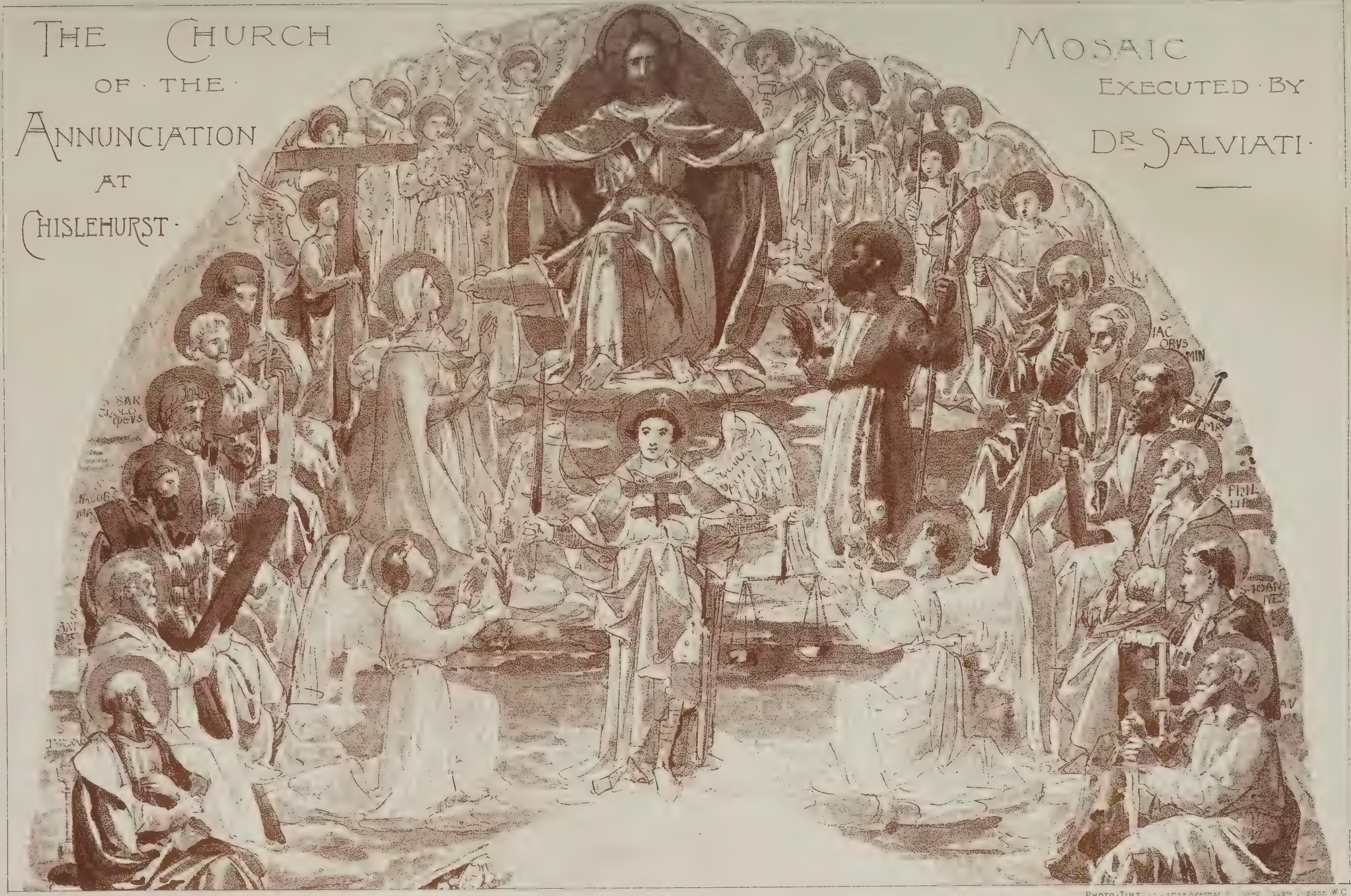

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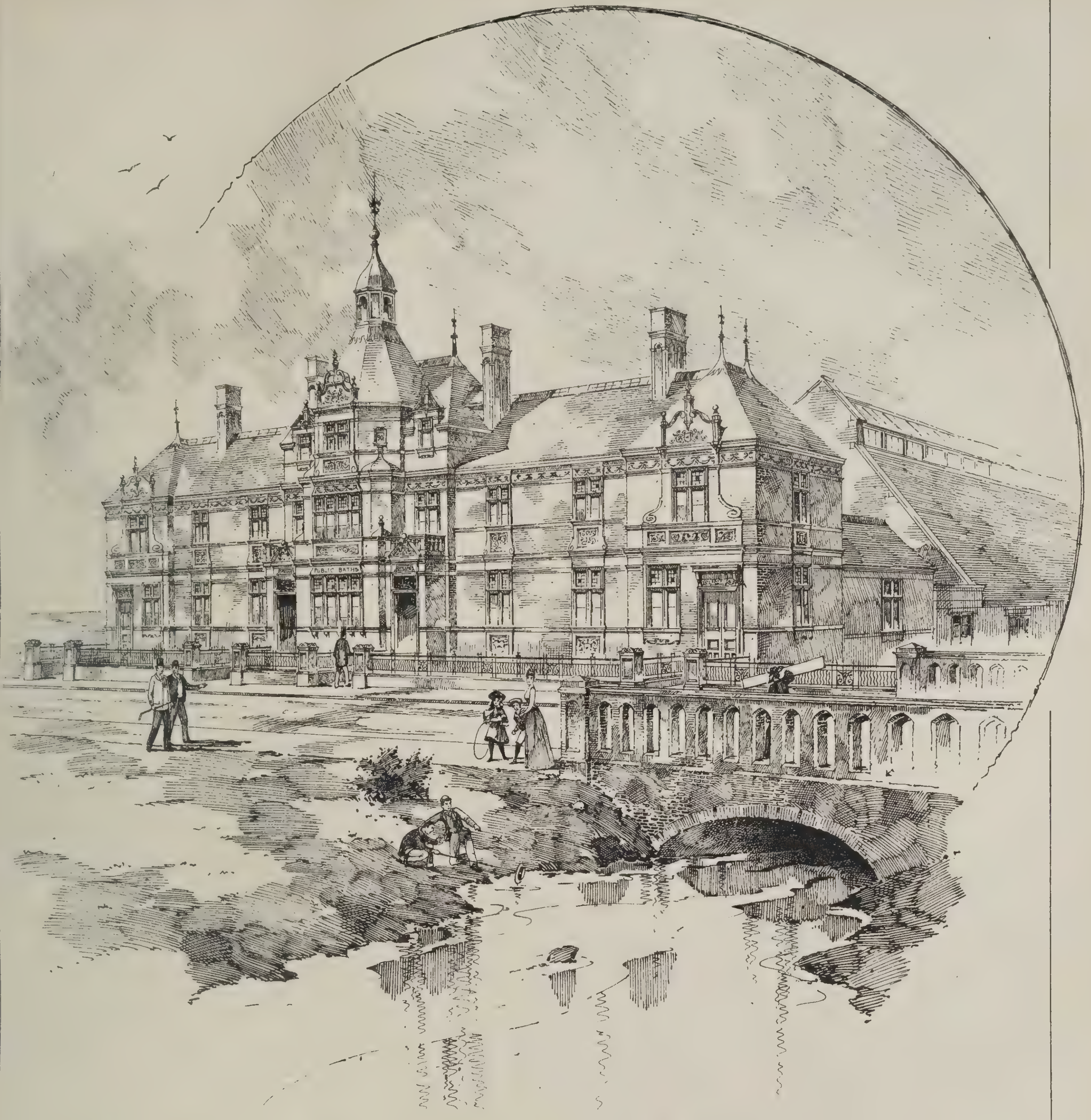

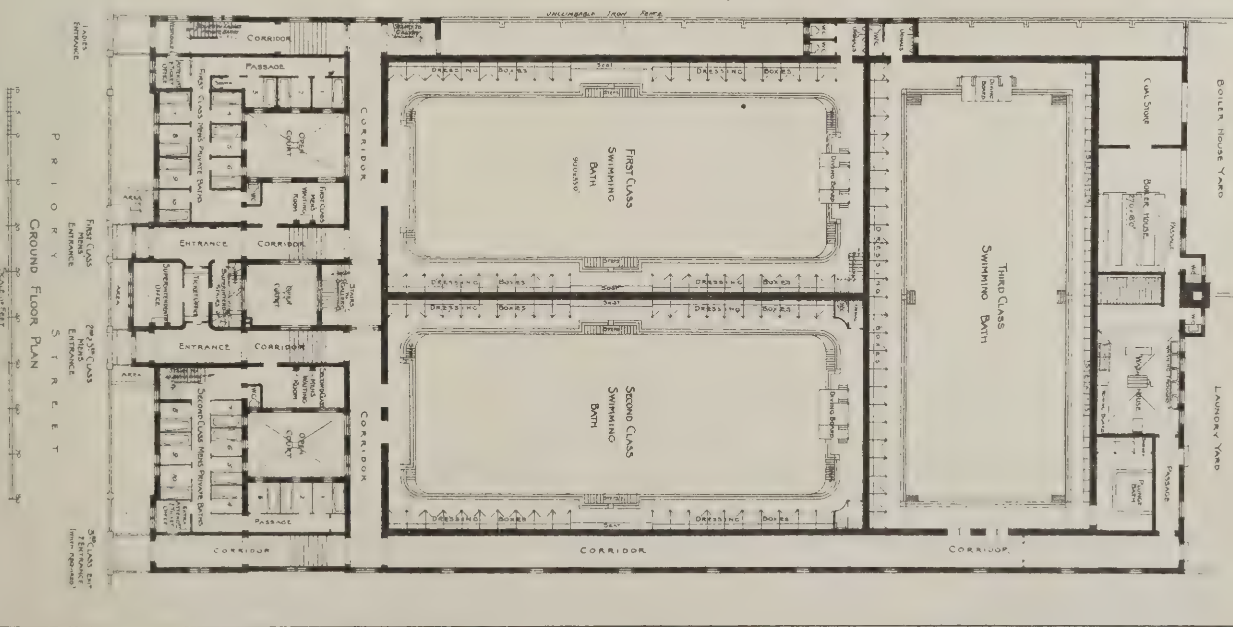

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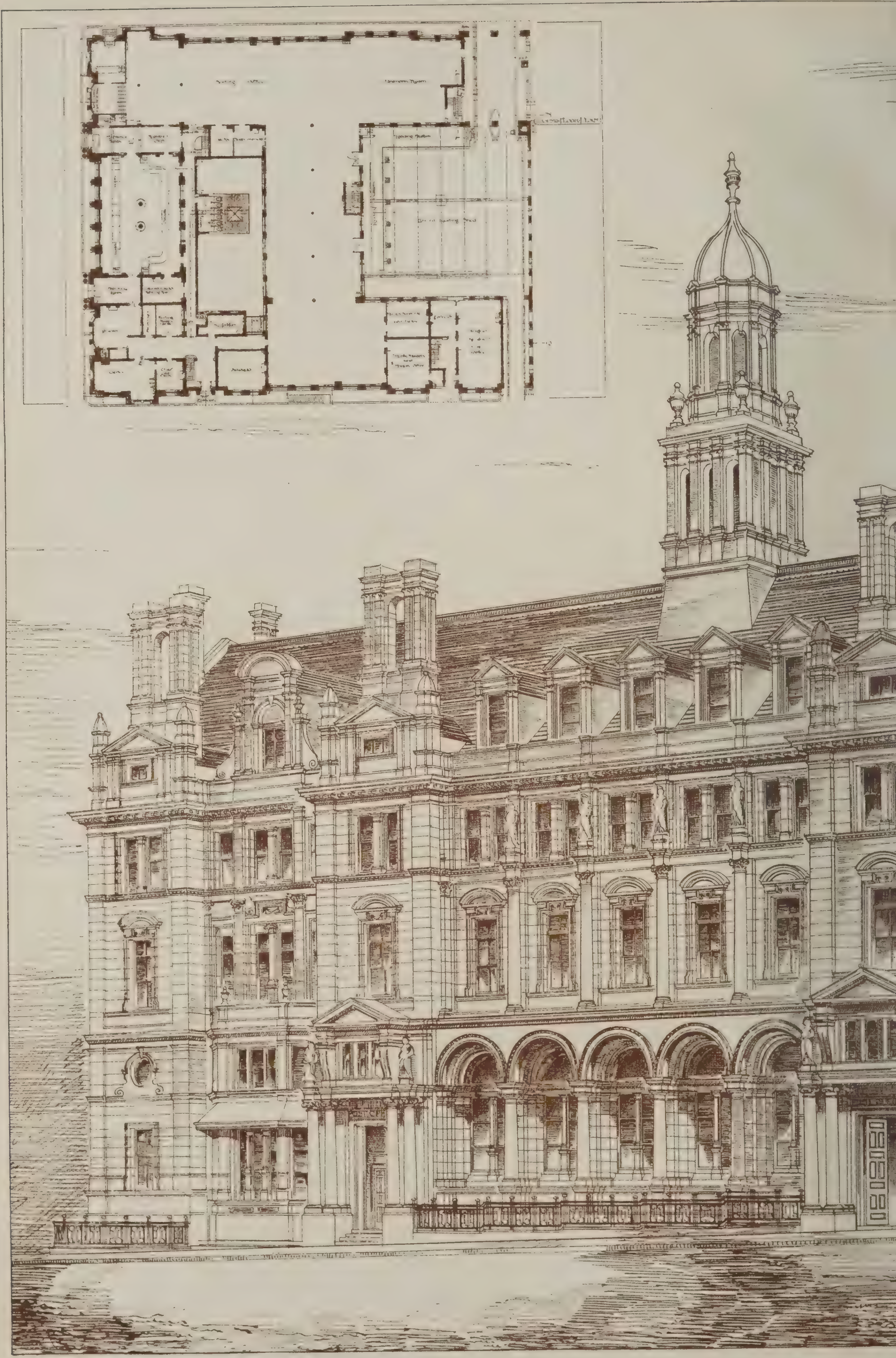

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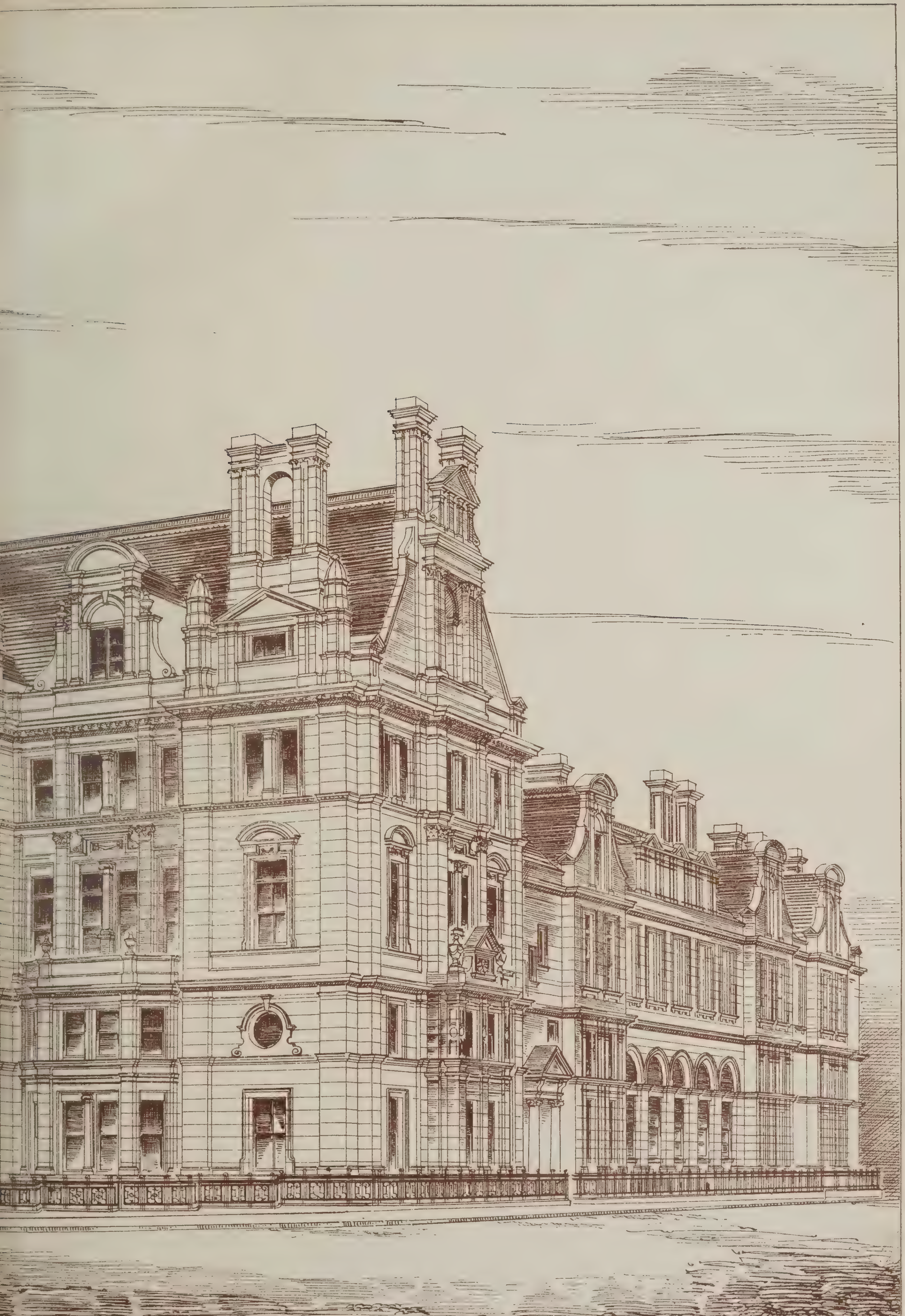

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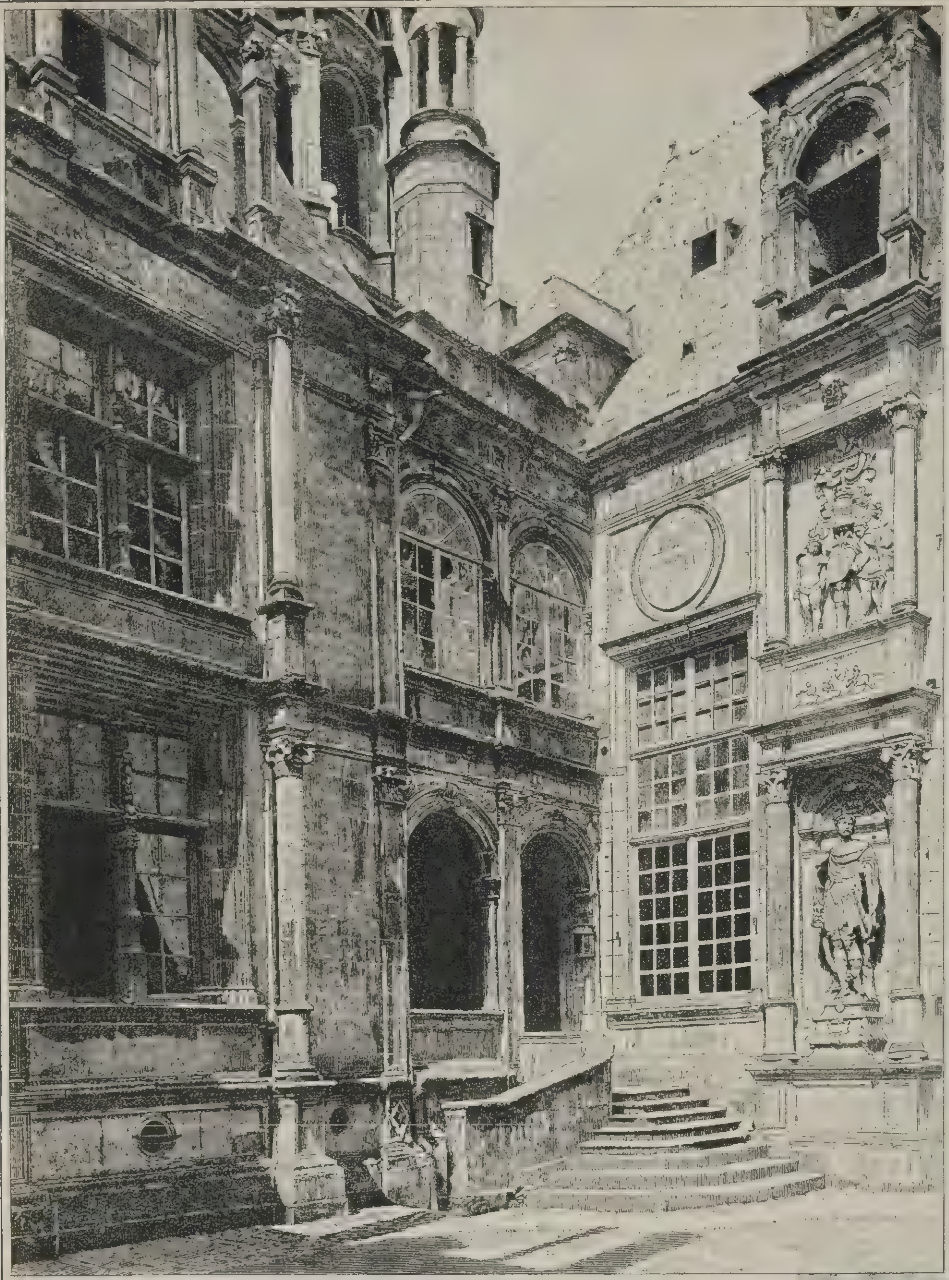

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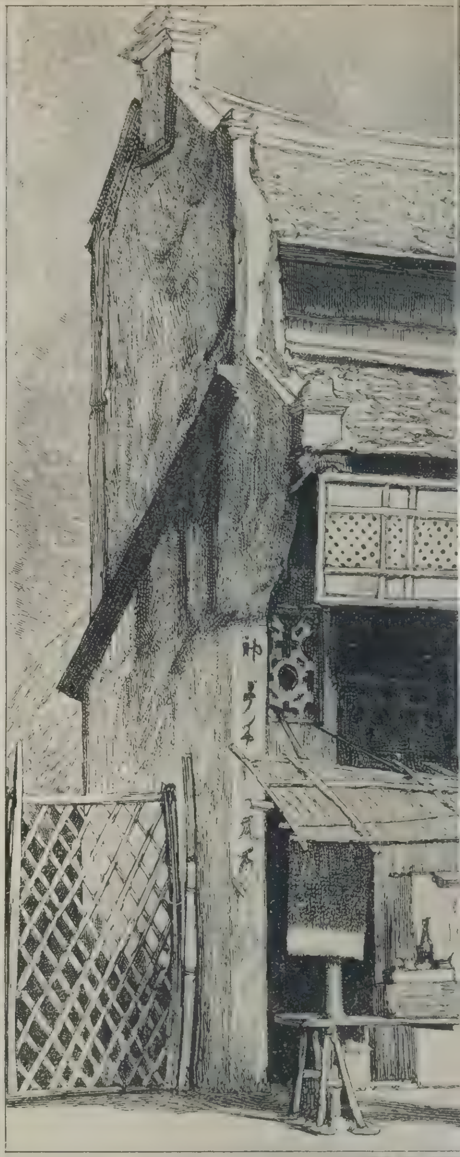

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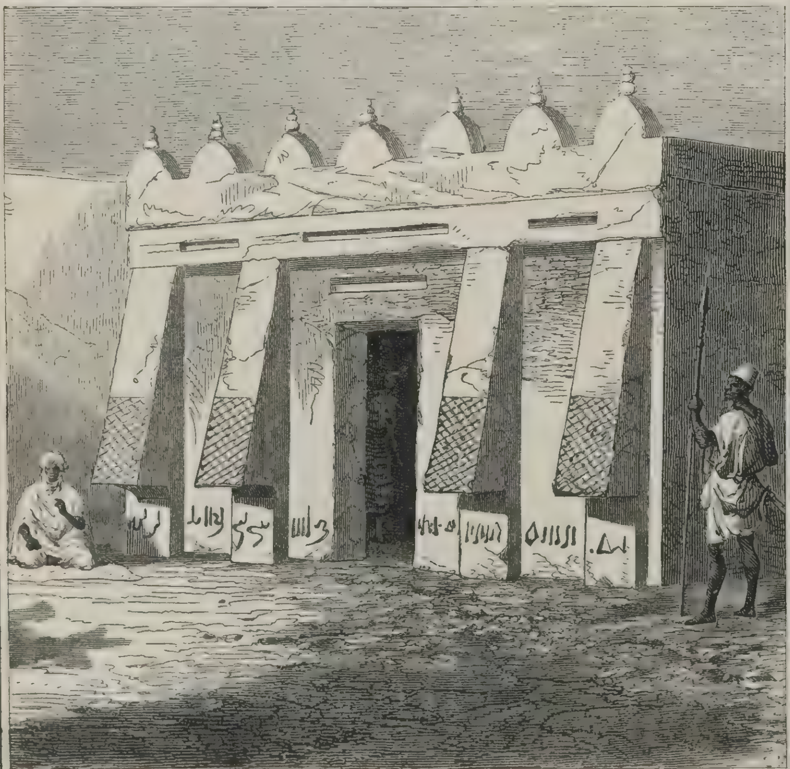

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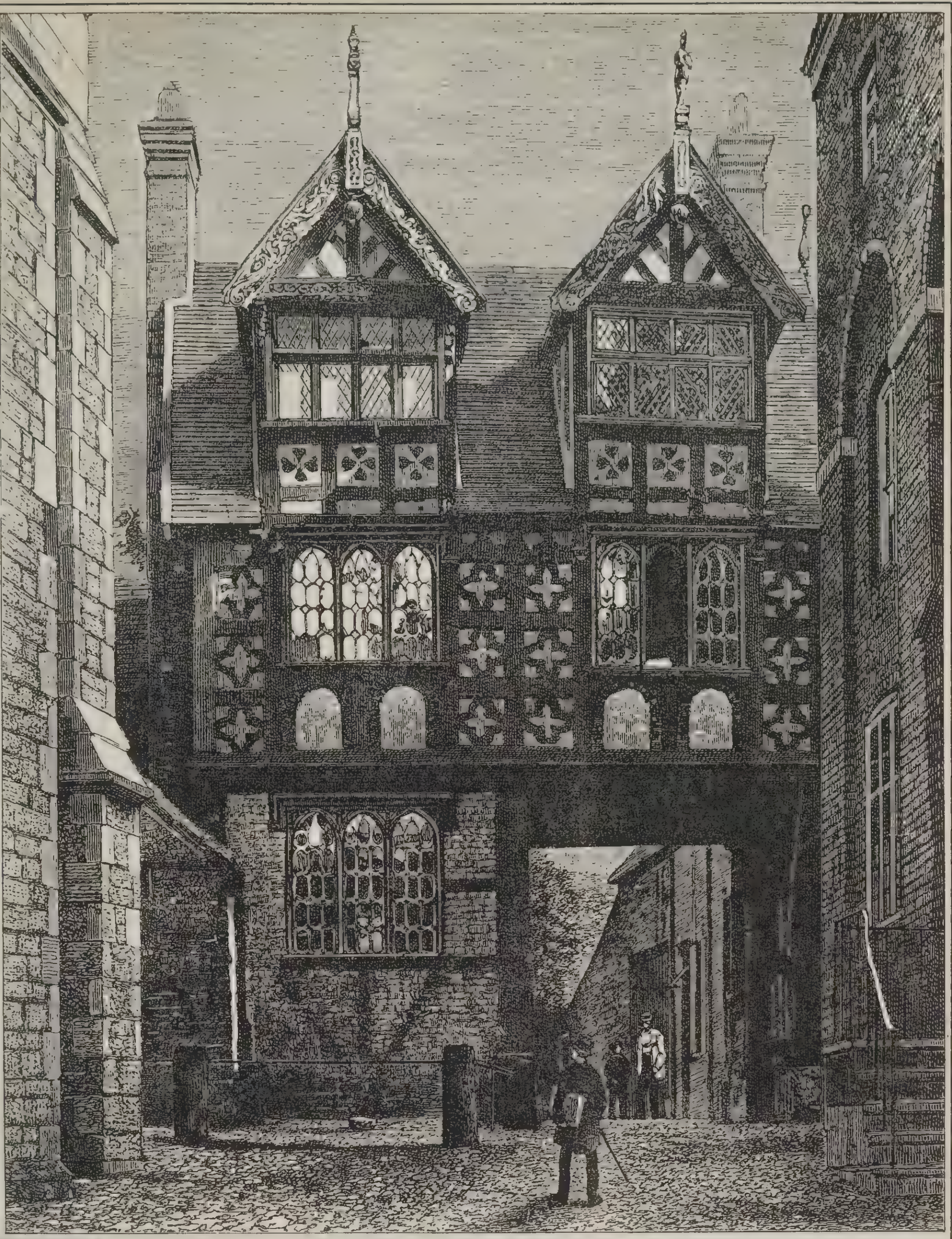

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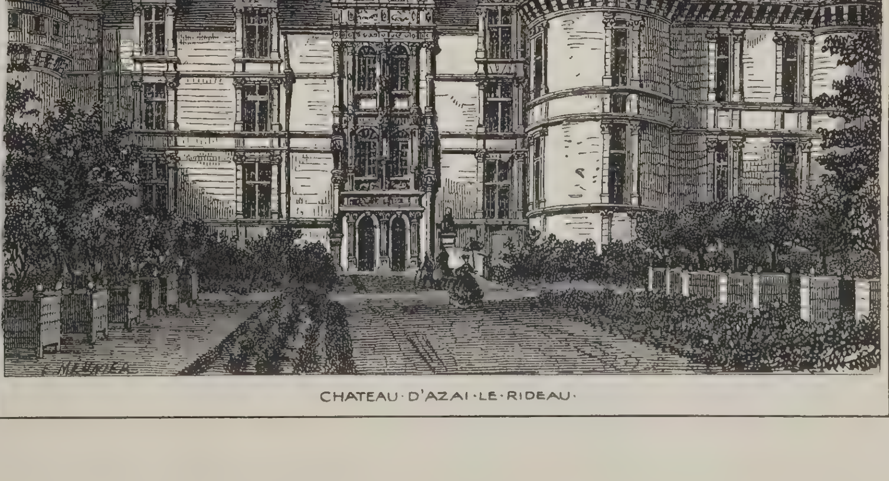

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THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXII.—No. 1940.

FRIDAY, MARCH 11, 1892.

CONTRACTS AND TENDERS.

A FREQUENT cause of dispute in transactions connected with building is the want of understanding between contracting parties. A contractor may be found willing to supply materials or perform workmanship for a certain sum on his own conditions, as a tradesman supplies goods at a certain price, the customer taking all risks; but the goods or workmanship supplied may not be such as to satisfy the owner or customer. A large number of building contracts are undertaken in this manner, to the dissatisfaction of the employer. The fault lies with the latter; he asks for a price to build, according to certain plans and specifications, and he is not satisfied with the price; he obtains a lower tender, or is contented if the contractor promises to erect a building that will satisfy his wants. Another price is tendered, and the work is commenced; but very soon the employer discovers that the contractor is carrying on the building in his own way. The result disappoints the owner, as a matter of course. The reader will interpolate the inquiry: Where is the architect? We have supposed him to have prepared designs, but not to act any further—or, rather, that he has not thought right to interfere in the matter of cost, which we may suppose is a condition precedent of the contract. In many instances his superintendence is a variable quantity, and on no account is he allowed to imperil the obtaining of a low tender. It may mean a very perfunctory supervision of the work in progress, to enable the architect to grant certificates; not a superintendence to inspect the performance of contract, to prevent the use of inferior materials, or check bad workmanship. The contractor perfectly understands "his book,"—to do as little as possible, to evade specification directions, and introduce materials of doubtful quality that shall not obtrude themselves on the architect's attention. He quite understands, in short, the situation—that he has to carry out a cheap building, and that the architect will not be too exacting or too hard. These kinds of accommodating contracts break down sooner or later; the employer finds he has been "fleeced"; the architect wakes up to find out the untenable and indefensible position as "go-between" he has occupied in the transaction, all because the terms of contract had not been strictly acted upon.

The modern tender is an offer to do something for so much money under certain conditions, but whether those conditions are sedulously kept in view when the tender is finally made is doubtful in a large number of instances. The builder can read between the lines; he can see how far he may play with the clauses of the contract specification; he can, so to speak, "take the measure" of the owner and of his architect. The leading idea of the tenderer who wishes to secure a contract is how he can contrive, without any offence to his conscientious convictions, to evade the meaning of the architect. The very weak support that is given to the latter by the employer is a motive for so doing. Every practical builder knows how many expedients are open to him: how an inferior and upper bed of the quarry can be substituted for the quality specified; how inferior or second quality bricks and timber can be introduced without detection; how fittings and goods supplied can be altered without exciting any suspicion.

The sub-contract question is one that is of primary importance to the building confraternity. Builders have a right to know whether they are to be free agents in the matter of assigning portions of their contracts to others, and a distinct understanding on this point ought to be made. Some time ago the Liverpool City Council discussed the question. A member proposed that the articles of agreement entered into between the corporation and any contractor should contain certain clauses, such as the following:—(*a*) The contractor is not to make over his contract, nor underlet the contract, nor make a sub-contract with any workman for the execution of any part of it; but to employ his own workmen for the labour, who are to be paid by him in wages by the day—in default of which the contractor is to forfeit for each offence a sum of £500 to the corporation; but that body is to retain the power to allow the contractor to sublet such portions of the work as would not be produced or carried out by him in the ordinary course of his business. (*b*) All persons or firms tendering for a contract with the corporation shall be required to make a declaration that they pay such rates of wages and observe such hours of labour as are recognised in the particular trade in question, and in the event of any charges being established against such firms or persons of paying less than the minimum standard rate of wages in each branch of the trade, their contract shall not be accepted. No objection can be taken to these provisions. The London County Council have adopted a similar clause, which gives them power to allow sub-contracting in certain cases.

In most instances, nowadays, tenders are accepted, based on an assignment of some portions of the contract. The contractor finds he can sublet with advantage the brickwork or carpenter and joiners' work, the plumbers' or ironwork, as the case may be; the employer gets the advantage of more expert hands, and the contractor can, perhaps, make a little out of the transaction. Many building firms keep only workmen who can perform ordinary trades; therefore if any special kind of brickwork or joinery or ironwork or plastering is to be done, it is an advantage to sublet such portion to those who are expert in these special branches. Those contracts which exclude subletting altogether handicap the small-builder tenderer, who is obliged to look to some other way of competing with the trade.

Take again the rate of wages and hours of labour. If the condition is strictly enforced that the union rate of wages is to be paid and the hours of labour enforced, a very considerable percentage would have to be added to many contracts. It is the absence of this condition from many contracts that has helped the low tenderer, who can thereby take advantage of the open labour market. How can we be surprised at the ridiculously wide tendering when those points have not been settled beforehand? Twenty and thirty, and even forty, per cent. differences may easily be understood. The clause usually inserted, "The contractors are not to sublet the works or any part thereof without the consent in writing of the architect," may be enforced by one and not by another, and the same with the rate of wages: the consequence is that we get tenders for works which vary under different architects. Therefore we have need of a more uniform system of contracting. Uniform contracts have been discussed; the American Institute of Architects and the U.S. National Association of Builders have considered the question; the Contractors' Association of New South Wales have issued rules and by-laws for the observance of its members, the object of which is to obtain fair and equitable terms between them and the Government Works office, and all corporated bodies, architects, and designers. English architectural societies might profitably take the matter into consideration with the co-operation of the representative societies of trades and contractors, to insure a recognition of equitable terms that shall be binding on all. Why should not public bodies do their own work without the intervention of a contractor? This is a question considered by a committee of the L.C.C., who now employ their own men.

A large difference in builders' estimates is the result of a want of care in calculating the cost of materials. The prices are affixed of bricks or stone; but sometimes, as we have reason to know, without a price for delivery or cartage to the works, which, in many cases, is a considerable item in the cost. The ordinary builder, in his eagerness to obtain a contract, overlooks the cost of cartage on many of the materials, with the result that his tender is considerably lower than many others. These irregularities of practice are taken advantage of by the employer, who secures the doubtful benefit of low tenders. They are, in fact, the outcome of vague terms and uncertainties, partly owing to indefinite contracts and specification, and partly to the spirit of commercial rivalry which animates the building fraternity.

But as the interest of the general building employer is to obtain low tenders, it is not to be expected that he will do anything to alter this state of things. If he obtains a benefit by a misunderstanding between the builder and his architect, why should he interfere? But the builder can say he will not compete if fair and equitable terms are not granted, and if this demand is adhered to, it will not be long before a more honourable mode of competing takes place. The architectural profession, for their own sake, will be the first to assist contractors in upholding a fair rate of wages for workmen, and in declining to accept tenders below an honest and remunerative price. The would-be cheap builder is the greatest enemy to the architect.

* * *

THE LIGHTING AND DECORATION OF ROOMS.

AMONGST the features of interest which appeal directly to the architect and decorative artist in the Electrical Exhibition at the Crystal Palace is the series of fitted rooms, in which the electric light has been introduced with more or less decorative effect. Hitherto we have seen the illuminating power of this light under conditions which have not been quite favourable, where its extreme brightness and glare have been almost painful from the want of some diffusing media. The brilliancy of the light appeared to render the surrounding darkness more visible by contrast—all seemed black between the strong white lights. In the suite of rooms in the South Gallery of the Palace, we may see the latest improvements in electric lighting, and a successful attempt made to render the incandescent light more diffusive and less glaring. In the artistically fitted and unique suite of rooms shown by Messrs. Rashleigh, Phipps, and Dawson, of 53, Berners-street, we see a variety of means employed to diffuse and break up the light, such as the "bead ray-diffusers" which were introduced by this firm, and the more recent "improved ray diffuser," also the cone-light. By these methods the full benefit of the electric light is obtained by reflection, the incandescent lamp, in fact, not being visible. Again, there was much to be done to render this mode of lighting artistic by the employment of such forms of brackets, sconces, girandoles, electroliers, and standards, as would be in keeping with certain styles and architectural decoration. Black forged iron, for instance, is well suited for the purpose, and Messrs.

Rashleigh, Phipps, and Dawson, have, in the Elizabethan Hall and "Solar" room, shown some beautiful examples of lanterns supported by brackets of wrought iron. A very pleasing instance of a pendant is seen hanging from the arched entrance of the first-named apartment, very gracefully outlined, with a rich pierced band of metal set with jewels of Bohemian glass. The curvilinear brackets, from which are suspended lanterns which spring from the cornice moulding of dado at intervals round the hall, are well in keeping with the dark-panelled dado, which is 6ft. or 7ft. high, the ceiling beams resting on brackets, and the furniture and decoration of the Elizabethan hall by Messrs. Godfrey, Giles and Co., in which an oak writing-table, chair, and other oak furniture of good design are to be seen. Passing into the "Solar" room, which in style is of the Italian Renaissance, we observe a very novel and prettily-conceived scheme of lighting. A dining-table is laid out in a very *recherché* style, with a flower-bordered fountain, in which the electric incandescent lamp is daintily introduced among the bank of flowers, each covered by a yellow silk shade. Over the table is a light representing the sun—a dome-shaped lamp of wrought iron, covered with sheets of ivory between the ribs. Other bracket-lamps and spheres of ivory represent the planets. The shade and scrolls of forged iron, the ring of Limoges enamels with the Zodiacal signs, and the graceful open ironwork and figure which surmount the central lamp, make an artistic centre, and the light is well diffused over the table. The walls of this room are of a rich green, patterned paper; it has an embossed gold frieze. The ceiling is broken into panels and ribs; the former have metallic, silver, and chocolate-tinted embossed fabrics. A sideboard recess forms one side of the room. The floor has the patent movable parquet. We notice corner cupids holding electric lamps and other devices, while the so-called "Anglo-Japanese" drawing-room is a very elegant and unique combination of bamboo fittings, screens, and furniture, and electric lighting. The centre pendant lantern is very effective; the brackets and standards have the lamps shaded by coloured fringes of beads which tone the light. We especially call attention to the use and decorative treatment of bamboo in the screen across the ingle nook of corner window, the door screens, hexagonal table, and the wall dado decoration. Mr. C. S. Walker, of Wigmore-street, furnished and decorated this room. In a similar spirit of adaptation, the electric light has been applied to a conservatory leading from the last room. Here we see the lamps springing as pendentive fruits from palm-trees and foliage in the midst of a wealth of stalactite grottoes, cascades, dripping wells, making an agreeable *coup de main*, executed by Dick Radcliffe. The luminous glass front composed of glass bricks has a bright effect. Further on we notice a suite of oak-fitted and furnished rooms illustrating the style of the 14th century and of Louis XVI., full of choice oak furniture and decorative adjuncts, including a massive carved fireplace from a French chateau, also a cottage home suite of rooms in the Sussex Barn-house style, designed and decorated in a simple, homely, but effective style, in which the woodwork is inexpensively treated; the latter has been erected and decorated by Messrs. J. and S. Bowyer, of Dulwich. These suites show in what manner electric lighting and decoration may be combined to produce highly artistic results.

THE SOCIETY OF ARCHITECTS.

THE sixth ordinary meeting of the Society for the present session was held on Tuesday evening, Mr. H. Roumieu Gough, F.R.I.B.A., past-president, in the chair. Mr. George Eaton Shore, of 109, Edleston-road, Crewe, was elected as a member.

Mr. W. Law Bros delivered an address, illustrated by numerous excellent lantern views from recently-taken photographs, entitled:

EARLY CHRISTIAN ARCHITECTURE IN IRELAND.

Among the thousands of tourists who annually visit the lakes of Killarney, there are few, the lecturer remarked, who, among the attractions of the romantic scenery, are aware that they are in the heart of a district full of remains of early civilisations, and of ruined churches and monasteries, whose remains carry us back to a time when Ireland stood in the foremost rank of Northern schools of art, science, and literature. In our south-eastern corner of England we boast of our churches at Canterbury, with which we associate the preaching of St. Augustine at the end of the 6th century, but in the county of Kerry we find ourselves in presence of buildings whose traditions run back at least two centuries earlier than those of St. Augustine; of monasteries and churches which prove that Christianity was practised here long anterior to its introduction into England. And although we may not in all cases accept the dates given by enthusiastic Irish antiquaries as authentic, enough remains in these secluded valleys to indicate that the sister island had attained, at a very remote period, a higher pitch of refinement than we can lay claim to at the same epoch, while at the same time the marked differences in the styles of buildings from anything to be found in other parts of Great Britain seem to indicate that this high state of culture was not derived in any way from British, Saxon, or Norman influences, but rather from an early, if not pre-historic, intercommunication with the nations of the far East. Not only do the museums of the Royal Irish Academy of Trinity College, and of the Science and Art Department at Dublin, attest the skill of Irish scribes and sculptors, metal workers and ivory carvers, but the very great number and high merit of articles of Irish workmanship preserved in Continental centres, prove how these articles were valued for their intrinsic merit, and how widely they were distributed; the museums of Paris, Milan, Ravenna, St. Gall, Basel, and Schaffhausen, being all specially rich in these specimens of manuscripts and books, brooches, fibulæ, and other ornaments, together with church bells and shrines, all of Irish workmanship. Nor are the architectural remains less fully preserved or of inferior interest than those of more portable objects. A combination of circumstances has led to the preservation of early buildings in Ireland such as is rarely to be found in countries blessed by a larger measure of material prosperity. These buildings may be divided into three categories, all forming links in one continuous chain of progress, from the rude cell, or so-called bee-hive dwelling, to the larger and more pretentious oratories and churches, and thence to the stone-roofed Hiberno-Romanesque churches, which covered the land at the time of the conquest of Ireland by Strongbow in 1172. Of the first of these categories, the bee-hive cells, or "Clochauns," there is little or nothing to point out their Christian origin, excepting in a few instances where a cross is rudely inserted over the doorway in a differently-coloured stone, and the fact that they are invariably seen associated with distinctly ecclesiastical structures, and in many cases with inscriptions in Ogham and other characters, which leave little doubt as to their nature. They are generally found in small clusters, occupying islands either in the larger loughs or off the coast, or else within massive stone forts or "cashels." One of the most interesting of these groups of cells is to be found on the rock of the Skellig, which rises to a height of some 700ft. above the waves of the Atlantic, at a distance of 12 miles from the mainland. The author described a visit he paid to the island in August last, with other members of the Royal Society of Antiquaries of Ireland, when the gunboat *Banterer* was placed at their disposal by the Admiralty. On landing we found, he said, a road roughly cut in the face of the rock leading to the lighthouse, and on our right hand an almost perpendicular flight of steps, rudely constructed of piled stones and stretching up to the dizzy height of 600ft. Of these steps, constructed by the founders of the monastery, 670 still remain, and form the sole approach to the plateau on which the cells are to be found. On arriving at the summit we found a massive wall or cashel of rough limestone, uncemented and in many places rising flush with the edge of the cliff upon which it was built, and entering the inclosure, were at once in the heart of the monastic settlement. The buildings are of three kinds: there are six stone cells for residences of the monks. These are rude, comfortless buildings, apparently of different ages, some being of unwrought stones, reminding one more of exaggerated tubes of caddis worms, rather than human habitations, while others are of more recent, or, at all events, more skilful construction, the stones being squared, and at intervals projecting stones give a suggestion that they may have been used as a substitute for scaffolding during construction. All these cells are about the same dimensions, from 12ft. to 15ft. in height, circular in exterior plan, but quadrangular within, with an internal space some 7ft. square, rising into a circular form a few feet from the ground. The walls are all of Cyclopean, or uncemented masonry 6ft. or 7ft. thick, and the space inside diminishes by the successive encroachments of each course of stonework till a small hole is left at the summit some 18in. or 24in. in diameter; the whole construction, both in plan and execution, resembling greatly the street boy's first architectural effort in the form of an oyster-shell grotto. The doorways of these structures are, as is almost universally the case with Irish buildings anterior to the English Conquest, built with inclined jambs and measure some 3in. or 4in. more at the base than at the top, and are, as a rule, about 3ft. 6in. to 4ft. 6in. high by about 2ft. wide, and above the lintel which forms the top is to be seen a rude cross, formed by the insertion of whiter stones than those forming the cell, this cross being the sole attempt at decoration. On the same plateau are also three oratories scarcely different from the cells in general construction, and only to be distinguished from them by their larger size, quadrangular form, and raised altars at the eastern end. There is, however, a church of more ambitious character on the island; this, dedicated to St. Michael, is the only building on the rock which has been cemented, and its modest internal dimensions are 15ft. by 10ft. This church is evidently of far later date than the surrounding buildings, and its cemented walls, although 3ft. 6in. thick, have been unable to stand the Atlantic blasts, and have fallen into ruin, while the earlier cells stand as perfect as when first built. There are also two small graveyards, each giving credence of perhaps a dozen interments, and each grave has for its headstone a rude cross; but no inscription has been found from which it is possible to ascribe an exact date to this wonderful relic of olden times. Of the history of this remarkable settlement we know nothing, except that it was plundered by the Danes in the 8th century. Tradition ascribes it to St. Finian, who lived early in the 5th century, and although one may not accept this date as more than approximate, I think that no one will, on returning from a visit to its venerable buildings, doubt that he has seen one of the oldest and most remarkable Christian settlements to be found in Europe, or perhaps the world. Close to the seashore at Dingle are to be seen not only a cluster of bee-hive cells similar to those on the Skellig, although far less perfect, but within a few minutes' walk of them a building, which, although of inferior interest to them, has attracted far more general attention, perhaps from its easier access—the Oratory of Gallerus. This may be looked upon as the type of the next stage of development of the peculiar forms of hut architecture. In the words of James Fergusson, "it is certainly one of the oldest places of worship in these islands, belonging probably to the age of St. Patrick, and it is also one of the smallest, being only 23 by 10ft. externally.[*] It shows the strange Cyclopean masonry, the sloping doorway, the stone roof, and many of the elements of the subsequent style, and it is, at the same time, so like some things in Lycia and in India, and so unlike almost every other building in Europe, that it is not to be wondered at that antiquaries should indulge in somewhat speculative fancies in endeavouring to account for such remarkable phenomena.[†] In many respects there is great similarity between this oratory of Gallerus and the clochauns on the Skellig, or at all events to those which appear to be the latest in date, the main difference being that this oratory has a rectangular instead of a circular ground-plan, the two end walls rising perpendicularly to a point, while the two lateral walls rise with graceful curves which meet at the apex of the roof, where they terminate in a row of pointed stones. The walls, which are about 4ft. thick, are of huge stones, which have been dressed and fitted into each other with extreme care, which shows that an immense amount of labour has been bestowed upon this building, the whole of the structure having been chiselled to an accurate surface both externally and internally. The western door (the orientation is the same as in our churches) is of true Cyclopean character, sloping inwards towards the top, and has internally two projecting perforated stones above the lintel, from which a wooden door might have been hung. It is about 5ft. 7in. high, 2ft. 4in. wide at the base, and 1ft. 7in. at the top, so that it was possible for me to enter by stooping slightly, whereas at the adjacent beehive cells access was only possible on all fours. The only architectural feature of this weird building is the small window at the east end, which is perhaps 1ft. in height by some 9 or 10in. wide, with an arched head cut out of a single stone. This building is by no means unique in this district. We saw in the course of the day's excursion two others of precisely the same character in the immediate neighbourhood, one of them now degraded into a pigsty. The name Gallerus, or Gallarus, has been variously interpreted, but the most probable derivation is that of Mr. W. M. Hennessy, that the word is gall-arus, meaning foreign house, and this name seems to point out not only the remote date of this structure, but also to indicate that the style is to be looked upon as imported rather than indigenous. The character of the roof of those buildings is worth notice. It is in each of stone, and formed by means of overlapping courses, dressed internally and externally to a graceful curve from the base to the ridge of the roof. For the next step forward I must ask you to follow me to the wild and romantic vale of Glendalough, in county Wicklow, where is to be seen the oratory which tradition ascribes to St. Kevin, and which is popularly known as St. Kevin's kitchen, from the round tower which rises from its roof with something of the appearance of a chimney. In this cell of St. Kevin there is an immense advance in the architecture from that of the earlier cell, such as that of Gallerus. Fergusson, whose dates are usually most accurate, places this as belonging to the 7th century, at which this saint is supposed to have lived; but the advance in style is so marked, that I suspect that the date is considerably later than that assigned by Fergusson. We may note three principal points of progress. In the first place there is, at the western end of the church, over the trabeated doorway, a perfect structural arch, one of the earliest on record, and very rude in construction, but still a great advance on any previous work. Secondly, we find a true roof rising from a wall-plate, with an arched chamber in the roof over the tunnel-vaulted nave of the church, and thus we get the germ of that feature, which is so typical of Irish buildings; and, thirdly, we have a tower, which gives an elegant appearance and considerable architectural effect for so small a building. There is, moreover, a distinct division into a nave and chancel, which indicates a great advance of ritual over the simple masses, which could have been performed in the ruder buildings we have seen. The tower is circular, and of the same plan as the well-known round towers, and here again we have evidence that it is of the same date as they are. Since Dr. Petrie's time, it has been generally accepted that these round towers date from the 9th to the 12th centuries, and I think that the commencement of this period is rather to be looked upon as the date of this building than the two centuries earlier to which Fergusson has attributed it. My next example is one which the chroniclers have no hesitation in placing in the year 1007. Among the valleys for which Ireland is so justly celebrated, perhaps for exquisite beauty none can excel that of the Shannon where it emerges from Lough Derg. Here is the important settlement of Iniscaltra, or Holy Island, and here stand to this day the ruins of seven churches, together with a round tower, which stands amid these ruins with impressive dignity and grandeur. At the lower end of this lough stands the small town of Killaloe, with its cathedral of rude 13th-century work, and under its shadows the smaller and more venerable building, which seems to form a connecting link between the oratories such as have been described and the so-called Hiberno-Romanesque churches. In size it scarcely exceeds the former, being only 36ft. by 25ft. in external measurement. Its masonry is rough, but not unscientific in construction. The interior contains two chambers, one with a tunnel-vaulted roof similar to the one at Glendalough, surmounted by an upper croft resting upon the vaulting, and directly bearing the external roof, which is entirely of stone. By this construction the use of timber, with all its liability to fire and decay, is entirely avoided, and we get a far sounder construction than where these elements of destruction are introduced into our Gothic buildings. The main ornamental feature is the doorway, which has a strongly marked semicircular head, which at first sight might be classsed as Norman by an English architect, but on closer examination differences between it and Norman work are apparent. In the first place we have the inclination of the jambs, which lean inwards to the extent of 5in. Again, the mouldings over the door consist of bold though simple rounds and hollows, very different from any Norman work in either England or the Continent. Again, the date of 1007 is conclusive against any Norman influence. At that date we have no Norman work, even in Normandy itself, which can compare with this building, but we must go much farther south, to the Byzantine churches of Perigueux and the South of France, before we find examples of construction similar in principle to these Irish stone-roofed oratories. To attempt to go through the long list of Hiberno-Romanesque churches within the limits of a short paper would be an impossible task, and these churches have been so admirably figured and described by Lord Dunraven in his "Notes on Irish Architecture," as well as by Dr. Petrie in his "Round Towers and Ancient Ecclesiastical Architecture," that I cannot do more than refer the student to these two works, and conclude with a few remarks on the building which we may perhaps consider as the culminating glory of Irish architecture before its decline under English inflences—Cormac's Chapel at Cashel. Here we have a building which at first sight presents all the details of the most elaborate Late Norman style, but on closer inspection we find that, however much the ornamentation may resemble Norman, the construction upon which this ornamentation is laid is distinctly Irish in character. Fortunately the Annals of Inisfallen give us the exact date of this chapel, which was commenced in 1127 and consecrated in 1134, its founder being Cormac McArthy, King of Munster, who was assassinated four years later, in 1138, and we also have evidence that St. Malachy, the then leader of the Irish Church, had spent much of his time on the Continent and especially in France. We may thus account for the introduction of Norman details of ornamentation of this church, but however this may be, at least the structure is not that of Norman builders, who at this time used the well-known coarse jointing in their masonry till a later period than this, while at Cashel we have squared stones carefully laid upon very fine joints of mortar, such as we certainly do not find in England nor in France at this date, which is at least half a century earlier than the English invasion of Strongbow in 1172. We also have the nave of the church scarcely larger than the earlier churches I have spoken of, and this at a time when both England and France had not only laid the foundations, but in many cases had completed the gigantic cathedrals, which arose in such numbers during the 11th century, but above all we have the same typical double stone roof as in the oratories at Glendalough and Killaloe. In the wilds of Kerry such a construction may have been necessary on account of the absence of timber on the shores of the Atlantic; but in the far inland provinces, at Killaloe, Kells, or Cashel, all fertile and well-wooded, that such a construction should continue proves that it had become a national style. And when we consider the unsatisfactory character of the wooden roof over the elaborate stone vaulted ceilings of our magnificent cathedrals, and not only the want of truth which such a construction implies, but also the danger both from fire and decay, where such a perishable material as timber is used as an essential portion of the structure as the roof, we can only regret that the stone-roofed system of construction should have been doomed to destruction in its infancy, and repeat the words of Fergusson, "Had the Irish been allowed to persevere in the elaboration of their own style, they would have applied this expedient to the roofing of still larger buildings than they ever attempted, and might in so doing have avoided the greatest fault of Gothic architecture."* At any rate, I think that the conclusions of the Irish antiquaries, that they had a national style of their own in Ireland before the Conquest in 1172, is fully borne out by facts, and a few words on the probable source of this style may not be out of place in conclusion. To those who are desirous of ascertaining whence Irish architecture was derived, I would advise the reading of three books, which appear to me to be full of indirect suggestive value, Butler's "Ancient Coptic Churches," Curzon's "Monasteries of the Levant," and De Vogue's "Architecture of Central Syria"; and not only in architecture, but also in institutions, ceremonies, ritual, customs, and laws, are to be found resemblances between Ireland and the far East, which are not to be explained by any theory of coincidences, but seem to point out a direct line of descent. Let them then look at the map of Europe and note that county Kerry, in which most of these typical churches are to be found, forms the extreme western portion of Europe, and is the point at which navigators from the south would touch on their northern travels, and the conclusion is not to be escaped that here, at all events, is a possible explanation of these resemblances, which have been so often pointed out.

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[*] These dimensions, quoted from Fergusson, are too great. The measurements given by Lord Dunraven are 15ft. 3in. by 10ft. 2in.

[†] Handbook of Architecture, p. 925.

At the close of the lecture a vote of thanks was accorded Mr. Bros on the motion of Mr. J. G. Waller, F.S.A., seconded by Professor Henry Adams.

THE ARCHITECTURAL ASSOCIATION.

AN ordinary meeting of the Association was held on Friday evening, the President, Mr. F. T. Baggallay, in the chair.

HOW THEY BUILT IN SHAKESPEARE'S TIME.

A paper on this subject, illustrated by numerous lantern views, was read by Mr. J. A. GOTCH, F.S.A. He asked what were the processes by which the rich and goodly dwellings of Shakespeare's period came into existence. Whom had they to thank for those stately homes, which the public never tired of seeing on the pages of the magazines, and which presented inexhaustible mines of detail whence architects might fill their sketch-books? The old work had not the self-conscious air of modern buildings designed by an architect, but had much more the appearance of spontaneous growth about it. Lord Bardolph, in the "Second Part of King Henry IV.," was made to say—

"When we mean to build,
We first survey the plot, then draw the model;
And when we see the figure of a house,
Then must we rate the cost of the erection."

To "draw the model" was to prepare the drawings—hardly to construct an actual model—though they heard of such a course being taken in one or two instances, and even of a model being brought from Italy. The drawings prepared, the next matter was to calculate the cost, and of this process we had various records and examples left to us. One, for instance, at Woolwich, built in 1572, was quoted in parts as a specimen. It enumerated so many thousands of bricks at 10s. the thousand for each story, with 3s. 4d. a thousand to the bricklayer, the timber frame being estimated at 6s. 8d. a foot. Then followed the roofing. So many thousand tiles at 10s. the thousand, so many bushels of tile-pins, so much lime and sand, so many loads of lath, and so much for laying at 2s. 6d. the thousand. Similarly with the plasterer; the materials so much, and the "lathinge and layinge of all the wales and sellinges," so much. The whole estimate amounted to £750 19s., and occupied only three and a-half sheets of foolscap. In the time of Shakespeare the term architect was not in general use, but rather employed as an academical term. John Shute, in his book on the "First and Chiefe Groundes of Architecture," published in 1563, used the name freely; but he invested it with an air of complete unreality by the remarks he made in connection with it. His definition was the old one, derived from Classic times, of "chief-workman"; and, indeed, for the next century the same definition was used, for in a dictionary of 1656 "architect" was defined as "the master-builder, the chief workman in architecture, the first inventor." Another instance of the use of the term is to be found in the epitaph of Robert Smithson, in Wollaton Church, dated 1614. He was therein described as "Architector and Survayor unto the most worthy house of Wollaton, with diverse others of great account," which was probably the first recorded instance of that conjunction of the two words which appeared to give so much offence just now. We were accustomed to look upon the well-known John Thorpe as an architect; and no doubt he was in so far as providing plans and elevations of many large houses constituted an architect. But he was never called so. He was always designated a surveyor: in all the references to him that occurred in the State papers his functions were those of a surveyor. But although he was called a surveyor, and did the work of a surveyor, there could be no doubt that Thorpe designed architecture, and that to him we owed the general arrangement and appearance of some of the richest and goodliest dwellings of Shakespeare's time. Mr. Gotch proceeded to show how widely different were the processes employed in Shakespeare's time from those in vogue at the present day, basing his remarks on Lord Bardolph's well-known speech, the first few lines of which are quoted above. The drawing of the model, so far as can be gathered, constituted one of the chief duties of the architect of those days, the other being to survey the works during their progress. Drawing the model was the work of such a man as John Thorpe, and the way in which he did it might be seen in his book at the Soane Museum. Plans and elevations were all that the architect provided in the way of drawings, as a rule, though he seemed sometimes to have furnished a few details. Still adhering to his text; the lecturer said he had already shown how they had "rated the cost of the erection"; and as to the process of "drawing anew the model in fewer offices" when the cost was too great, John Thorpe's book furnished us with an example of this also, for he made two sets of plans for Sir Walter Covert's house at Slaugham, in Sussex, the one adopted being somewhat the smaller. These architects or surveyors who provided the drawings were well versed in their art, and in the fashions of the day. Some of them went to Italy, as John Shute did, he being the first travelling student of whom we had any record. Those who either could not, or did not, go direct to the fountain-head, in the manner of John Shute, studied the books published on architecture, of which there were a good number. There was very clear evidence that John Thorpe, for instance, did this, since he had copies among his drawings of some of the illustrations of books then recently published. The "models" of houses, therefore, were drawn by experts who had imbibed great draughts of foreign influence, and who, with minds full of what they had seen abroad, and fingers itching to draw Classic columns and pediments, nevertheless had the good sense to remember that their clients were Englishmen, and lived in England. The result of these opposing forces was to be seen in the beautiful houses which covered the land from one end to the other. But the model drawn and its extent definitely fixed, there came the process of executing it. With the amplication of his small-scale drawings, the architect of those days seemed to have little to do. Of detail drawings, except a few full-sized sections of strings, mullions, and handrails, John Thorpe had absolutely none. Mr. Gotch said he only knew of one detail drawing of that time, and that was preserved in the State Papers, and was indorsed in Lord Burghley's own hand "Henryck's Platt (or plan) of my baye Wynd." It was drawn to a scale of about one inch to the foot, and showed a plan and elevation, but whether it was the plan of a window already built, or was the drawing from which it was to be built, could only be conjectured. The probability is that the general small-scale drawings were handed over to a local agent or foreman, or clerk of the works, who hired labour on behalf of the building proprietor, overlooked the men for him, made bargains with them for doing the work, and paid them from time to time. All the correspondence that had been found relating to building in those days pointed to this conclusion. At Burghley we had Peter Kemp, at Cobham Richard Williams, and at Hatfield Robert Liminge—each one writing to his master for instructions, and reporting progress, but always referring points that required settling to the decision of the employer, not of an architect. The various workmen, or the chief of them, were engaged for their skill in their particular work, not only as workmen, but also apparently as designers. That was to say, the stonemason would have to carry out the work from the small-scale drawings, and would supply all the details himself; and, accordingly as he was skilful or the reverse, the details were good or bad. This seemed to be borne out by much of the work of that time, which looked well at a distance, but lost by a close inspection. The architects or the surveyors did undoubtedly themselves study the details of such things as cornices and columns, since Shute's book was little else than a display of the Five Orders; and Thorpe had one or two pages wholly devoted to technical drawings of the same kind; but there was no evidence that they supplied to the masons full-sized sections of any of the numerous entablatures that were executed. The masons did not work away entirely on their own responsibility; they kept in touch with their employer to a certain extent. The carved stonework was not always executed on the spot. The most important features no doubt were; but there seemed to have been no objection to having the carved strings, where the pattern repeated, done away from the work in large quantities and then fitted into the spaces that required filling. This was very evident at Kirby Hall, where, in many cases, the carved group of flowers or fruit had been ruthlessly cut in two, so as to fit up to one of the large projecting pilasters. Such an expedient was hardly excusable, even in a terracotta building like Sutton Court, near Guildford, where, no doubt, they sent some distance for their moulded work; but in a stone building, with masons on the spot, it was a distinct blemish, and exhibited a neglect of that good finish which marked the conscientious and careful workman. But as the mason provided his details, so did the plasterer provide his, and the joiner, most likely, his. From some letters sent to Lord Cobham in 1601 we gathered some interesting particulars as to the buildings in progress. The plasterer, it was stated, would submit to his Lordship his models for a ceiling, and a bargain was driven with one Giles de Whitt for the making of the chimney-pieces. Thus Lord Cobham's foreman or agent not only looked after his buildings, but mixed up reports on building matters with the information that he had "spoken to ye drap to make provision of cloth for Liveries." Not one word of a controlling architect. One part of Lord Bardolph's advice was to "question surveyors." As a matter of fact, in the building of Burghley House, Sir William Cecil did question several. He employed, as already shown, Henryck to make a plan of his bay window, and at different times he sent at least two other surveyors, Edmund Hall and Richard (not John) Shute, to report upon the progress of the works. Leaving Burghley for another great palace of the time, Holdenby, we got an interesting glimpse of that great house in course of its erection. In the year 1579 it was approaching completion, and Lord Burghley, being in the neighbourhood, and being himself a great builder, wrote to Secretary Walsingham to tell Sir Christopher Hatton that on his way to Northampton he and the Chancellor "mean to survey his house at Holdenby." Sir Christopher was then at Greenwich, so he wrote to Lord Burghley to welcome him and make him free of Holdenby, beseeching him "for your opinion to the surveyor of such lacks and faults as shall appear to you in this rude building." How far Sir Christopher was prepared to accept Lord Burghley's suggestions, how far the soul of the architect or surveyor was to be wrung with the necessity of altering his design at the bidding of his client's grand friend, we were spared the necessity of inquiring, for his lordship was mightily pleased with the house, and he wrote next day to his host to say so. Still, there was no acknowledgment of an architect, as we interpret the word. The praise was all given to the promoter, as, indeed, was the custom now. Mr. Gotch referred to the rules laid down for the guidance of architects by Shute, which were, he remarked, merely an echo of Vitruvius, and not afresh devised for his own time, and in closing observed it would not be amiss if we tried to bring about such a state of things that once again the mason and the plasterer and the joiner might be able to help us in design as well as execution.

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* Handbook of Architecture, p. 919.

After the lantern illustrations had been exhibited, a vote of thanks was accorded Mr. Gotch on the motion of Mr. A. H. Clarke, seconded by Mr. C. H. Brodie, and supported by Messrs. F. T. W. Goldsmith, Bernard Dicksee, and J. C. Stockdale.

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ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE following members were elected last Monday at a general business meeting, Mr. Macvicar Anderson in the chair:—

As Fellows: Mr. W. R. Bryden, Buxton; Mr. F. H. Humphreys, Hastings; Mr. J. Medland, Chancery-lane; Mr. H. A. Matear, Liverpool; Mr. W. A. Gelder, Hull; Mr. John Young, Great Winchester-street, E.C.; Mr. A. Burnell Burnell, Arundel-street, Strand; Mr. G. H. Stanger, Wolverhampton; Mr. J. W. Brooker, London Bridge; Mr. J. T. Lee, Bedford-row, W.C.; Mr. A. Rovedino, Camden-grove, S.E.; Mr. G. D. Oliver, Carlisle; Mr. W. A. Longmore, Walthamstow; Mr. J. Mackland, Bloomsbury; Mr. W. L. Carruthers, Inverness; Mr. E. M. Gibbs, Sheffield; and Messrs. H. Spalding and A. W. S. Cross, both of Queen-street, E.C.

As Associates: Mr. T. I. Goldie, Bridgwater; Mr. J. H. Beckett, Longton, Staffs; Mr. G. F. Collinson, City; Mr. F. E. Littler, Hastings; Mr J. R. Wigfull, Sheffield; Mr. J. E. Evans, Reading; Mr. T. C. Agutter, Portsmouth; Mr. W. E. Barry, Scarborough; Mr. F. S. Baker, Strand; Mr. T. G. Charlton, Phœnix-street, N.W.; Mr. W. C. Hall, Leeds; Mr. E. Osborn, Wandsworth; Mr. A. Mackintosh, Barnsbury; Mr. W. E. Hewitt, Westminster; Mr. H. Helsdon, Upper Baker-street, N.W.; Mr. A. E. Kirk, Leeds; Mr. H. Budgen, Llandaff; Mr. C. A. Hindle, Liverpool; Mr. C. Burton, City; Mr. H. A. Saul, Spring-gardens, S.W.; Mr. H. S. East, St. John's Hill, S.W.; Mr. F. A. Coles, Spring-gardens, S.W.; Mr. A. E. Tiller, Southampton; Mr. G. P. G. Hills, Adelphi.

Monsieur César Daly was elected Royal Gold Medallist for the current year.

A long debate insued on the "Amended Suggestions for the Conduct of Architectural Competitions."

The Chairman proposed the adoption of the paper prepared by the Competitions Committee, and this was seconded by Mr. James Brooks.

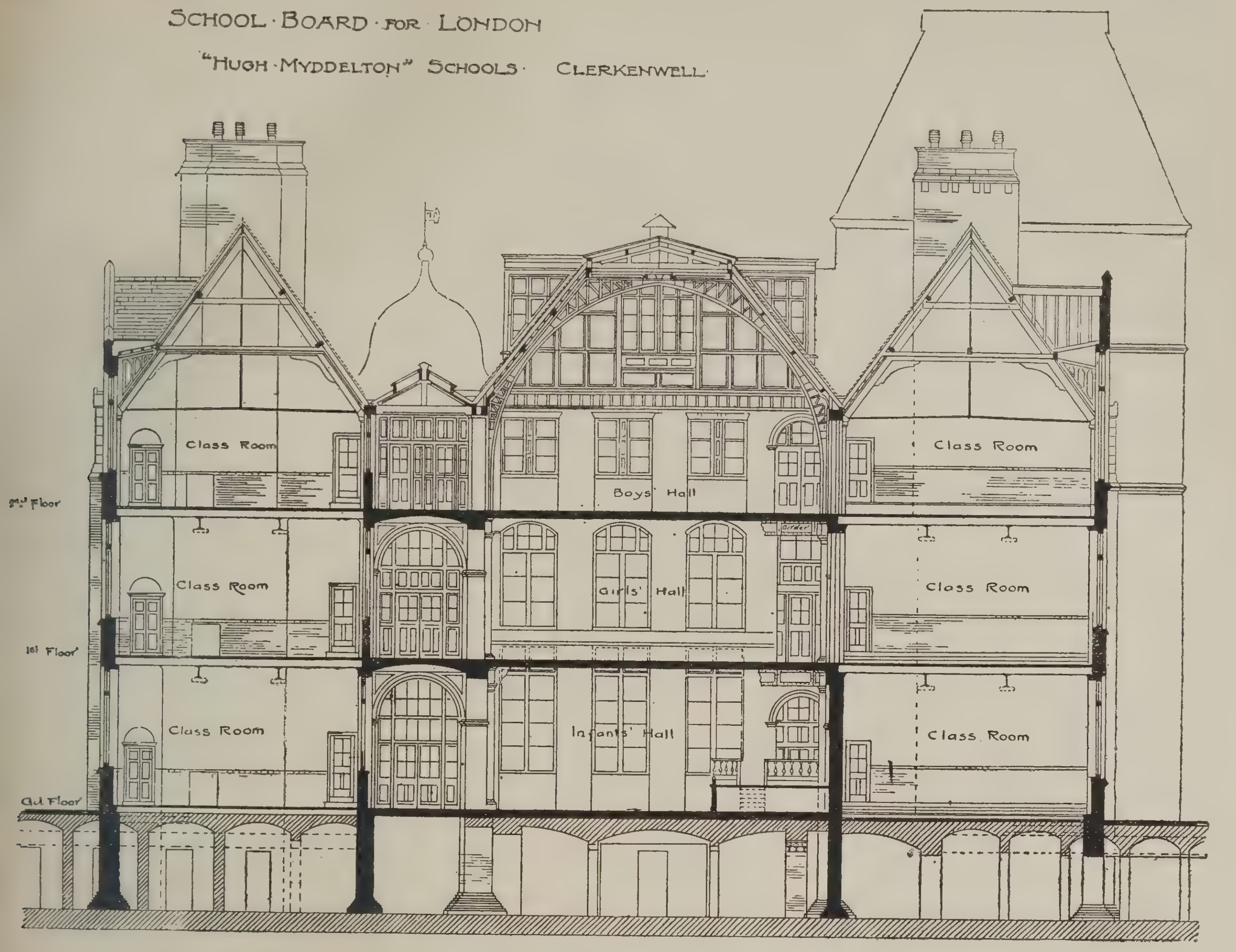
Mr. William Woodward pointed out several details in the various clauses which were open to amendment, one of which was that no assessor should "directly or indirectly" take part in competing or act as architect for the proposed work in connection with which he was engaged as referee. The matter of stipulated cost for the building competed for having once been settled by the assessor in advising the promoters at the outset, should not be departed from in making the award.

Mr. Maurice B. Adams suggested that the power proposed for the assessor "to determine which of the designs conform to the instructions and *to exclude all others*" should be limited to his advising the committee on the matter, leaving the actual exclusion to the committee, thus affording the promoters the opportunity of reviewing the technical objections pointed out by the assessor. Mr. Adams urged the necessity of the referee's report being made available for the perusal of the competitors when the competition drawings were open for their inspection after the award had been made, so that all being fair and square those most interested might know precisely the reasons for the decision arrived at, and that the assessor might be aware when determining the merits of the various designs that his decision must be based upon such good reasons as may be plainly stated in black and white for reference. The speaker contended that competitors had a right to know, however briefly, why their designs were not chosen, and in limited competitions particularly this was desirable.

Mr. Williams supported this view, and instanced a case in which his plans were placed first by the assessor, but a friend of the chairman of the promoters in question was after all appointed for the work, the assessor's report being kept private.

Mr. J. J. Stevenson, F.S.A., thought that more than one referee should be appointed in large competitions, as particularly in matters of taste more than one opinion was desirable.

Mr. Alfred Waterhouse, R.A., said that they could not have a more important matter brought before them than that of competitions, and as one who had acted on many occasions as professional referee, he knew the great difficulties which had to be considered. As to more than one assessor, he felt that increased care and undivided attention could be devoted to the study of complicated plans and technical arrangements



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hen one person acted alone; when engaged ith others the attention was distracted by side sues, and on the whole he thought a sounder dgment was more likely to be obtained one, provided, of course, the assessor was competent man. The point raised by Mr. aurice Adams as to the report of the referee ing made known to the competitor, was, he greed, a subject of the highest importance for eir consideration. He realised the difficulties rticularly where a large number of plans, y 100, were sent in. He always made his ports as short as possible, and thought this was e best way, but he agreed entirely that when l was square and fair it was an advantage for e competitors to be allowed to see the terms of e award.

Mr. Henry Currey thought the publication of e referee's report would often lead to disputes.

Mr. G. T. Hine spoke of the necessity of e scale of professional charges of the Institu te being referred to in the list of competition ggestions, and he agreed with Mr. Waterouse's proposal that travelling expenses should understood by the committee of a competion as due to the architect over and above his per cent., and that when part of a work was stponed some payment on account of it should made to the architect, who often now was left take his chance. The debate was continued Messrs. Statham, Ridge, Hansard, Cole lams, Brydon, and others. In the end, the ggestions paper was passed, subject to the prosals made at the meeting being considered by e Council and incorporated as far as possible.

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A lift railway is about to be constructed at rewsbury, to connect the summit and foot of the stle Hill. Mr. Marks is the engineer.

HUGH MYDDELTON SCHOOL.

THE block of schools now being erected by the School Board for London occupy the site of what was formerly the House of Detention at Clerkenwell. When this was removed the board acquired the site from the Government for public elementary school purposes, and decided to build a school for 2,000 children, divided into three departments—boys, girls, and infants; a large centre for the instruction of deaf and dumb children, a school for the instruction of the blind, and also a cooking school, this being a central position for all these needs, and the site containing an area of upwards of two acres. The schools were planned by the board's architect, Mr. Thos. J. Bailey, and the contract is being carried out by Messrs. Bull, Sons, and Co., Ltd., of Southampton, at a contract price of £41,492, the entire scheme being the largest on one site which has, as yet, been carried out by the board.

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FROST: ITS EFFECTS ON BUILDING.

OUT-OF-DOOR building operations have been much interfered with by the recent frosts. In many new houses which are being erected by the speculative builder the mortar-joints and pointing have become loose or disintegrated or entirely fallen out through the moisture in the materials. The unfortunate buyer who is persuaded to invest in house property may find a heavy outlay required in making good to the brickwork, in repointing, in restoring stonework that has fractured and become loose by the wedge-like action of expansion incident to frost. We cannot understand any builder, except under pecuniary obligations, proceeding with brickwork during a severe frost. He generally takes not the slightest precaution to cover the walls with weather-boards or straw or to use quick-setting mortar made of unslaked lime, a practice which prevails at Christiania, and is said to be successful. This indifference aggravates the offence. Even in Christiania, where building in frosty weather has received particular attention, it is considered that bricklayers' work does not answer in more than 14° to 9½° below freezing point. The bricks, too, lie exposed to all weathers on building estates; there is no attempt made to protect them from the rain or frost; the consequence is, they are used filled with moisture or congealed water. So with blocks of stone; we have seen them sawn and left exposed to the rain or snow, and immediately afterwards cut up and built up on the brickwork. No one looks after these irregularities, and they go on unchecked until the results are shown in rotten brickwork and stone that flies all to pieces.

In glazing roofs, the same indifference to weather is met with. As glass expands and contracts by heat and cold, the putty joints give way and crack. It is very seldom that we find ordinary care shown as in leaving play room in the rebates for expansion and contraction of large sheets of glass, or, better still, to fixing the glass in grooves, especially for shop-front windows. Many systems of patent glazing, such as that of Helliwell, by affording protection to the joints by lead caps, and allowing grooves underneath for condensed moisture, prevent the mischief. The effects of severe frost tell more seriously on the work of the plumber. Not only do the pipes give way by the expansion of the water in them, but the lead flats and gutters contract to such an extent as to cause them to split or tear in the weak parts, or at their connections with the flashings. Yet it is extraordinary that the same unscientific method of laying and fixing should prevail, and that architects still permit these modes of execution to be carried out, or lead to be used unable to bear the strain put upon it. When we can insist on a certain thickness of lead for flats and gutters, and specify certain methods of laying to allow for contraction, when we can incase our water pipes and cover them in non-conducting substances, and provide taps for emptying them during a severe frost, when we can fix our pipes without holding them-tight at the joints, there ought to be no possible excuse for allowing them to become exposed to the destructive agencies of frost and heat. The public hailed the advent of the "registered" plumber to do much to prevent these shortcomings, to instruct in scientific plumbing, and to create an improved system of sanitation; but all will be of no purpose unless the appreciative British employer puts within his reach the means for securing the benefits of technical skill, which he can only do by putting his hand in his pocket and paying honestly those who can do the work.

SOMETHING ABOUT CHIMNEYS.—III.

By F. Dye.

In the last paper it was mentioned that with pipe chimneys, when carried in conspicuous positions inside a house, the chief thought was to keep the size as small as possible, but frequently with ill-results to the stove.

It has to be acknowledged that the unsightliness of a pipe-flue increases in proportion with its increase in size; but, strange to say, no one, at least very few people, think of overcoming the ill-appearance of the pipe by decorating it. A 9-in. pipe coloured to match its surroundings has a decidedly better appearance than a 6in. pipe left its natural black colour, yet everyone seeks to reduce the evil by using a smaller pipe, much to the detriment of the stove very commonly. In using small pipe, about half those who put it up only think of what it will do when they first test it, and (coal fuel being used) no thought is given to what it is capable of doing when a collection of soot occurs inside it; and iron pipe flues collect soot within them much faster than brick chimneys, as will be explained directly.

In decorating iron pipes that have to withstand heat, it is not proper to use any materials such as oil and those matters which will not stand the high temperature that is sure to be felt, particularly near the stove. Ordinary oil paints are of no use whatever. Brunswick black is very commonly used—for what reason it is hard to understand, for it blisters and burns off, and creates a highly disagreeable odour in so doing, or at any time that the stove is allowed to get unusually hot. Then, supposing it had none of these disadvantages, it does not make the pipe any more sightly than if it were left quite plain, its natural dark grey colour. If anything, the appearance of the plain pipe would be preferable, and the metal when indoors does not perish and needs no preservative painting.

To decorate these pipes, only water colours or washes can be used—merely the colouring matter, with water, and a little size as a fixative. If a little lime-white be made, and coloured with burnt umber, this will give the pipe as good an appearance as could be desired, and the heat will not affect it nor cause it to peel. The appearance can be further improved by ornamental stencilled bands round the pipe here and there in a darker shade. Of course, a brown shade will not suit all surroundings. It would not agree if the general decorations were blue, but the white wash can be tinted just as may be required. In the latter case a light slate colour might be applicable. A skilled decorator could probably choose his colour so that the pipe in some situations, although in full view, would scarcely be noticed at all.

This completes the question as to the size of the pipe, and the next possible fault that may be made in carrying a pipe-flue from a stove to an existing chimney (or as a complete chimney in itself) is that of making bad joints where the lengths of pipe are joined. It was explained in a previous paper how the introduction of cold air in a chimney went to interfere with its efficiency, possibly to ruin it, if the trouble was in a sufficiently aggravated form. Now this explanation applied to those forms of grates, &c., which admit the air so freely at the chimney opening where the grate itself is. With the point now to be discussed the trouble is commonly of a worse character than that, owing to the air entering at different points in the chimney away above the fire, which goes to materially reduce the quantity of air the fire gets, and which it needs under any circumstances.

If we fix a stove in a room, and carry a pipe from it into the chimney breast some few feet away, as Fig. 6, we shall get bad results if the pipe joints are not sound by reason of cold air passing in as indicated by the arrows. The ill results in this instance are two-fold, for we not only get the cooling influence of the air passing in at these fissures, but the draught which we depend upon to pass through or near the fire in the stove, only does so to a lessened extent with proportionately lessened good results. It will be understood after a moment's thought that the draught in the chimney being due to lightened air being displaced by cooler air, that, to effect this, the cool air will enter at every possible point it can. We could not expect it to choose any particular opening to enter by, for the pressure of this atmosphere is equal at all points in the chimney. As a rule, however, it will be found that openings of this or a similar kind have the air pass through them more freely than it will do through the fire. The fire in itself is an obstacle to its free passage, and if there is any difference in the clearness of the passage into the chimney, the air will go chiefly through that which offers the least resistance. It evinces a choice in this respect.

A simple experiment to prove this can be made with almost any close-fire cooking-range (a kitchener, as it is sometimes called). These ranges, when the dampers are all drawn out, have the fire burning like a furnace, as all the draught has to pass through the fuel. If, while the range is working in this manner we throw open the register-door, the door in the top covering-in-plate of the range, we shall find that a swift inrush of air will take place at this point, and the fire will be instantly checked. In quite the majority of cases the fire will be so seriously affected as to smoke, and be quite unsuited for any cooking purposes. (The height of the chimney governs the effect produced, supposing it to be an efficient one.) From this experiment it will be seen that the opening into the chimney by which air can enter without passing through the fire, has its ill-effect instantaneously. It is not a question of the air so entering having a cooling effect upon the chimney, for the check upon the fire takes place the very moment the door is opened. The existence of the opening itself, in the chimney above the fire, is the cause of the trouble; but, of course, the cold air which enters would create still further ill-results when it had been flowing in long enough to have a cooling effect upon the interior brickwork.

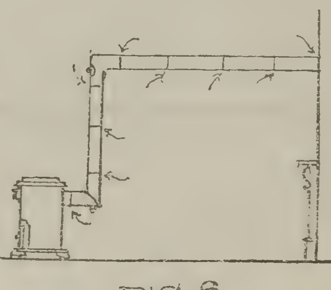

FIG. 6.

From this it will be readily seen what a prejudicial effect bad joints in a smoke-pipe must bring about. It matters not how small the crevices may be, they should be tightly stopped. Occasionally a chimney may be of such a height or character that its draught is strong enough to ignore small leakages; that is to say, the draught is of such strength that a leakage merely takes a small proportion of it, and there is still abundantly sufficient passes through the fire to keep it burning properly. A chimney of this efficiency, though, is no excuse for bad pipe joints. Bad joints are evidence of bad workmanship or carelessness.

It is hardly possible to get air-tight joints in iron pipes without the aid of some packing material, and for this purpose nothing excels common glazier's putty. It is necessary to first paint the surfaces before the putty is applied. This insures the putty adhering to the metal surfaces. A very imperfect joint is made without paint. The peculiarity of putty is that it hardens with heat, and after a little time the joint will not only remain sound, but it will be found firm enough to require a genuine effort to unmake it. Putty has a particular advantage in being of such a consistency that its application is simplicity itself, whatever form the joint may take. It is largely used for making the joints between the castings of cooking ranges, and for this it can hardly be excelled. In all these cases it is the subsequent heat that secures and perfects the joint.

As just mentioned, when stoves are connected with tall chimneys, a leakage, supposing it to be known, requires no consideration in many cases, as the draught is of such a character as to require checking by some means or other under any circumstances. This is often the case with close stoves, for the simple reason that these appliances require very little draught to keep the fire going, and to carry the smoke away. With practically all stoves, the air inlet is at the bottom, and the smoke nozzle at the top, and a straight open space exists between the two. Nothing better could be desired, and if a stove were placed in an open space with no high surroundings, a pipe-chimney 4ft. high would work it successfully. It would almost work without a chimney at all.

Sometimes a portable form of cooking-range is fixed standing out in a room or kitchen. This is done for various reasons: for convenience, or commonly to avoid interfering with a large existing range. Portable ranges are frequently fixed in front of existing ranges with a pipe-flue carried into the chimney. Now, when a range is used with a pipe-flue, the question of joints is a very important one. With almost any form of portable range the passage that the air or draught has to take from the fire opening to the chimney is so much the reverse of straight or direct that a certain resistance is caused, and a much stronger draught is needed than with stoves with the straight passage through them.

It is probably known to everyone that the direction the draught has to follow in passing through a close fire-range is as indicated by the arrows in Fig. 7. This means that, in the first place, the air has to travel in directions quite contrary to that which it is natural to follow. It was explained earlier that the convective action brought about by subjecting air to heat causes the warmed air to take a directly ascending direction. We, however, in this cooking-range require the draught (around the oven) to first pass along a horizontal flue, then *descend*, then travel horizontally again before it can ascend in the slightest degree. In addition to this, these flue-ways are invariably narrow, and this, with the abrupt angles, brings about considerable resistance to the passage of the air and the smoke it conveys. It must also be understood that a sluggish draught will never do for a close fire-range; it may possibly work it for one day, but the deposit of soot is so abundant from the dull-burning fire that nothing can be done with the range unless the flues are cleaned daily, and even with this care the range is a very limited success.

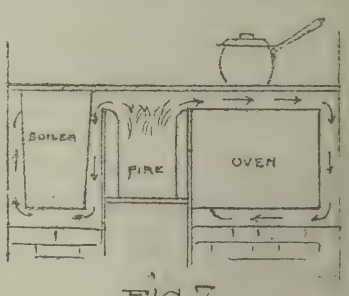

FIG. 7.

It is always necessary, when fitting up stoves and ranges in this way, to see that the joints in these articles themselves are sound. Range-fitters (the men who actually fit the castings together) are so apt to think that all ranges are set in openings with brickwork round them (which goes to stop up all leaky joints), that a deal of carelessness is often introduced. It is also very necessary to see that where the pipe fits on the nozzle of the stove, and also where it enters the chimney breast, are made air-tight. In other words, see that all the air which enters the chimney first passes through the fire. This is strictly necessary. Many a range has been a temporary failure wholly because one of its soot-doors has been left out of place or lost. The failure has been remedied the instant the door has been put in its place, and the opening thus stopped.

This brings to mind the third possible cause of failure in fixing stoves or ranges in this way. This error is in omitting to stop or close the brick chimney off below where the pipe enters it. When we carry a pipe into an existing brick chimney through the chimney breast, it follows that some form of grate or range is at the bottom of this chimney, or it may be that the grate or range has been removed, and a bare opening exists. Whichever may be the case, it is absolutely necessary that all passage of air into the chimney in this direction be stopped. If it is an old-fashioned register grate that is there, the register flap can be tied down, and if necessary jointed with putty (the register can be opened when the chimney has to be swept). If it is an old open range that exists, then the open mouth of the chimney over the range must be closed across in an airtight manner with a sheet of iron. To prevent the removal of this sheet every time the chimney is swept, a well-fitting door must be provided in it for the sweep to operate through. In any case, whatever opening exists at the bottom must be stopped. If a close-fire range exists at the bottom of the chimney, and is not used, then see that the dampers are pushed in tightly, and that no doors are left off, or openings exist.

When it is possible or convenient, it is a good plan to stop the chimney just below where the pipe enters, and only leaving room for a soot door and frame for the removal of soot, as Fig. 8. It may be thought that the omission of some provision to close the chimney at the base is very unusual, but it is far from being the case. Numbers of failures have been due to this cause, and if it is a portable range that has been fixed, it is a failure of a very pronounced character when this oversight occurs. It is so much easier for air to pass up this clear and directly-ascending passage, than it is to pass through a fire and a maze of flues, that the range is almost ignored altogether.

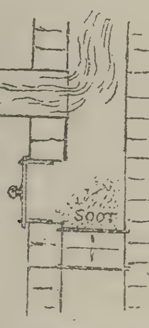

FIG. 8.

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THE PALAIS DES BEAUX-ARTS OF LILLE.

On Sunday, the 6th March, was inaugurated, under the presidency of the Mayor of Lille, the fine monument destined to receive the collection of paintings, sculpture, &c., of the museums of the town of Lille—this town possessing one of the richest and most complete collections in France. A portion of the funds necessary for the construction of the Palais was raised by means of a lottery of five millions of tickets at one franc each. This lottery taking place in the year 1883, produced a net sum of nearly three million francs. A competition in two degress was opened, the winning competitors being the Parisian architects, Messrs. Delmas and Berard, who were intrusted with the construction of the Palais. The building has cost a round sum of five millions of francs, the town of Lille completing the necessary sum above that produced by the lottery. The building occupies 16,000 square mètres, this being really one half of the ground supposed to be occupied; the town intending to complete the remaining half in the course of a few years.

The basement is constructed of a hard blue stone quarried at Soignies, in Belgium; the other portion of the monument of a soft stone from the quarries of St. Dizier, Belgium. This stone, when fresh from the quarries, is very easily worked, but obtains great hardness on exposure to the weather. The whole of the building was therefore constructed in rough blocks, all the mouldings and carving being executed after completion. The floors and roofs are entirely constructed of iron on stone vaulting, all danger of fire being thus avoided. The basement contains the heating apparatus, consisting of 400 horizontal and vertical stoves, warmed by steam and hot water distributed from the heating chambers distant 400 yards from the monument, and connected therewith by a vaulted gallery led beneath the boulevard. The ground floor contains, *en façade*, an immense vestibule 250ft. long by 70ft. broad, and devoted to the *chef-d'œuvres* of sculpture. This vestibule forms one of the largest and best lighted sculpture galleries in France. Two lateral galleries, 150ft. by 40ft., receive the Museums of Arts and Trades and Antiquities. Four angle pavilions, each lighted by a vaulted oculus 30ft. in diameter, connect the galleries. Two fine circular staircases, with vaulted ceilings decorated with costly mosaic, lead to the first story. The rooms follow the same disposition as those of the ground floor, and are devoted to the rich collection of paintings possessed by the town of Lille. The grand *salon d'honneur* on the façade, 150ft. by 40ft., with semicircular vaulted ceiling, and lighted by three immense decorated windows, is well worthy of remark. The general style of the monument is in Free Renaissance, richly treated with sculpture. The greatest credit is due to the architects, Messrs. Berard and Delmas; the sous-architect, Mr. Arthur Vye-Parminter; and the Inspecteur des Travaux, Mr. G. Mahy. The different trades may be classed in round sums as under:—

Stonework	2,000,000fr.	or	£80,000
Ravalement (mouldings in stonework)	300,000	„	12,000
Plasterer	200,000	„	8,000
Mosaic	150,000	„	6,000
Ironwork	450,000	„	18,000
Carpenter and joiner	150,000	„	6,000
Roofs (lead and zinc)	50,000	„	2,000
Heating	175,000	„	7,000
Sculpture	350,000	„	14,000
Generally, &c.	—		—

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CHIPS.

The tender of Mr. Groves, builder, Milton-under-Wychwood, Oxon, has been accepted for new house at Shipton-on-Stour, Worcester, for Mr. James Atkinson. Mr. T. T. Allen, of Stratford-on-Avon, is the architect.

Since 1873 there have been in the diocese of Chester 91 churches restored at an outlay of £276,232, and 53 new churches built at a cost of £226,101.

Mr. John Rust, jun., architect, of Aberdeen, was elected on Monday, by the corporation of that burgh, city architect and superintendent of works, by nineteen to four votes in favour of Mr. A. M. Mackenzie. Mr. Rust was until recently a magistrate, and resigned in order to become a candidate for the post.

Mr. Geo. Soudon Bridgman, one of the vice-presidents of the Society of Architects, has been elected a member of the Devon County Council for the Paignton district. Mr. Bridgman contested for the seat at the last election, and lost by eight votes only. At this election no one could be found willing to contest the seat against him. He belongs to the Progressive party.

At the Islington Vestry meeting on Friday last, Mr. George Green, Assoc.M.Inst.C.E., of the Borough Engineer's Department, Nottingham, was appointed to the vacant office of assistant surveyor to the northern district of Islington, in succession to Mr. T. R. Roscoe, the recently appointed Borough Surveyor of Luton. Islington is one of the largest London parishes, and had a population of 319,259 in 1891. There were a large number of applicants for the vacancy.

The new schools, Ely, near Cardiff, are being warmed and ventilated throughout by means of Shorland's patent Manchester grates and fresh-air inlet panels, the same being supplied by Mr. E. H. Shorland, of Manchester.

The town council of Maidstone decided to build a school of science and art on a site at the end of the Museum Garden, and intrusted a committee to obtain plans and estimates for the building.

THE "GUARDIAN" SASH FASTENER.

Mr. Gawthorp, of Long-acre, has patented a new sash fastener, which he claims is simple and inexpensive. He also points out that there are no parts to get out of order. It is made of solid brass throughout, and there are no springs or iron pins to rust or break. It locks in the usual way. The back sash can be lifted by the lever A without bending. The sashes are drawn close, preventing shake or rattle. The lever arm A, when drawn to position (Fig. 2), is locked by the guard B, which cannot be moved by knife, wire, or tool from outside until the lever is replaced as in Fig. 1.

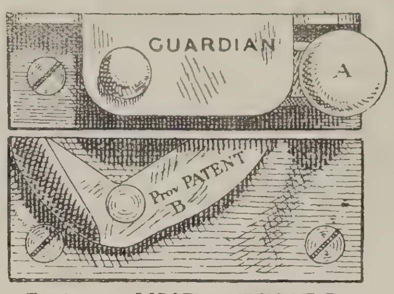

Fig 1 UNFASTENED

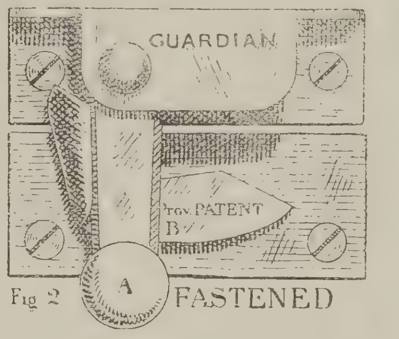

Fig 2 FASTENED

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ARCHÆOLOGICAL.

The Temples at Argos.—Some interesting discoveries have just been made at Argos, the ancient capital of the Peloponnesus, where excavations have been proceeding on the site of the Temple of Hera, under the superintendence of Mr. Walstein, director of the American Archæological School in this city. The workmen have discovered the foundations of the Homeric Temple, which was destroyed by fire in the year 429 B.C., and have also come upon the remains of the second temple, which once contained the colossal statue of Hera wrought in gold and ivory by the famous sculptor and architect Polycletus, a contemporary of Phideas. The relics disclosed up to the present include the bases of the statues which decorated the temple, and also a beautiful head of the goddess dating from the 5th century B.C., besides other heads, fragments of marble sculpture, vases, and bronzes; 180 workmen are employed on the excavations.

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The City Commissioners of Sewers decided, on Tuesday, to acquire for £2,427 certain interests in Threadneedle-street, in order to widen the public way. A retiring pension of £500 a year was voted to Mr. Swale, the superintendent of street cleansing. It was decided to pave the carriageways of Barbican and Bridewell-place and the footways of Aldermanbury with asphalte, at a cost of £2,480, and the carriageway of the eastern side of St. Paul's-churchyard with asphalte and the southern side with wood, at a cost of £2,772.

The Aberdeen town council discussed on Monday the site and pedestal for the proposed statue of Burns to be erected in the city. By sixteen to ten votes a site in Union-terrace, beside the central access to the gardens, was selected, the minority voting for the site at the corner of St. Nicholas-street, recently occupied by the statue of the Queen, which was removed to the vestibule of the town-hall. A design for a granite pedestal has been selected, Mr. John Fyfe offering to erect it for £165. Mr. Bain Smith, London, is the sculptor, and the cast will be finished in about three months.

WAYSIDE NOTES.

THE withdrawal of Mr. Tate's munificent offer in the matter of the proposed Gallery of British Art is little short of a national calamity. It is greatly to be regretted that the Government could not have "bought up the opportunity" for the English people. So solid a nucleus as Mr. Tate's pictures would have eventually led to the possession of a collection of the greatest value and interest. Yet here, after months and months of indecision and delay, we have the whole matter thrown over. The throwing over may be fairly laid to the charge of the authorities intrusted with the duty of finding a site. After making such a difficulty of the matter and causing so much delay, Mr. Tate's action is quite comprehensible. It is but natural.

At the same time one is bound to remember the difficulties that must necessarily encompass the question of site-finding in a crowded city. It was supposed some weeks ago that at the corner of the Imperial Institute-road a suitable position had been found. The science people at Kensington, however, raised objections, and the Government could not see their way to making use of the site for the proposed gallery. The result is the withdrawal of the offer, and the loss to the nation of a unique collection of pictures and a generous gift in solid cash. One may feel a little tempted to say something about gifts freely given, and to suggest that if Mr. Tate offered the nation a gift of pictures and money, it should have been an offer free of conditions and restrictions. When, however, it is considered how badly so fine a collection as the National Portrait Gallery—erstwhile nomadic, like the Arab in the desert—has been cared for, it appears but just and desirable that Mr. Tate should have said that, if accepted, the pictures should be provided with a proper home.

What was the exact object of the deputation from the National Union of Teachers who, on Saturday, waited upon Sir W. Hart-Dyke, as Vice-President of the Council of Education, is not apparent to me; but the deputation urged that drawing should be an optional subject, instead of compulsory, in elementary schools. Anyhow, Sir William did not give them great encouragement, stating that the Department could not consent to the subject of drawing being made optional, as they had at their backs practically a unanimous vote of Parliament, and the very strong reports of two of the most important Royal Commissions that had ever sat upon the question of education. The increase of the grant on account of drawing instruction at elementary schools for this year has amounted to between £30,000 and £40,000. As the Vice-President of the Council of Education, in his concluding remarks, said that in bringing about gradually, but securely, the compulsory teaching of drawing, the Department had no desire to press hardly upon small schools, it is to be suspected that some vested interests are to be identified with this deputation.

The least that can be done to increase the popular appreciation of art and architecture is the compulsory teaching of drawing. It may, in a certain percentage of the youngsters taught, be pure waste of money, on account of the fact that some children might be taught to draw until the dawn of that era when all will be "blue," and never be a penny the wiser in matters artistic; but the broad principle must be observed and the small loss ignored in view of the greater gain. Teaching drawing may not make a draughtsman—it very seldom does; but it is impossible to direct the child's attention to the form, shape, and colour of objects—even if these objects be only the hackneyed cardboard and plaster models of the artists' colourmaker — without putting him on the road to a perception of the truly beautiful, to which, alas! strange fact as it may seem, thousands of our fellows remain insensible. We know that the studios of South Kensington and its allied schools turn out few artists; but all—or a very large percentage—of the labour of teachers in such schools is not in vain. Vast numbers of persons have their eyes opened to the beauty of nature and the instincts of art, which, after all, is of more importance than the manufacture of artists and draughtsmen. So, I should say, with regard to the teaching of drawing in elementary schools—seed is sown that must some day bear fruit.

Another defective flue. The old church of St. Nicholas, at Rochester, has had a narrow escape from complete destruction by fire. As it is, a considerable portion of the roof, a number of pews, one of the galleries, some stained-glass windows, and ancient memorial tablets were destroyed, and a fine organ irretrievably spoilt. It seems a marvel that the building escaped annihilation.

I read that the Kent and Essex brickmakers have decided to continue the policy of limiting the output of bricks during the ensuing brickmaking season by commencing the manufacture later, and by reducing the number of hands employed. They say that the condition of the market renders the step necessary; but it is alleged that the real object is, by restricting the supply, to force up the price of bricks. Capital urges the former excuse; Labour is responsible for the latter statement. It is evident that the effect does not come without a cause, be that what it may. The manufacturers' excuse appeals more to one's reasoning sense. The question is whether the depression is general or the result of some individual and special circumstance. Business, generally, we know is bad, and it would seem probable, unfortunately, that the building trade will, at any rate in the immediate future, get no brisker. In London the result of the County Council elections will certainly cause depression in building speculations, on account of the uncertainty that holders of property will feel with regard to the radical changes rumoured, so that the gentry who so gaily won Saturday's conflict will perchance find that lack of business is a heavy price to pay for cheap tram-rides, *etcetera*.

To return to bricks and the brick market, the increasing adoption of "gaults" must be affecting many fields where the good old "stock" is the staple article of manufacture. This increase must have been noticed by very many. The future promises to see a still further development. Frequently, now, the gault is usurping the place of picked stocks for facings, and for inside work gault bricks seem to be almost ousting the stock from the market. This cannot but be felt severely in quarters where gault clay does not occur. The question then arises, why the neglect of the stock? Builders say they cannot now get good sound stocks as of yore, and that a front of picked gaults is equal to a front of picked stocks, which may be true as regards evenness of colour, but scarcely so with respect to durability. There is too much flake about the gault, and the quality of the brick varies greatly. To my mind, nothing equals in effect and durability the old-fashioned, well-made, well-dried and turned, hand-made stock; but such bricks seem, unfortunately, to be becoming unknown in London, and the machine-made, pale-faced gault daily more in use. I suppose it is all a question of £ s. d.

One may imagine, therefore, that what with the still raging red-brick fever, and the rise and progress of the gault, the poor old stock is hard driven. Seeing that it is no good at all for facings in dirty, sooty London, and that even if it were the red brick would cut it out in nine cases out of ten, and seeing, further, that the gault is now used generally for backings and internal walls, the demand for stocks in London must be a fraction of what it was some years ago. Locally, in the country, the stock may still reign supreme.

When an architect chances upon a job in a district where really excellent stocks are procurable, he should try his hand at something artistic with stocks for the main facings. So great has been the rage for red brickwork in country and town, that the admirable effects to be obtained from stocks, when of sound texture and of bright golden and orange-grey hues, seem to be in danger of ranking among the lost arts. Occasionally we find a building in which the capabilities of the humble stock have been developed. Messrs. I'Anson's Convalescent Home at Swanley Junction is one among very few that I can call to mind as having been evidently the work of architects striving for the time, at any rate, to throw off the red-brick fever. In the country, the stock remains clean and bright, and instead of blackening, as in London and other smoky cities, grows mellow with age. The depressing hue of old stock-brick fronts in London is enough to make architects, who may be so unfortunate as to live in view of a prospect mostly composed of such, forswear for ever the use of such bricks for facings; but in the country the native stock would often be capable of more effective treatment than the results of attempts at red-brick making with miserably unpromising materials. Goth.

OBITUARY.

WE record with regret the decease, on 2nd inst., of Mr. William Hudson, architect and surveyor, formerly of 19, Bennet's-hill, Doctors' Commons (now re-named Godliman-street). Mr. Hudson, during his professional career, held several appointments. He was for about half a century surveyor in London to the West of England Fire Office, at one time assessment surveyor to the Commissioners of Sewers, and, until his recent retirement from business, was surveyor to the Saddlers' Company, a member of the Vintners' Company, and for many years a Fellow of the Surveyors' Institution, and also of the Surveyors' Club. As an architect, he has erected many important buildings, principally warehouses and City premises. His design was selected in a limited competition for the City of London Union Offices in Bartholomew-close. Mr. Hudson partially relinquished active work in the year 1880, when he was joined in partnership by his son, Mr. Arthur B. Hudson, F.S.I. (the present C.C.), and Mr. A. C. Bulmer Booth, A.R.I.B.A. (who was formerly in practice in Buckingham-street, Strand), under the style of Wm. Hudson, Son, and Booth. He retired entirely in 1889, when the style was altered to Hudson and Booth. Mr. Hudson was in his 80th year, and throughout a long, busy life was much respected, both in his profession and out of it. He leaves a widow, and of a numerous family five sons and four daughters survive. His eldest son, Mr. H. H. Hudson, M.A., is Professor of Mathematics at King's College, London. The interment took place on Saturday last at Brompton Cemetery.

We also have to announce the death of Mr. Isaac Barradale, F.R.I.B.A., which took place, at the age of 47, at his residence at Stoneygate, Leicester, on the 19th ult., after a short illness. The deceased gentleman was born at Leicester in 1845, and was articled to Messrs. Flint and Shenton, of that town. He commenced practice in 1870, and his works, which are mostly in Leicester and the neighbourhood, are of good repute, several of which have been exhibited at the Royal Academy, and illustrated in this paper. Mr. Barradale was elected a Fellow of the Institute in 1879.

CHIPS.

The Staffordshire County Council have appointed Mr. William Rankin as district surveyor for Lichfield at a salary of £175 a year, in succession to Mr. J. Wylie, deceased.

A mission hall in connection with St. Matthias parish, Plymouth, at the corner of Amity-place and Armada-street, was formally opened on St. Matthias' Day. It is built of red brick, with Portland-stone dressings, from designs by Mr. G. D. Bellamy, architect. Messrs. A. R. Lethbridge and Sons were the builders, and Mr. W. J. Ezford clerk of the works. It is 60ft. by 45ft., and has attached to it a classroom and vestry. The cost has been £1,400.

The inhabitants of Walthamstow have pronounced in favour of the adoption of the Public Libraries Act in the parish by 2,773 votes against 921, a majority of 1,852.

The new Metropolitan Rifle Range at Staines, inaugurated last week, consists of rather more than a thousand acres of perfectly flat land, bounded by Colne brook, Wynardsbury river, Langley Marsh, and the South Western line. The butts and ranges, of which Messrs. Brunlees and McKerron have been the engineers, allow for firing up to 1,200 yards.

CONTENTS.

Contracts and Tenders 361
The Lighting and Decoration of Rooms 361
The Society of Architects 362
The Architectural Association 363
Royal Institute of British Architects 364
Hugh Myddelton School 365
Frost : its Effects on Building 365
Something About Chimneys.—III. 366
The Palais des Beaux-Arts of Lille... 367
The "Guardian" Sash Fastener 367
Archæological... 367
Wayside Notes 368
Obituary 368
The BUILDING NEWS Directory XIII
Building Intelligence XIV
Engineering Notes... XIV
Our Illustrations 369
Competitions 388
Architectural and Archæological Societies 388
Correspondence 389
Intercommunication 390
Legal 390
Legal Intelligence 391
Parliamentary Notes 392
Water Supply and Sanitary Matters 392
Our Office Table 392
Meetings for the Ensuing Week 393
Statues, Memorials, &c. 393
Trade News 393
Tenders 393

ILLUSTRATIONS.

ERFURT CATHEDRAL.—HUGH MYDDELTON SCHOOLS, CLERKENWELL.—ALL SAINTS. CHURCH, FRESHWATER.—RIBUR HALL.—LONDON AND SOUTH-WESTERN BANK, WIMBLEDON HILL.—LINCOLN GRAMMAR SCHOOL.—DECORATIVE FURNITURE BELONGING TO THE LATE HON. LEWIS WINGFIELD.—LODGE AT NEWENT COURT.

Our Illustrations.

ERFURT CATHEDRAL.

THIS fine etching of Erfurt Cathedral, showing the west front with its grand staircase approach in mid-winter, is from the hand of Herr Bernhard Mannfeld, the well-known architectural artist, and we are indebted for our reproduction to Herr Raimund Mitscher, of Berlin, the original publisher of the valuable series of similar plates* recently issued of Prussian and German historic buildings, and from which this example is taken. Aachen Cathedral; Merseburg; the Market-place, Danzig; the Rathhaus, Cologne; Heidelberg Castle, and Limburg are all notable subjects admirably rendered in the same collection. Erfurt Cathedral is a highly elaborate building, with many beautiful parts in detail; but it illustrates, in common with many other German Gothic churches, an extreme slenderness of construction and characteristic thinness of design. The triangular porch which forms the principal entrance on the north side is, however, the richest and boldest portal of its kind to be seen anywhere. It has often been likened to that at Ratisbon, and has a tall conical roof of elegant proportions, and is enriched with statues, reliefs, and intricate traceries. The mosaic panel in the west front, representing the Madonna, was erected about twenty years ago by Dr. Salviati, of Venice, when the building was restored. The church stands on the site of a wooden chapel built about 740 by St. Boniface, who here founded a short-lived bishopric. The choir of the present cathedral, erected in 1353, is its chief glory. It is wider than the nave, and is not on a line with it. The nave, dating from 1472, has side aisles wider than itself, and is connected with the choir by two stately towers of 12th century date. That on the north contains the famous bell called Maria Gloriosa, weighing 275cwt., much ornamented, and dated 1497. The choir contains some very beautiful painted glass and an old bronze candelabrum, representing the penitent holding tapers. The ancient stalls have been much altered, and the pulpit is modern. The floor is inlaid with monumental stone slabs, carved with effigies of canons, and many of the altars are very elegant and rich in bronze. Peter Vischer's "Coronation of the Virgin" is a highly finished work, and the bronze relief attached to the memorial of Canon Henning Göden in 1521 deserves mention. The cloisters display a range of traceried openings, characteristic of the 13th and 14th centuries. The towers group with the cathedral very prominently from all sides, and the view from the top of the church amply repays the effort of reaching so elevated a standpoint.

HUGH MYDDELTON SCHOOLS, CLERKENWELL.

(SEE description, &c., on p. 365.)

FRESHWATER CHURCH, ISLE OF WIGHT.

MR. PERCY GODDARD STONE, F.R.I.B.A., has now issued to his subscribers the third part of his previously-mentioned work on "The Antiquities of the Isle of Wight,"* and we are enabled to furnish herewith a further example of the author's illustrations, which seem to include every object of interest, from an archæological point of view, to be seen in the island. The subject of our plate represents Freshwater parish church, well known, of course, to very many of our readers. It may be taken as typical of the Isle of Wight churches in the West Medine, though it can by no means claim to be exceptionally important either by reason of size or architectural merit. The church was one of those given to the Norman Abbey of Lyra, and, as the author tells us, we find, by the Chartulary of Carisbrooke, it is expressly stated that its revenues, with those of Godshill and Arreton, were to be employed for the relief of the poor and strangers. There seems to have been always more or less friction between the parish priests and the alien abbey. In A.D. 1306 a strife arose between Roger de Drokensforde, rector of Freshwater, and the community of Lyra, which caused much trouble, and other contests of an earlier date still are connected with its history. The present church, though it looks modern, is not really so, and on entering the building this impression is agreeably dispelled. Its walls date from the 12th century. The chancel is the earliest part, and Mr. Stone very ingeniously traces the history of the development of the building and its various enlargements from time to time. Little or nothing was done in the 14th century, but with the advent of the monks of Sheen in the 15th century a fresh impulse was given to building operations. The aisle walls were raised and new windows inserted, the porches were added, the bell turret was converted into a tower by the addition of an upper stage. At the same time the chancel arch was removed, and a new one built the whole width between the walls and the usual rood loft thrown across it, the way to which is still visible on the north side. In 1874 the increasing demand for accommodation led to wider aisles being added, and Mr. Stone says "the architect of the work carried out his enlargements in an exceedingly conservative spirit, practically doing little damage to the ancient structure"; anyhow, the removal of the hideous galleries was an artistic gain. The plan shows the existing fabric. Adam de Compton's brass figures in Mr. Stone's book. The frontispiece is an admirable etching of the handsome Jacobean pulpit in Newport Church, with its beautifully-enriched sounding-board. In the volume itself are drawings of the entire series of the figure-carvings in the panels of the pulpit. The church, of course, is illustrated, and some old engravings of it before its re-erection in 1853 are given. Brighstone Church, St. Mary Brooke, Calbourne Church, Carisbrooke Priory and Church of St. Mary, Chale Church, the oratory and lighthouse on St. Catherine's Down; St. Olave's Church, Gatcombe, where there is some quaint old church plate and 16th-century furniture, besides stained-glass remains; Kingston Church, Mottiston Church, Newtown Church, Shalfleet Church, Shorwell Church, with a pulpit curiously devised in a pier of the nave arcade, and an interesting painting on the walls, the principal figure of which is St. Christopher with some fish and ships to indicate the river; Thorley and Yarmouth Churches. Such is the list of places represented by Mr. Stone, and in each case a full description of the buildings shown is furnished with many plans, details, and marginal sketches, supplying an interesting variety of suggestive designs. The hour-glass stand from Yarmouth, with its jointed elbow, is curious, for instance, and the symbolic arrangement of the three fishes in the painting in Shorwell Church is another item of the class we have thus briefly indicated. The drawings of Freshwater Church are by Mr. H. B. Downing.

RIBUR HALL.

THE gateway is at the entrance to a courtyard, formed by the centre and two wings projecting, one of which is seen in the sketch. The house is now used as a farmhouse, and is dated 1633, and is situated on the top of Ribur, a hill some three miles out of Matlock Bridge, in Derbyshire. The house has been stripped of its panelling, &c., but a good oak staircase of heavy newels and balusters still remains. It is a dreary, desolate place, and stands overlooking a great sweep of wild moorland country, reminding one greatly of the house described in Emily Brontë's "Wuthering Heights." E. GUY DAWBER.

NEW BANK, WIMBLEDON COMMON.

THESE premises are being built in a prominent position on the Belvedere Estate, Wimbledon, for the Directors of the London and South-Western Bank, from the designs of their architect, Mr. Edward Gabriel, by Mr. Harmer, of Wimbledon. The lower part of the front elevation is in granite, the upper portion in Corsehill stone, the shops adjoining being in red brick with Corsehill stone dressings. The roofs are covered with green slates. The banking hall is on the ground floor, the walls of which will be lined with Burmantofts faïence, and furnished with fittings in teak. The strong rooms, which are built in salt-glazed firebrick, are in the basement, and fitted with grilles and fireproof doors. The upper floors of the bank buildings are arranged for the manager's residence.

LINCOLN GRAMMAR SCHOOL.

THIS school is built near the Cathedral, on the brow of the hill overlooking Lincoln. The central block and south wing were built in 1885. The north wing has just been added, and was opened on Dec. 21, 1891, by the Lord Bishop of the Diocese and the Dean. The buildings consist of a central block, containing a large hall (with gymnasium beneath), cloister, and porch; a south wing of three class-rooms; and a north wing containing the library and two classrooms, divided by a movable partition, so that the whole can be used for lectures illustrated by the lantern. The accommodation provided is for 120 boys. The elevations are carried out in red bricks, with Ancaster stone dressings, the roof being covered with red tiles. The cost of the whole building has been about £3,100. The contractor for the first portion built was Mr. J. Greenwood, of Mansfield; and for the north wing, Messrs. H. S. and W. Close, of Lincoln; the architect for the whole being Mr. W. Watkins, F.R.I.B.A., of Lincoln.

DECORATIVE FURNITURE BELONGING TO THE LATE HON. LEWIS STRANGE WINGFIELD.

THE Old Dutch Cabinet has little plain space on the front, so richly is it carved with sporting cupids, masks, and scroll foliage, the elaboration being further increased by spiral columns and the curious moulding round the two lower panels. The shelving is well arranged for the display of objects indicated in our sketch. There are four cupboards below, and two drawers above with curiously carved handles. The date 1686 is on one of the enriched mouldings. It was sold for 57 guineas. The Chinese Chair is unusual rather than beautiful, although nicely made in rosewood. Two marble plaques are let into the back, and below these and under the seat are bits of carved work of decidedly Oriental character. The seat is of cane. The Armchair below is very curious, and seems to have been made for some exalted personage, the back being elaborately carved with coronet, shields of arms, sea-horses, &c. The seat and arms are covered with red stamped velvet. The Dwarf Cabinet of carved oak is fitted inside with shelves, and two drawers above. The carving is crude and bold, the figures being in bold relief. All the above objects were sold under the hammer by Messrs. Christie, Manson, and Woods, at their Rooms in King-street, St. James'.

LODGE AT NEWENT COURT, GLOUCESTERSHIRE.

THE materials of which this lodge is constructed are hard, local stone, with Bath-stone dressings for the walls and boundaries, Broseley tiles for the roofs, and half-timber work for the gables, &c. Advantage has been taken of the rapid slope of the ground upon which the lodge stands, to place the living-rooms at a higher level than the entrance, thus obtaining the increased height beneath the bedroom floor necessary for the carriage-way. The contractor for the work was Mr. John Cole, of Newent. The architect was Mr. Fredk. W. Waller, 17, College-green, Gloucester, and 8, John-street, Adelphi, London.

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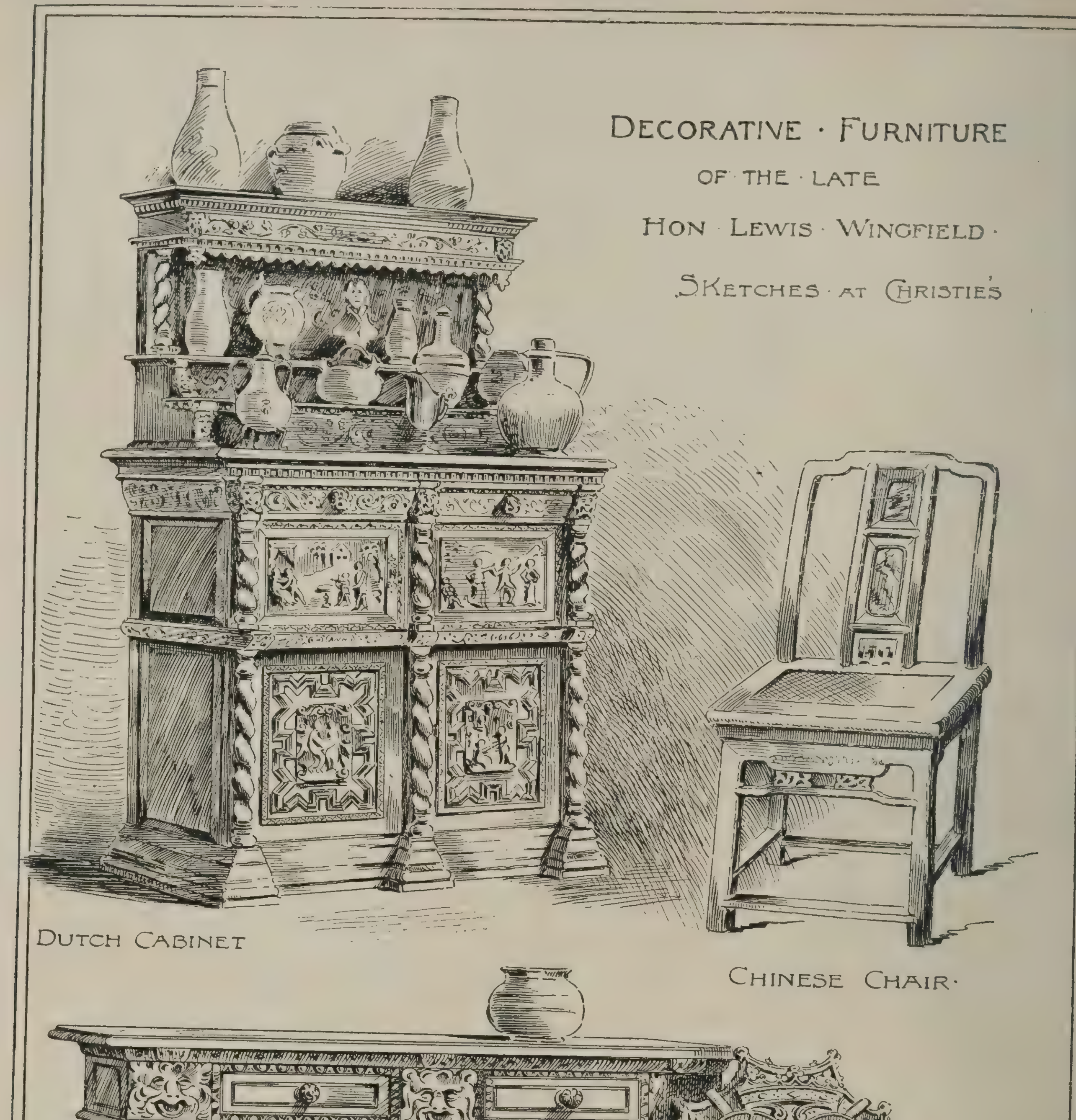
* Bernard Mannfeld's Original Radirungen, Berlin S.: Verlag von Raimund Mitscher, Neu-Kölln, a. W. 10.

* The Architectural Antiquities of the Isle of Wight from the XIth to the XVIIth Centuries. Part II.: the West Medine. By PERCY GODDARD STONE, F.R.I.B.A. Published by the Author, 16, Great Marlborough-street, W. 1892.


Decorative · Furniture
of the · late
Hon · Lewis · Wingfield ·
Sketches · at Christie's
Dutch Cabinet
Chinese Chair ·
Oak · Cabinet ·
Heraldic · Chair ·
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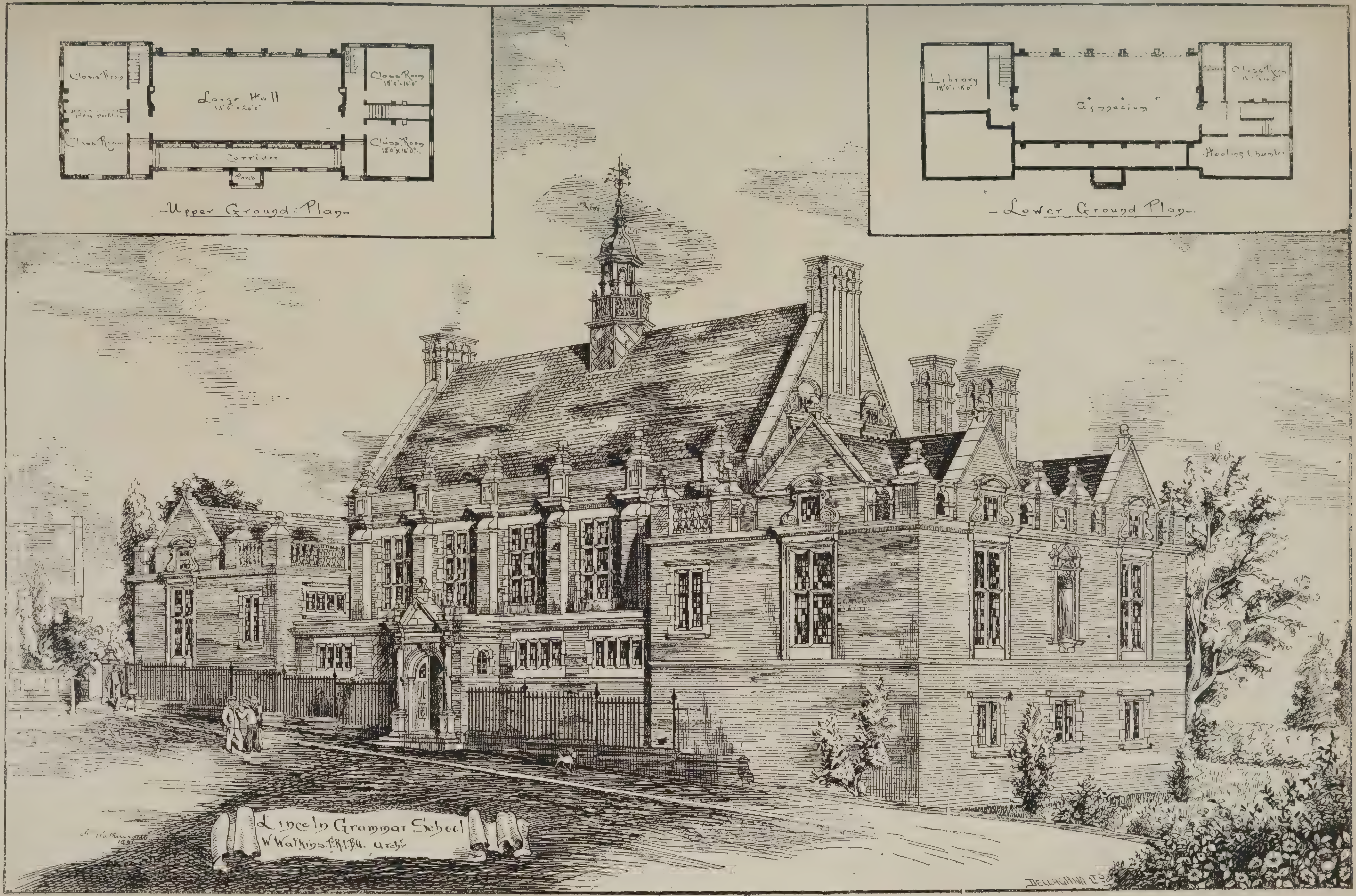
Class Room
Large Hall
34'0" x 24'0"
Class Room
18'0" x 16'0"
folding partition
Class Room
Corridor
Class Room
18'0" x 16'0"
Porch
-Upper Ground Plan-
Library
18'0" x 18'0"
Gymnasium
Stores
Class Room
Heating Chamber
-Lower Ground Plan-
Lincoln Grammar School
W. Watkins F.R.I.B.A. Archt.
Dellagana Co.

COMPETITIONS.

Alloa, N.B.—A school board competition has just been decided at Alloa, Mr. Salmond, of Glasgow, being the assessor. Forty-two competitors sent in plans. The *Alloa Journal* states that "Mr. Salmond, it is understood, first decided on the designs 'X. Y. Z.,' '(X),' and 'Ruby,' the latter being by Messrs. Thomas Frame and Son, architects, Alloa, another plan, with the motto 'L'Ecole,' which came in for a good deal of attention, being set aside owing to excessive cost. However, the author of this plan, it seems, subsequently came to an arrangement with the school board, whereby he agreed to prepare the plans, take in estimates, and carry through the preliminaries on the basis that if the cost were found to exceed £7,000—the maximum fixed by the board—he could withdraw, and leave the board free to select another plan. This arrangement, curious as it may appear, seems to have met with the approbation of the board, for another short leet was fixed on, 'L'Ecole,' by Mr. J. B. Wilson, Glasgow, being now placed first; 'X. Y. Z.,' by Mr. R. M'Farlane, architect, Edinburgh, second; and '(X),' by Messrs. M'Luckie and Walker, architects, Stirling, third—'Ruby' being consequently thrown out. Mr. Wilson was accordingly appointed architect for the carrying on of the work." The Alloa and Stirling newspapers comment adversely on the mode in which the competition was conducted.

Birmingham General Hospital.—A meeting of the committee of the General Hospital was held on Tuesday, to receive the report of the consulting architect, Mr. A. Waterhouse, R.A., on the thirteen plans submitted for the building of the new hospital, and to make a final selection. The Building Committee recommended, in their report to the meeting, the adoption of the award of Mr. Waterhouse—viz., 1st prize, £150, Plan 1; 2nd prize, £100, Plan 2; 3rd prize, £50, Plan 6b. The report having been received, the Chairman moved its adoption, remarking that the Building Committee unanimously approved the award of Mr. Waterhouse. All the gentlemen who had sent in plans agreed in one thing—viz., on the question of cost. They all told them with one voice that a hospital with all the modern improvements and requirements would cost considerably over the sum estimated. Mr. A. Waterhouse said that though it would be out of place to give his reasons for the award, yet he thought it right that they should know something of what induced him to come to the conclusions he did. The whole of the 13 designs submitted by the 12 competitors evinced very great skill and trouble, but No. 1 was undoubtedly the best. In the first place, the distance the wards were apart was a point in its favour, for it was an important matter to get all the air possible going through the hospital, and, moreover, the larger wards were pushed forward to the street, and the smaller wards were kept very considerably back, a situation far superior to that in which they were all pushed forward in an equal line. This characteristic was, however, common to No. 2 also. The second point in its favour was that the author of Plan 1 considered that circular wards were a mistake where the number of patients was eighteen, or, at most, twenty. It involved a too great distance across the room, and greater cubic contents than were absolutely needful. The third point in its favour was the entrance court towards Steelhouse-lane, which gave access to the whole of the hospital except for tradesmen, who got in by way of Weaman-street. No doubt there were certain modifications which would have to be made in some matters in that part, but they would not involve any radical change. It was also greatly in its favour that the nurses' home was kept entirely apart from the hospital proper. It was towards Whittall-street. Moreover, there was the question of external appearance, which, though of secondary importance, might yet be well taken into account, and the design No. 1 evinced artistic taste in a remarkable degree. The design also paid great regard to sanitary details.—The motion was agreed to. Mr. W. S. Till, the city surveyor, then opened the envelopes and read:—First prize, William Henman, A.R.I.B.A., Bennett's-hill, Birmingham; second prize, Worthington and Elgood, Manchester; third prize, Frank B. Osborn, Birmingham. The selected design is in a Free Classical style conceived in a Gothic spirit. It is intended to harmonise with the adjoining Law Courts, and the material employed will be red brick and terracotta, covered by green slates. The frontage on Steelhouse-lane will be about 350ft. in length, and the height of the ordinary wards about 45ft., though two pyramidal, lantern-topped towers will rise to an elevation of about 120ft. The corridors will be kept down to facilitate the flow of air. The nurses' home will be towards Whittall-street, and communicates with the wards, of which there are four parallel ones, two long, coming up to the frontage, and two short, lying back by a conservatory. The plan is thus ш-shaped, but with two short projections at equal distances from the central point. Each large ward will contain 24 beds, giving a floor-space of 110sq.ft. per patient in the large, and 234sq.ft. per patient in the single wards.

Darwen Technical Schools.—In this competition, decided a fortnight since, Mr. J. Murgatroyd, of Manchester, being the assessor, an anonymous correspondent to a local journal complains of the manner in which the award was made. He asks, *inter alia*, whether a letter was not sent from one of the corporation departments, asking a certain successful competitor to send in designs, and also saying that everything would be done to secure him the work. The correspondent further states that several of the conditions were not rigidly complied with by the winner of the first prize. A letter on the subject, written, we have reason to believe, by another local architect, appears on p. 389 of this issue.

Manchester. — The city council have awarded the first premium of £50 in connection with plans for the erection of public baths in Cheetham, to the author of the designs submitted under the motto "Diver."

Northfleet Cemetery Chapels.—Fourteen designs were received by the Local Board, and at a meeting on Tuesday last the plans of Mr. J. T. Walford were accepted.

Mr. G. Soudon Bridgman, V.P.S.A., has prepared drawings for a new banking premises at Kingsbridge, Devon, for the Devon and Cornwall Banking Company, Limited. The building is intended to have a heavy granite base and ground front. The general dressings are to be of Ham Hill stone and local Dun stone. He is also preparing drawings for a new post-office premises to be erected alongside and of similar materials.

The half-yearly report of the directors of the Manchester Ship Canal Company states that the progress of the works has been impeded by the severe weather and the high floods, which have done considerable damage. Considering the season, however, a fair amount of work has been done. The Manchester Docks are completed, and the Salford Docks nearly so. The area of land purchased since the last report has been 60 acres, at a cost of £11,774, the total area purchased being 4,480 acres, at a cost of £1,086,000. The amount estimated still to be spent is nearly £1,800,000.

A great fire occurred on Tuesday night at the timber yard of Messrs. Latham, timber dealers and cabinetmakers, Curtain-road, Shoreditch. The yard lies at the back of the main shop and premises, and is one of a nest of similar yards which are used by firms carrying on kindred businesses to that of Messrs. Latham. These spaces are inclosed in a square of houses used as manufactories and workshops on three sides. Amongst the firms whose property was subsequently in a greater or less degree destroyed were, besides Messrs. Latham, Messrs. Light, cabinet makers; Messrs. Buck, cabinetmakers; Messrs. W. and J. Green, drawing-room suite makers; and Messrs. Paris, marqueterie cutters. Damage to the amount of £50,000 was sustained.

The Congregational church at Pontefract, built two centuries since, was reopened last week after structural alterations, additions, and improvements, carried out from plans by Mr. J. H. Greaves, of Albion-street. The children's gallery has been removed, and the other gallery reseated in pitch-pine. The staircases are lighted by additional windows, and the building is now ventilated by Messrs. R. Boyle and Son's apparatus. The front of the chapel has been rebuilt in Italian Renaissance style. Mr. H. Gundill carried out the contracts for masonry and brickwork.

The annual dinner of the Royal Institute of Painters in Water Colours was held on Tuesday night at the Gallery of the Royal Institute in Piccadilly, Sir James Linton, the President, occupying the chair.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

Cardiff Architects' Society.—The annual dinner of the Cardiff Architects' Society took place on Monday week at the Park Hotel. Mr. E. W. M. Corbett (president of the society), occupied the chair. The prizes given by the society to the assistants and pupils successful in drawing and sketching examinations were distributed, after the conclusion of the loyal toasts. The winners were:—Senior grade, 1st prize, value £4, J. H. James; 2nd, value £2 10s., F. W. Chapman. Junior grade (pupils under 21 years of age): 1st prize, value £2 10s., C. B. Caple; 2nd, value £1 10s., G. F. Grimwood; special prize, value £2 10s., R. Peacock. Holiday sketch: 1st prize, value £2, G. H. Grocock; 2nd, value £1, C. L. Wilson. Captain E. M. Bruce Vaughan gave the toast of "The Corporate Bodies of Cardiff," coupled with the names of Alderman Jones and Mr. Lewis Williams, who responded. Other toasts followed, including "The Visitors," submitted by Mr. George Thomas and acknowledged by Mr. Harry Cousins; "All Architectural Societies," proposed by the Rev. H. C. Davies and acknowledged by Mr. George Thomas; "The Master Builders," given by Mr. J. Coates Carter and replied to by Alderman Jones.

Sheffield Society of Architects and Surveyors.—The monthly meeting of this Society was held at the School of Art on Tuesday night. Mr. J. A. Gotch, F.R.I.B.A., of Kettering, read a paper entitled "How they Built in Shakespeare's Time," which seems to have been the same read before the A.A. on Friday, and reported elsewhere.

CHIPS.

The Rotherham town council, who have recently taken over the management of the local gasworks, have appointed Mr. C. B. Newton, of Sheffield, as gas and water engineer.

The Halifax town council have instructed Messrs. Jackson and Fox, architects, to prepare specifications for the new technical schools. The mayor has reported to the council that already over £10,000 has been promised towards the undertaking.

At Hull, on Friday, Wm. Cartwright was committed to prison for two months for robbing Mr. Sandys B. Foster, architect, London, in the Station Hotel in that town.

The parish church of St. Nicholas, Rochester, was partially destroyed by fire on Sunday morning, the accident being, as usual, attributable to the overheating of the flues for warming the church. A considerable portion of the roof, a number of pews, one of the galleries, some stained-glass windows, and ancient memorial tablets were destroyed, whilst the fine organ was irretrievably spoiled. The pecuniary damage sustained is covered by insurances.

The Prince of Wales has presented a handsome gold pin representing his crest, with the monogram "A. E.," in diamonds, to Mr. Robert Howe, clerk of the works at Windsor Castle, as a token of his appreciation of his services at the funeral of the late Duke of Clarence.

The Consett Local Board have passed plans, prepared by Messrs. Armstrong, Lamb, and Knowles, architects, Newcastle, for the erection of a new Wesleyan chapel, classroom, schools, and lecture hall, on a site adjoining Middle-street, at an estimated cost of £7,000.

A memorial brass has been placed on the north chancel wall of Uplowman Church, in memory of the late rector, the Rev. C. S. Bere. Mr. Harry Hems, of Exeter, executed the work.

On Tuesday in last week the foundation-stones of a Wesleyan chapel were laid at the Talke Pits, Kidsgrove. The structure is estimated to cost £750 and to seat 250 people. It is to be built of bricks, with brick facings and stone dressings, the style to be Romanesque, plainly treated.

Lord Cranbrook has accepted the invitation of Mr. Busbridge to deliver the "Queen's Prizes" to the students of the Metropolitan Drawing Classes. The ceremony will take place in Carpenters' Hall on Friday in next week, the 18th inst. The chair will be taken by the Archbishop of Canterbury.

A movement is being promoted by the vicar of Llanrhos to build a church in the Llandudno portion of his parish. The parish church only seats 200 people, and is nearly two miles from the town. It is proposed to erect an edifice to seat 1,000 people, at a cost of about £6,000. Lord Mostyn has given a site, and Lady Augusta Mostyn has given £1,000 towards the fund.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. Passmore Edwards.

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One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 0d. (or 6dols. 30c. gold). To France or Belgium, £1 6s. 0d. (or 33fr. 30c.) To India, £1 6s. 0d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two the minimum charge being 5s. for four lines.

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The charge for advertisements for "Situations Vacant" or "Situations Wanted" is One Shilling for Twenty-four Words, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., L., LI., LIII., LIV., LVIII., LIX., and LX. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

Received.—J. M. G.—A. and I. R. Co.—F. P. (Dover).—G. M. S. Co.—J. Grainger.—Old Sol.—G. D. O.

Correspondence.

COMPETITIONS.

To the Editor of the Building News.

Sir,—In another column you will, no doubt, give a report of a case "Ellis *v.* the Walsall School Board." I shall be glad if you will allow me space to give some further particulars of this case. In reply to an advertisement for plans, the Walsall School Board received ten sets of plans; from these, according to the minute book, three sets were chosen in the following order:—1st, "Bruin"; 2nd, "St. George"; 3rd, "Lux." On the envelopes being opened it was found that "Bruin" and "St. George" were by the same author.

A letter was sent to the competitors saying that the Board had selected the design under the motto "Bruin," and that his design could be seen by the competitors. I saw the drawings, and afterwards wrote to the clerk saying that the plans were not worked out according to the rules of the Educational Department—"the gable ends should be fully utilised for light" being entirely ignored. My letter was laid before the Board; they replied that they saw no reason to alter their decision. In my letter I suggested that the Board keep the whole of the drawings until the accepted set had been approved by the Department. After receiving a letter from my solicitor, the Board agreed to keep the drawings.

The design "Bruin" was sent to the Department, and on September 10th the secretary writes saying that the plans cannot be approved, the following being an extract from the letter:—"I think it is to the Board's interest to replan the schools entirely, bearing in mind that the first necessity after compactness is to preserve all the gables for light (Rules 3A and 9A)." A complaint is also made that the site is too small. After receiving this letter, the Board, although the design "Bruin" was not approved by the Department, returned the designs to the various competitors. An addition of 48ft. is made to the frontage of the site, and the plans "Bruin" arranged on the enlarged site. This is sent to the Department with a letter, from which I extract the following:—"I have also to state that the Board, having selected the plans by competition, are desirous of having the same sanctioned, with as few structural alterations as possible." An extract from the reply:—"I am directed to return the plans, and to state the consulting architect reports that the plan of the extended site is satisfactory; but, for the reasons stated in their lordships' letter of the 10th September, the plans of the buildings cannot be approved. They must be revised and returned."

The Board now fall back on the design "St. George," but here again the gable ends are blocked, and, for other reasons, would not be approved by the Department, so an entirely new plan is prepared, and ultimately approved.

The judge at the court made some curious remarks at the hearing of the case. He said that it was not necessary that those who made the award should know the rules and regulations of the Educational Department. There was no evidence offered on either side, the judge saying that there was no ground for action. The Board had not accepted any design, but only provisionally accepted, on the condition that the plans complied with one of the clauses of the conditions of competition. The acceptance of the plans is subject to the approval of the Educational Department, and on submitting the design "Bruin" to the Department it had not been approved, neither had the second received the sanction of the Department; the Board then, as they were at liberty to do, abandon the competition, and have an entirely new plan prepared. He also said: "If you can bring evidence that the plan which is being carried out is not worked out according to the 'conditions of competition,' and the rules of the Educational Department, I will hear you."

This unique decision had not occurred to the defence. I should very much like to see the opinion of some of your readers on this competition and the decision of the judge.—I am, &c.,

Walsall, March 8. Jon. Ellis.

DARWEN PUBLIC LIBRARY AND TECHNICAL SCHOOL COMPETITION.

Sir,—Although not a competitor in the above competition, I have had an opportunity of perusing the assessors' report, and of examining the selected design, and I am somewhat astonished that he should have arrived at such a decision. Some of the points specially mentioned in his report as defects are embodied in this very design.

For instance, many of the classrooms provide even less than 10ft. super. per student (Mr. Murgatroyd, the assessor, particularly remarks that 12ft. is necessary), and the lecture theatre has only one entrance.

The condition "that two or more classrooms can be thrown into one, and two of the larger rooms can be subdivided" has been entirely disregarded.

Although the classrooms are so much under the necessary area, this has not prevented the winner from providing rooms not asked for at all.

It would probably be of interest to many competitors if the assessor would be good enough to say if he is aware that the lecture theatre in this design has a small room for assistant professor suspended over the lecture table with no visible means of access thereto. Also, that although the floor of the theatre is shown on section to be 2ft. lower than the general floor level, at the expense of the classrooms below, reducing them consequently to 14ft. in height, yet these rooms are carefully figured as being 16ft. high; and, lastly, although a gallery thirteen rows deep is shown in the theatre, it is solemnly proposed by the author of this successful design to obtain light by means of windows on either side, with sills only 4ft. above the floor! Perhaps, however, I have failed to grasp the meaning of this arrangement, and it is really intended to utilise these windows for lighting the underside of the gallery seats.

The selected design is one of the most, if not the most, expensive submitted; but the condition that "the cost must not exceed £8,000" has been considered worthy of no further remark from the assessor than that the maximum cost allowed will have to be extended.

The competitors cannot, however, complain of having had to bear any lengthy period of suspense for the award. The drawings were due at Darwen on Monday, Feb. 15th, and could, therefore, be opened some time on Tuesday. By Saturday, the 20th, Mr. Murgatroyd had issued his report on the twenty-five sets submitted.

The celerity of judgment might account for the reason why some of the points just mentioned may have been overlooked.—I am, &c.,

C. A. C. H.

HALIFAX ARTISANS' DWELLINGS COMPETITION.

Sir,—As a matter of interest to the profession in general, as showing the value put upon architects' services by the sanitary committee of the borough of Halifax, I beg to draw the attention of your readers to the conditions of this competition, just advertised.

The competition is for *two* large blocks of artisans' dwellings, one on a site about 190ft. by 100ft., and the other on an irregularly-shaped piece of ground of 2,960 *yards* superficial area, and averaging about 240ft. by 130ft.

The following extracts from the printed conditions will, I think, speak for themselves, and need no comment:—

"Clause 3. The designs of competitors must be exhibited by plans, elevations, and sections drawn to a scale of 8ft. to an inch (except the block plan) and consist of the following drawings:—Block plan (16ft. to an inch) showing the system of drainage, with all gullies, traps, inspection holes, sewer ventilation, &c., indicated by brown lines thereon. Cellar plan, ground plan, roof plan, and plans of each floor where more than one is intended. Elevations of every frontage. Sections as may be necessary, and on such lines as may best show the general internal arrangements."

"Clause 6. All the drawings must be made upon sheets of plain white drawing paper, without borders, and mounted on plain white stretchers of one uniform size of 4ft. by 3ft. As many drawings as conveniently possible to be placed on each stretcher. No framed or glazed drawing will be received."

"10. The committee reserve to themselves the right to reject the whole or any of the designs should they be considered unsuitable. The selected designs will only be accepted subject to a *bonâ fide* tender from a reliable contractor or contractors being obtained for carrying out the work within the estimated sum so arrived at by the author thereof."

"11. The committee offer two premiums of £30 and £20 respectively, which will be paid to the authors of the design which, fully complying with all the conditions and instructions herein set forth, shall in their opinion be considered as first and second in order of merit. The two premiated designs will remain the exclusive property of the committee, who will make their own arrangements as to carrying out the erection of the building."

The stipulation in Clause 6 as to no framed or glazed drawing being received is distinctly amusing, and indicates a grim sense of humour in certain members of the committee.

It would be interesting to know how many members of the profession intend to make a bold bid for fame and fortune by submitting designs.—I am, &c., A Non-Competitor.

TERRACOTTA.

Sir,—I have been much interested in reading "Notes on Terracotta" in your last and preceding issues. The directions, if they may be so called, as to the manufacture and drying of the material, are good and practical; but there are two statements made at the end of the article in your issue of the 4th of March which are not quite what I should like to see go uncontradicted.

Your writer says: "Blocks that are not perfectly dried when placed in the kiln whiten on their faces, and are often coated with a scum-like discoloration." Now this scum-like discoloration is one of the banes of most terracotta manufacturers; but it is not caused, as you state in this article, by the blocks not being perfectly dry when placed in the kiln, because on most terracotta subject to it at all the scum is perfectly visible on the blocks when they are dry, and before burning; and, again, in my own experience, blocks which have been put in the kiln in anything but a dry state turn out a beautiful red colour, where blocks that are allowed to lie in the rooms until they are over-dry, if I may use the expression, come out scummed.

Some clays will not burn a single block clear of scum, while in others it is only an occasional piece that suffers. In this district there is hardly a works besides my own where the plague is not in full force, and the water and brush is not in operation.

We all have our opinions as to the cause, and each theory can be more easily disproved than proved; but, strange to say, it only appears in those blocks (speaking of terracotta, not bricks) which are made in plaster moulds; those made by machinery, and properly burnt, being universally good in colour.

Now I come to the second point. "During the period of drying, the blocks become more or less surface-coated with fine dust and other foreign matter, which, having come into contact with the moist clay of the blocks, firmly adheres to their faces. To remove these and bring forward the natural colour of the clay when fired, the exposed faces are rubbed with water and a brush just prior to going into kiln."

It is very evident to my mind that the gentleman who wrote this article for you has gained his experience of terracotta in a works where the clay, if allowed to be burned without the rough treatment which he suggests, would come out of the kiln scummed as described above beyond all possibility of removal, and it is in such cases as this that manufacturers who are troubled with this scum, resort to the water and brush treatment before burning it. It is not to remove the fine dust and other foreign matter, but the scum. The use of the brush and water is, I need hardly say, most hurtful to the terracotta block. In the first place it can be easily imagined what the effect is of taking a perfectly dry block and wetting the surface with a damp or wet brush. The surface will craze all over in fine cracks, owing to unequal shrinkage of that part which is damped after once getting dry, and I say that all terracotta treated in this way, while it may on arrival from the works have a splendid bright colour, is sure to lose it and become weather-stained and weather-worn, because the smooth finish which the knife of the finisher gives to the block, and which, when the block is thoroughly burned causes the beautiful smooth surface, which is one of the great arguments for using terracotta in preference to stone—viz., that terracotta possesses a smooth surface closed to the weather, whereas stone has a rough worked surface—I say that this brushing destroys that surface, and makes such terracotta little better than stone as a weather-resisting material.

Good terracotta should be such that, when it leaves the hands of the finisher who smooths the surface and gives the face the polish it ought to have, does not require touching again on that point, but burns a bright colour, and is smoothed and thoroughly vitrified. The block, when it has been turned out of the plaster moulds, should be allowed to stiffen considerably before finishing, and the surface, as far as possible, scraped with a fine scraper before the final polish is put on with the knife.—I am, &c.,

Ruabon, March 8. E. Lloyd Edwards.

THE MOSAIC AT CHISLEHURST.

Sir,—I observe in the Building News of March 4 a print purporting to be a representation of the mosaic at the Annunciation, Chislehurst. I can only say that, had I been aware of your intention to publish it, I should have most strongly objected, and I protest, moreover, against the infringement of my copyright in the design.

It is apparently taken from some copy of my first sketch, of the existence of which I was unaware. It was a slight sketch, and in no way as to detail represents the cartoons which I did, and of which I have the studies.—I am, &c., N. H. J. Westlake.

Intercommunication.

QUESTIONS.

[10739.]—**Cement.**—Could any of "ours" kindly give me information about the manufacture of Keene's and Parian cements, the kind of furnaces used, and the heat wanted? And the method and quantity of gypsum, &c., used? Are there any works where I could see the manufacture going on?—W. H. M.

[10740.]—**Builder's Book-keeping.**—Please allow me to ask through your colums if any correspondent can recommend a good system of builder's book-keeping?—W. N., Gosport.

[10741.]—**Parish Map.**—I have recently copied an old parish map, and it was necessary to do a part of the filling-in with liquid (Prout's) brown, and I find this will not take the colour. I shall be glad if a reader versed in this will tell me how to set the brown?—W. F. T.

[10742.]—**Party-Wall.**—Where an estate is laid out and sold in plots of a certain frontage each plot, has a buyer the right to build his party-walls so that half their thickness is on adjoining plots, although the adjoining owners do not contemplate building? Is any notice required to be given to adjoining owner, and what form should it take?—Uncertain.

[10743.]—**Action of Sea-Air on Timber.**—In erecting buildings on the West Coast I am troubled by the sea air rotting the timber of porches, gables, &c., and should be glad if any correspondent would inform me if any, and what, timber can be had to withstand the atmosphere, and also if there is any solution to put on wood in such exposed situations to assist as a preservative?—Lancashire.

REPLIES.

[10728.]—**Fireproof Plaster.**—There is a composition manufactured by Messrs. Lowood, of Attercliffe-road, Sheffield, which, when added on to old and burnt-out flues, will, it is said, make them almost as durable as new fire-holes; but at present we have not had an opportunity of testing the material.—P. and S.

[10729.]—**Pile-Driving.**—The practice of driving piles with their natural butt end downwards is, I believe, generally practised by engineers to prevent, as far as possible, what so often happens,—viz., the splitting of the pile before it is driven sufficiently to give the required resistance. The pile is not so liable to split when driven in this way, on account of the concentric rings or layers being more numerous, and therefore closer together, at the hooped end of the pile. The average of four specimens of elm balk mentioned by Haslett ("Timber and Timber Trees") gives the ratio of layers in the butt and top to be as 2·1 is to 3·8. The fact that the strongest part of a balk is the heartwood closest to the sap, may also be a reason for the practice, because the hooped end would naturally—in a pile free from sap—have more of this than the shoed end.—H. C. Reid.

[10730.]—**King-Post Roof.**—The reason for the tie-beam being deeper than the principal rafter is that the latter is supported at shorter intervals than the former, and therefore does not require so much depth to give it rigidity. In a 25ft. span the tie-beam is supported in the centre by the king-post, giving an unsupported bearing of 12ft. 6in. The P-rafters are also supported at their centres by the struts, giving approximately a bearing of 7ft. A tie-beam 10in. by 6in. is the most economical size for the required strength. Were the beam placed with its depth as 6in., the strength to resist tension would still remain; but it would require additional support to prevent it "sagging."—H. C. Reid.

[10731.]—**Circular Ramped Coping.**—"Masonry and Stonecutting," by Dobson, 2s. 6d., Weale's series, Crosby Lockwood and Co., London, is a useful book on masonic projection. There are also the "Lessons on Masonry and Stonecutting," with illustrations, by Mr. Lawrence Harvey, which have appeared in the course of the last three years in the columns of this journal. In these lessons the science of geometrical projection is applied in a very able manner to the solution of some of the most difficult problems in stonecutting. As a mason, I had the good fortune of studying under Mr. Harvey for a while. Models were made of all the subjects studied, which proved a great aid, enabling the students to realise in the solid what they had drawn on a plane on the paper.—J. Day.

CHIPS.

The High Sheriff of Essex, Mr. T. Courtenay Warner, has offered to give a site for a free library at Walthamstow, and to contribute £300 towards the building fund.

On Saturday a new branch stores of the Bolden Industrial Co-operative Society was opened at Pelaw. The building is situated close to Pelaw Railway Station, and will cost about £2,000. It consists of shop on the ground floor, with warehouse, committee-room, and office upstairs, a house for the manager being attached. The architect was Mr. Morton, of South Shields, and the builder Mr. R. Allison, Whitburn.

The board schools, Bearpark, Durham Co., are about to be altered and enlarged for the Elvet St. Oswald's school board, from plans by Mr. H. T. Gradon, A.R.I.B.A., of Durham.

The Provisional Order for the extension of the boundaries of Cheltenham has been received by the town clerk of Cheltenham. It provides for the amalgamation of the greater portion of the parish of Leckhampton and a part of the parish of Charlton Kings with the municipal borough. This will give to Cheltenham an additional population of about 4,000, raising the population to 47,000.

Legal.

ANCIENT LIGHTS IN NEW BUILDINGS.

One of the most difficult questions that architects have to deal with in rebuilding old premises is how they can preserve their ancient lights, while they at the same time enlarge and improve the property. It very often happens that a low, old-fashioned house is removed, and upon the ground there is put up a lofty building, whose windows are larger and in every way different. Then a time comes when the owner of the premises opposite, or adjoining, as it may be, thinks he too will build something big, and then the first improving owner seeks to stop his going too high by calling up the "ancient lights" in the little old house long ago forgotten. To succeed in this is a very troublesome matter, as appears from the recent case of "Pendarves v. Munro" (*Times*, February 27), where it was attempted in vain. There the plaintiffs were the ground landlords of lofty warehouse premises that had been erected in 1876 upon the site of a very old public-house that had been condemned as dangerous in 1872. The defendant is the owner of land opposite, upon which also had stood some old, low buildings of the same kind, which had been removed, and he was now putting up more lofty premises. The present action was for an injunction to prevent the defendants from carrying the new buildings to a greater height than the old ones, on the ground that his so doing would obstruct the access of light through some parts of the plaintiff's new windows, which coincided with the apertures in the old windows of the ancient tenement.

The defence was substantially that the plaintiff had failed to prove that any particular part of the present lights covered a space which could be identified as being identical with any part of any ancient light. The only evidence the plaintiff had in support of his contention was the usual affidavit of one who remembered the old building. But this man could only swear generally that he believed the present windows in the plaintiff's frontage covered in whole or in part the ancient lights of the old edifice. Mr. Justice North, in giving judgment for the defendants, said he agreed with their witness in believing that some part of the new windows covered some part of the old light. But that was not enough to entitle plaintiff to an injunction. It must be shown what part of the old windows coincided with the new, so that the ancient lights could be actually identified. This had not been done, and so the plaintiffs failed to make out their case. In thus deciding, the judge followed the earlier authority of "Fowler *v.* Walker" (51, *Law Journal*, Chy. 444) where this principle was laid down by the Court of Appeal.

Fred Wetherfield, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

John.—Road.—Private Way.—As long as a road is closed with gates that can be and are shut occasionally, and there are notices describing it as a private road, no public right of way can be acquired over it, nor any private right of way, except by a user of at least thirty years.

H. J. J.—Drain.—Building.—This is not the ordinary case of a house-drain under a building. It is a main drain, and it appears to have been put in by the local board by arrangement with the former owner of the property. Therefore, the question seems to be, what rights of way were sold to the board by this owner?

Two stained-glass windows are about to be placed in St. Andrew's parish church, Dundee, from subscriptions raised by the Court of the Nine Trades of Dundee.

The Armourers' and Braziers' Company will hold their third annual exhibition of art brass and copper work, of original design, the work of British subjects, at their hall, Coleman-street, from the 10th to the 14th of May next. Prizes and certificates will be given to designers, craftsmen, apprentices, and students; and a prize of five guineas is offered for a design for a certificate to be given to prize winners at the exhibition.

LEGAL INTELLIGENCE.

DAMAGES FOR OVERLOADING A PARTY-WALL.—HART v. MONARCH LAND COMPANY (LIMITED).—Mr. Justice Mathew and a special jury have heard an action to recover damages for injuries done to the Star Music Hall, Abbey-road, Bermondsey, by the erection by the defendants of some model dwellings which abutted upon the east wall of plaintiff's building. The Star was rebuilt in 1886, the front wall being supported by piers of brickwork resting, plaintiff averred, upon good foundations of concrete, and remained intact until the defendants' buildings were erected in 1890. The defendants made use of the east wall of the Star as a party-wall, paying £65 license and undertaking to make good all damage done. After being warned not to put extra weight upon the eastern wall, the defendants, by resting their roof and top floor upon it, caused the wall to subside, cracking the front wall. Plaintiff had expended £105 in rectifying the damage to the building. The defendants contended that the injury to the front wall of the Star was caused (1) by defective construction; (2) by the subsidence of one of the piers upon which the front wall rested. For the plaintiff, architects and surveyors were called to prove that the defendants' building added 50 tons to the pressure upon the wall; and that the cracks in the building were caused by the subsidence of the defendants' building. For the defendants, Mr. Bell, Mr. Bridgman, and other architects and surveyors were called to prove that one of the eastern columns supporting the front wall of the Star had subsided half an inch, which subsidence was caused by an iron girder being out of bearing. They also proved that the defendants' foundations went down to clay, and the only settlement of that building was due to shrinkage of the mortar. The jury found a verdict for the plaintiff for the amount of the agreed damages—£105.

CONTRACTOR AND SUB-CONTRACTOR.—JOHNSON v. CONEY.—This case came on for trial before His Honour Judge Eddis at the Clerkenwell County Court, and related to a large block of buildings in the neighbourhood of King's Cross. The matter disputed related chiefly to external plumber's work, and the judge, considering the accounts too intricate to be tried in court, referred the matter to Mr. Lovegrove, surveyor, of 26, Budge-row, E.C., who made the award in favour of the plaintiff, subject to a slight correction of the figures.

CONTRACTORS' LIABILITIES.—DINEEN v. BALLARD.—The plaintiff in this case, tried by Mr. Justice Grantham and a jury last week, sued for damages for personal injuries. The defendant, a contractor, was, in April last, carrying out for the Local Board some works in Bower's-street, Wood-green. A hole had been dug in the course of the work, which was unlighted and uncovered, and plaintiff fell into it. The defence was that the work was carried out for the Local Board under the Public Health Act of 1875. The jury gave a verdict for the plaintiff, damages £50.

ACTION AGAINST CONTRACTORS.—WEALE v. REEVES AND CO.—In this action heard on Friday, Saturday, and Monday week, by Mr. Justice Collins, without a jury, Mr. Charles James Morey Weale sued the executors of the late Thomas A. Walker, who in July, 1887, had entered into a contract for the construction of harbour works, docks, &c., at Buenos Ayres. Plaintiff was engaged in 1887 as an interpreter at £400 a year, subsequently increased to £500. While plaintiff was in England on sick leave in 1891, troubles arose in the Argentine, and Mr. Walker's executors—Mr. Walker having died in November, 1889—dismissed plaintiff on the ground that the works were stopped. They offered him three months' salary and his expenses. This he refused to take. The defendants then paid £250 into Court as reasonable damages. Mr. Justice Collins, in giving judgment for the plaintiff, found a verdict for £400 damages over the £250 paid into Court, and there would therefore be judgment for £650 for the plaintiff.

IN RE PAINE BROTHERS.—The debtors, John William Paine and Charles Frederick Paine, builders, carrying on business in Vartrey-road and Holmdale-road, Stamford Hill, applied, before Mr. Registrar Brougham, on Friday, for an order of discharge. The failure occurred in October last, the liabilities being returned in the statement of affairs at £5,519, and the trustee reported that the assets had realised £30 gross, and he estimated that they would produce a further sum of £614. The debtors commenced business in 1886, and subsequently entered into a number of building agreements entitling them, on completion of various erections, to acquire leases, the freeholders agreeing to make certain advances as the works progressed. The debtors attributed their failure to pressure by creditors and their inability to complete and realise the properties. The Official Receiver opposed, on the ground of the insufficiency of the assets to yield 10s. in the pound, and that the debtors had omitted to keep proper books of account, and that they had brought on their failure by rash and hazardous speculation. Messrs. Young and Marten, of the Broadway, Stratford, builders' merchants, creditors for £254, also opposed on like grounds.—His Honour held that the offences alleged by the Official Receiver had not been displaced, and that the order of discharge must be suspended for three years, mainly by reason of the rash and hazardous speculation.

EMPLOYERS' LIABILITY.—WILD v. WAYGOOD.—(Before Lord Herschell and Lords Justices Lindley and Kay, March 5.)—This was an appeal by the plaintiff from a decision of Mr. Justice Mathew and Mr. Justice A. L. Smith, allowing an appeal by the defendant from a judgment in favour of the plaintiff on the trial of the action before a jury at the Shoreditch County Court. The action was brought by a workman under the Employers' Liability Act. Messrs. R. Waygood and Co. contracted with builders engaged in erecting a house to construct a hydraulic lift. The plaintiff was in the employ of the builders, and was paid by Frost, their foreman. Duplea, a joiner in the employ of Waygood, asked Frost to allow the plaintiff to assist in the work of the lift, and Frost allowed him to do so. According to the plaintiff he was working at the lift under Duplea's directions. Duplea directed him to put a plank across the landing-stage, telling him it was "quite safe," and when the plaintiff was on it, the end he was on went down, Duplea having at the same time started the lift. To save himself he laid hold of a rope which pulled him over the pulley, and he sustained injury. The County Court Judge told the jury to find whether plaintiff was a workman of the defendant when the accident happened; and whether Duplea was defendant's foreman at the time, under whose directions the plaintiff was acting. The jury found for the plaintiff, with £50 damages. The Divisional Court reversed that decision, and gave judgment for the defendant. Lord Herschell, in giving judgment, said that it seemed clear that the injury had resulted from standing on the plank in conformity with orders, and that the plaintiff was entitled to judgment. The Lords Justices concurred, and the appeal was accordingly allowed.

IN RE M. GENTRY.—The debtor, Mark Gentry, builder and contractor, of London Wall and Stratford, passed his examination on the 3rd inst., on a statement of affairs which showed liabilities to the amount of £38,571 (£14,659 being unsecured), with assets £6,573.

A QUESTION OF LIGHT AND AIR.—Before Judge Prentice and a jury at the Bow County Court on the 4th inst., Walter Davidson, Forest Gate, sued Joseph Henry Pavitt, Barking-road, Plaistow, to recover £50 for obstruction of light and air to his premises. Plaintiff was the leaseholder of Nos. 70 and 72, Barking-road, and defendant was the owner of No. 68, adjoining No. 70. In September defendant built a wing at the rear of his houses, which blocked the light of plaintiff's back window. He admitted, in cross-examination, that he made no complaint to defendant or his builder whilst the work was in progress. Henry Monckton, architect and surveyor, said the light was considerably blocked. Henry Ellis, surveyor, proved that plaintiff's window was an "ancient light." The defence was that neither light nor air was impeded, and Mr. Thurston-Green, architect and surveyor, of the Poultry, deposed that plaintiff's back window was blocked up with shelves and goods, and very dirty. Defendant's building in no way interfered with either light or air. Antonio Daley, an architect, gave similar evidence, and the jury returned a verdict for defendant, with costs.

ARCHITECT'S ACTION AS TO A COMPETITION.—ELLIS v. WALSALL SCHOOL BOARD.—At the Walsall County Court, on the 3rd inst. (before his Honour, Judge Griffiths), Mr. Jonathan Ellis, architect, Walsall, sued the School Board of that town for £37 16s. damages for loss to him by reason of the defendants having, contrary to their implied agreement, selected and accepted plans and specifications other than the plaintiff's for the erection of school buildings at the Pleck, the plans and specifications selected, as the defendants well knew, not complying with the conditions of the competition. An alternative claim was made for work and labour on his plans, which were improperly rejected by the Board. Mr. Plumptre (instructed by Mr. J. N. Cotterell) appeared for the plaintiff, and Mr. Kettle (instructed by Messrs. Crump and Barrows) for the defendants. It came out in the course of a preliminary discussion that ten sets of plans were sent in, and that three of these, marked respectively "Bruin," "St. George," and "Lux," were selected, the first two being by Mr. McConnell, and the third not by the plaintiff. Those marked "Bruin" were sent up to the Education Department, but were refused because certain requirements of the Department had not been complied with, and then the board fell back upon the second set, "St. George," which underwent extensive modifications and alterations, and as altered were approved by the department. Mr. Plumptre put in the conditions issued by the defendants as to the completion for the Pleck Schools, and the regulations of the Education Department on school building. He contended that these conditions had not been complied with by the plans which the board themselves had laid down. He submitted that any gentleman in preparing plans must incur certain risks, which were that his plan need not be accepted at all, it might not be equal to some other plans sent in, or it might not be found to comply with the requirements; but the School Board had no right to expose the competitors to any further or other risk than those which were obvious. The competitor took the chance of the board being so ignorant or wanting in taste as to throw his plans out altogether, but if the board accepted any plan at all it must be one which complied with their own regulations. This was, he submitted, an implied contract that if they selected at all they must select in accordance with their own conditions. His Honour said that there might be power to prevent the board selecting a plan which did not comply with the rules, but by their doing so what injury did they do the plaintiff? It gave plaintiff no right to be accepted, and he was not injured by some one else's plan being accepted. Mr. Plumtre submitted that the selection, if made at all, must be upon the plans laid down. His Honour asked what damages could be alleged. He was inclined to think with Mr. Plumtre that there was an implied contract to that extent, but where was the injury and damage? Mr. Plumtre contended that plaintiff would be entitled to fair remuneration for the labour to which he had been put. His Honour said that there might be an implied contract, but the damage was nominal only. It was quite clear that the only thing the law could do was to put the plaintiff into the position of a competitor, but the board was not bound to accept his plans even then. Minute books and other documents were then put in and showed that on the first ballot the board chose three sets of plans (plaintiff's not being one) and that from these they selected those of Mr. McConnell to send to the Educational Department, by whom they were not approved, and they had to be altered very considerably. After a long discussion, Mr. Plumtre submitted that there was an implied contract that the board would not send up to the Department for approval any plans which they knew, or ought to have known, did not comply with the conditions laid down. His Honour said that he really did not think that there was any contract not to submit the plans for approval, and he must give a decision in favour of the defendants with costs.

AN ARCHITECT SENT TO PRISON.—At the Central Criminal Court, on Monday, Frederick William Fryer, 24, architect, was indicted for obtaining £100 from George James Cawthorne by false pretences. The defendant had been connected with the publication of a building-trade journal, and he advertised for a secretary, receiving a reply from the prosecutor. The defendant made statements to him as to the circulation of the journal, and stated that the advertisements were genuine. The defendant also said that he was one of the surveyors of the London School Board. Upon the faith of the statements made by the defendant, the prosecutor deposited £100 with him. It was alleged on the part of the prosecution that the representations made by the defendant were untrue. It appeared that he had been employed on several occasions to do surveying work for the School Board of London. The defendant urged in defence that the statements made by him were perfectly accurate, and he called witnesses who gave evidence on his behalf. The jury returned a verdict of Guilty. The Recorder sentenced the defendant to six months' imprisonment with hard labour.

CHIPS.

Mr. Alfred Groves, builder, Milton-under-Wychwood, is erecting new stabling and making additions to house at Bradwell-grove, Oxon, for Mr. W. H. Fox, J.P., under the superintendence, and according to specifications prepared by Mr. W. E. Mills, architect, Banbury.

At an assembly of members of the Royal Scottish Academy, held at Edinburgh on the 3rd inst., it was resolved that twelve artists should be elected to Associate rank at the meeting to be held on 30th March. The assembly also resolved unanimously that of these four should be architects, two sculptors, and six painters.

A meeting of the St. Paul's Ecclesiological Society was held on Wednesday evening, when Mr. F. J. Beckley, B.A., read a paper on "The Christian Monuments of Ireland up to A.D. 900."

At Newport, Mon., police-court, on Friday, two men, named Benjamin Gough, farmer, of Keynsham, and Edward Merchant, pig dealer, Newport, were charged on remand with stealing a cheque for £17, the property of Samuel Small, builder and contractor, Newport, and also with forging his name on the said cheque. Complainant lost the cheque in question, which was endorsed by Gough and cashed by Merchant. The prisoners were committed for trial on a charge of larceny by finding, the mayor saying that there was no case of forgery.

PARLIAMENTARY NOTES.

Plumbers' Registration Bill.—This Bill was read a second time on the 3rd inst., and was referred to a Select Committee. We congratulate the Plumbers' Company and its indefatigable secretary, Mr. W. R. E. Coles, on the completion of this, the first stage of their legislative labours. The business-like way in which this matter of Plumbers' Registration has been managed from the first is as creditable to the Plumbers' Company and the plumbers generally, as the hindrances thrown in the way of the Registration of Architects are disgraceful to the jealousy of the Institute and the lukewarmness of architects.

Honorarium to Sir E. Du Cane.—In reply to a question, Mr. Matthews stated on Monday that Sir E. Du Cane, who receives £2,000 per annum as chairman of the Prison Commissioners, was granted last year a special gratuity of £1,000, in consideration of his exceptional services in the designing, erection, and superintendence of prison buildings on a large scale, whereby a very considerable saving of public expenditure has been effected.

WATER SUPPLY AND SANITARY MATTERS.

Denby.—The first sod of Square Wood Reservoir, at Denby, for the supply of Denby and Denby Dale, has been turned. The reservoir is part of a large scheme, will hold two million gallons of water, and is for the low level service. The water is from springs, and is of an excellent quality. The scheme also includes a tank to supply the middle district, which will be at Moistholme, and hold 100,000 gallons, and a third supply for the higher levels at Rusby. The making of the Square Wood reservoir has been let to Messrs. Allott Bros., of Denby Dale. Mr. G. H. Crowther, of Huddersfield, is the engineer for the undertaking.

Dublin.—An inquiry was held last week in the City Hall by Mr. Cotton, C.E., engineering inspector to the Local Government Board, to consider the application of the Dublin Corporation to sanction a loan of £278,000 for the purpose of carrying out a main drainage scheme, and a loan of £13,000 for the erection of artisans' dwellings on parts of the city estate. Mr. Samuel Walker, Q.C., who represented the corporation, said that the question of main drainage had been dealt with by three Acts of Parliament in the years 1870, 1871, and 1875. Unfortunately, it became impossible to carry out any of these Acts, and the evil was found to be aggravated. The scheme has been approved of by the Board of Works, the War Office, the Chamber of Commerce, and the Dublin Sanitary Association. Lord Pembroke offered to give them 20 acres for the nominal sum of £10, and proposed to give 3¼ acres at the south wall for £200. The borough engineer, Mr. Mansergh, C.E. (London), and other engineers were examined in support of the scheme.

CHIPS.

Moriah Welsh Presbyterian Church at Carnarvon was reopened on Sunday after renovation, at a cost of about £4,000, inclusive of the erection of an organ. The works were carried out by Mr. Owen Morris, from the designs of Mr. Rowland Lloyd Jones.

Mr. William Motherwell died on Thursday in last week at his residence in Airdrie, in the 84th year of his age. Mr. Motherwell was a native of that town, where he, for a considerable time, carried on business as a joiner and timber merchant, but for many years he has been out of business.

£4,050 has been expended on the works for the strengthening of the outer pier at Scarborough, excluding engineer's charges, but including the cost of plant. On the recommendation of the engineer, Mr. P. Messent, C.E., further work is about to be executed on the upper portion of the face-wall.

A pair of model cottages are in course of erection at The Foxholes, near Chipping Norton Junction, Oxon, for Messrs. L. E. and H. Bailey. Mr. Alfred Groves, of Milton-under-Wychwood, is the contractor.

The tender of Mr. A. Groves, builder, of Milton-under-Wychwood, has been accepted for the restoration of Begbroke Church, Oxon. Mr. H. Geo. Drinkwater, F.R.I.B.A., is the architect.

The Washington School Board, Co. Durham, are about to erect a new mixed school on ground near Washington railway station. Some time ago they invited architects to send in competitive plans, and those submitted by Mr. J. Gibson Cowe, architect, Fence Houses, were accepted. The school and classrooms provide accommodation for 200 children, and the contract for erection of same has been secured by Mr. T. Hunter, builder, Washington. The total cost will be about £1,900, which includes playground walls, covered shed in playgrounds, and all conveniences.

Our Office Table.

We were pleased to note that the Plumbers' Registration Bill successfully passed the ordeal of second reading in the House of Commons on Thursday in last week. The Bill was strongly supported by petitions in its favour from large towns, and being heartily approved of by the trade, was unopposed at the second reading. It now stands referred to a select committee, which will meet as soon as the necessary arrangements can be made. The committee is empowered to take evidence so that any members of the trade, unregistered or otherwise, who may consider they have a grievance, will be enabled to go before the committee and ventilate it. The committee, which was appointed on Tuesday, consists of Mr. C. Bruce, Mr. Cremer, Mr. S. Evans, Dr. Farquharson, Mr. Fenwick, Mr. Isaacs, Mr. Kimber, Mr. Knowles, Mr. Lafone, Mr. Maden, Mr. Murphy, Mr. Powell, and Mr. Taylor. The measure will supply a missing link in sanitary legislation.

The residents of Streatham Hill must deplore the recent spoliation of the fine wooded park belonging to Leigham Court at the corner of Streatham Hill and Leigham Court-road, which land is bounded by the cutting of the Brighton and South Coast Railway leading from Victoria to London Bridge. We hear that the site has been purchased by an Industrial Dwelling Company. Why such a locality should have been selected for the purpose of dwellings for the working classes, so far away as it is from the centre of their labour, and right in the midst of a superior residential neighbourhood, we cannot imagine. It is a great pity this beautiful site could not have been secured for a different class of residences, if such indeed are necessary, which we very much doubt, seeing that house property all over London, especially in the west and south-west districts, is at a serious discount.

Of the three architects who sought election on the London County Council, Mr. Walter Emden, M.S.A., is the only one who succeeded, and but one civil engineer gained a seat—Mr. Henry Ward, elected for Hoxton. Mr. H. J. Powell, of the Whitefriars Glass Works, and Mr. Nathan Moss, master cabinet-maker, were re-elected for Dulwich and Hoxton respectively. The building trades are well represented on the Council. Four builders were re-elected—Mr. Geo. Bethell Holmes for South Hackney, Mr. John Marsland for Walworth, Mr. R. Roberts for South Islington, and Mr. Lawrence Stevens (who began life as a journeyman bricklayer, but is now a builder at Rotherhithe) for Rotherhithe; while the new members include Mr. William Goodman at West Islington, and Mr. H. Keylock at Deptford. Mr. F. C. Baum, member for North Kensington, is the secretary of the Upholsterers' Society and a member of the London Trades Council; Mr. W. C. Parkinson, gas engineer, was re-elected for North Islington, and Mr. John Burns, working engineer, for Battersea.

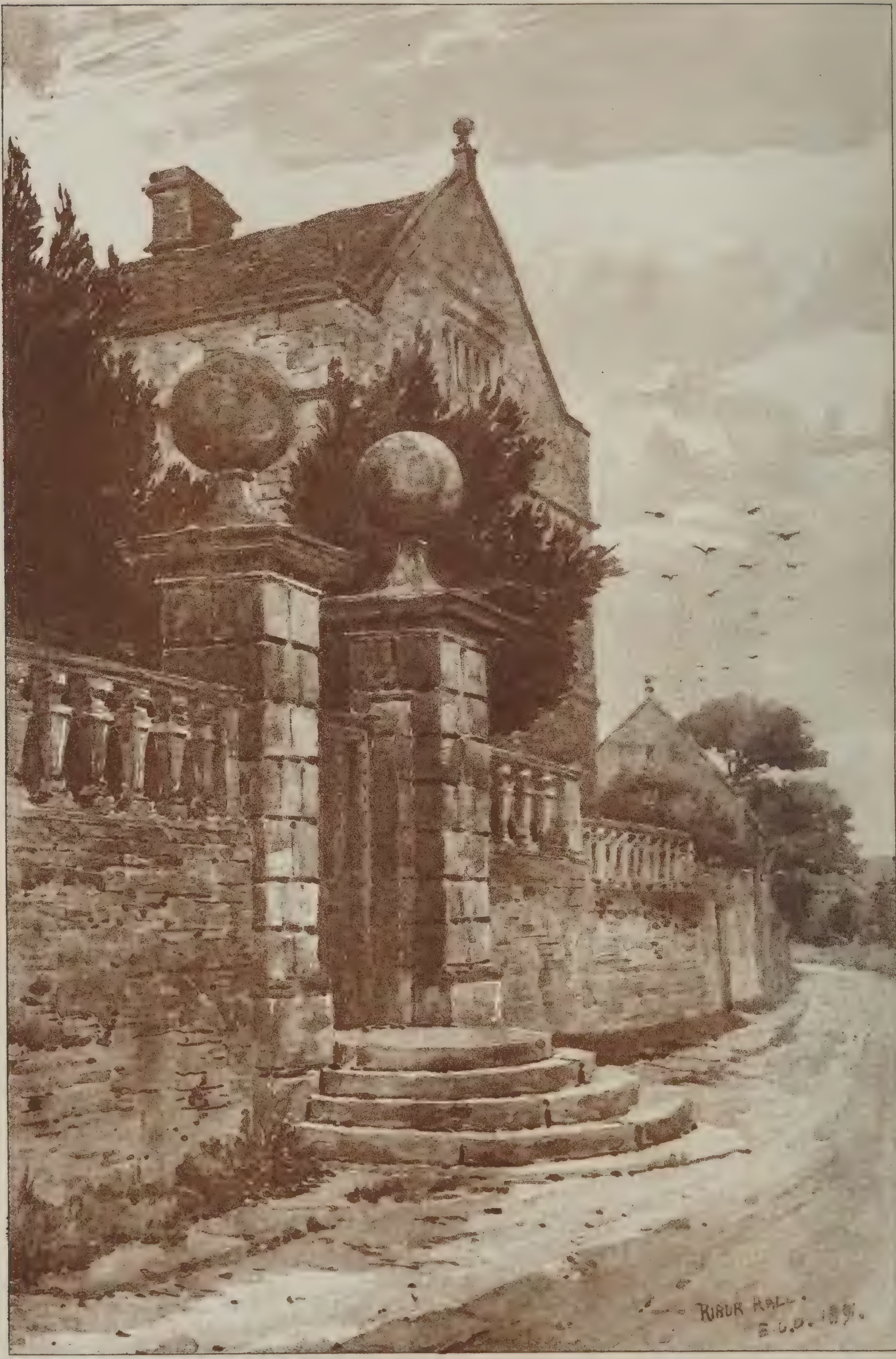
The first outward and visible signs of the progress made by the Warwickshire Photographic Survey will soon be on view to the public at the Birrmingham Art Gallery. A large number of photographs have been received, and a committee of selection, on which Mr. Jethro A. Cossins, a well-known local architect, and Mr. Whitworth Wallis, curator of the Art Gallery, are included, is now at work choosing 500 of the best pictures for exhibition. These will be hung at the Art Gallery at an early date, and will be afterwards handed over, together with the works at present withheld, to the authorities of the city and preserved at the Reference Library. In the collection are to be noted records of interest, from the elaborate halls of Compton Wynyates, Castle Bromwich, and Warwick Castle to the pillory at Coleshill, and the rain-water cistern at Pooley—from ecclesiastical architecture such as the Beauchamp Chapel at Warwick to the picturesque mud hovels still inhabited at Wolvey Heath.

Cast-iron pipes, with indiarubber joints, for gas, water, and other purposes, have come into general use in the colonies. Of course, these joints, by permitting the pipes to adapt themselves to the levels and settlements of the ground, are well adapted where inequalities of the ground exist. Several advantages are claimed for the so-called "Acme" cast-iron pipe, used largely in the Australian colonies. They can be more easily and rapidly laid, as ten pipes can be put down on this system where only one of the ordinary lead-jointed pipe can be laid; they can be easily lifted and relaid; they adapt themselves to slight subsidences of the soil, which cause lead-jointed flange pipes to break; the "Acme" pipes are lighter than socket and spigot pipes, and the cost per yard laid less, one reason being that the trenches need not be so wide. On the Continent and in America gas and water pipes have been laid with indiarubber joints for many years.

In a lecture on the relation of art to nature, given at the Manchester Art Gallery recently, Professor R. A. M. Stevenson remarked that there was so much that was conventional in painting that whether one worked from the head or from nature, he was equally compelled to use his imagination. Painting was a translation rather than a copy. The causes of artificiality might be summed up as follows:—(1) The fact that a frame or fixed boundary of the sides of the canvas was used; (2) that two dimensions were used instead of three; (3) and that the real light of nature had to be replaced by the available scale of pigments on the palette. These conditions made necessary the arts of composition, modelling, perspective, and colour. Composition had to do with masses and colours as well as lines, and employed the resources of harmony, contrast, and breadth. Many impressionists placed figures not in the best possible position, but in the most natural. It used to be said that a face should be seen from below; but it was rarely so seen. In modern composition the floor often rose above the level of the head. This did not look natural, so accustomed were we to a more formally beautiful sort of arrangement; but perspective probably looked no more natural to the ordinary observer of the 15th century.

The report presented of the Prudential Assurance Company, at the forty-third annual meeting on Thursday week, states that: In the ordinary branch the new annual premium income was £355,980, no less than £1,442,746 having been received in premiums during the year, or £280,097 more than was received in 1890. The increase in the premium receipts for the quinquennium 1887-91 was £1,045,806, giving an average annual increase of £209,161. In the industrial branch the premiums received during the year amounted to £3,688,338, being an increase of £170,413. The increase in the premium receipts for thequinquennium 1887-91 was £777,043, giving an average annual increase of £155,408. The total number of policies in force last year was 9,617484; the average duration being six years and three-quarters. The total assets of the company, as shown in the balance-sheet, are £14,623,627, being an increase of £2,043,757 over those of 1890.

An idea of the great extent of the forthcoming Columbian Exposition may be gained from the dimensions, acreage, and cost of the large number of important structures which are to compose it. These will face the Grand Avenue, and each will be the design of a separate architect, though they are prepared under certain conditions to insure harmonious effect. At the head of the Grand Avenue is the administration building, 260ft. square, covering 1·6 acre, and to cost £90,000. On the north, the buildings for manufactures and the liberal arts; the latter will measure 787ft. by 1,687ft. and occupy 30·5 acres, costing £200,000. Electricity will have its own building, 700ft. by 345ft., 5·5 acres, and will cost £73,000. Buildings for mines and mining, horticulture, fisheries, agriculture, forestry, machinery hall and annexe, fine arts, a women's building, and several others will be erected, covering in all 144·8 acres, and costing altogether £1,176,000. The United States Pavilion will be 350ft. by 420ft., and cost £80,000; another is the Illinois State building, to cost £50,000. Altogether, about 80 State buildings are estimated to be erected. The size of the World's Fair of 1893 will be four times as great as that of the Exhibition of Paris in 1889. The principal buildings at Chicago will occupy an area of 150 acres, while those of Paris covered only 55 acres.


RIBUR HALL.
E.G.D.

"PHOTO-TINT," by James Akerman, 6 Queen Square, London, W.C

ENTRANCE TO RIBUR HALL FROM A WATER-COLOUR DRAWING BY E. GUY DAWBER A.R.I.B.A. ARCHT

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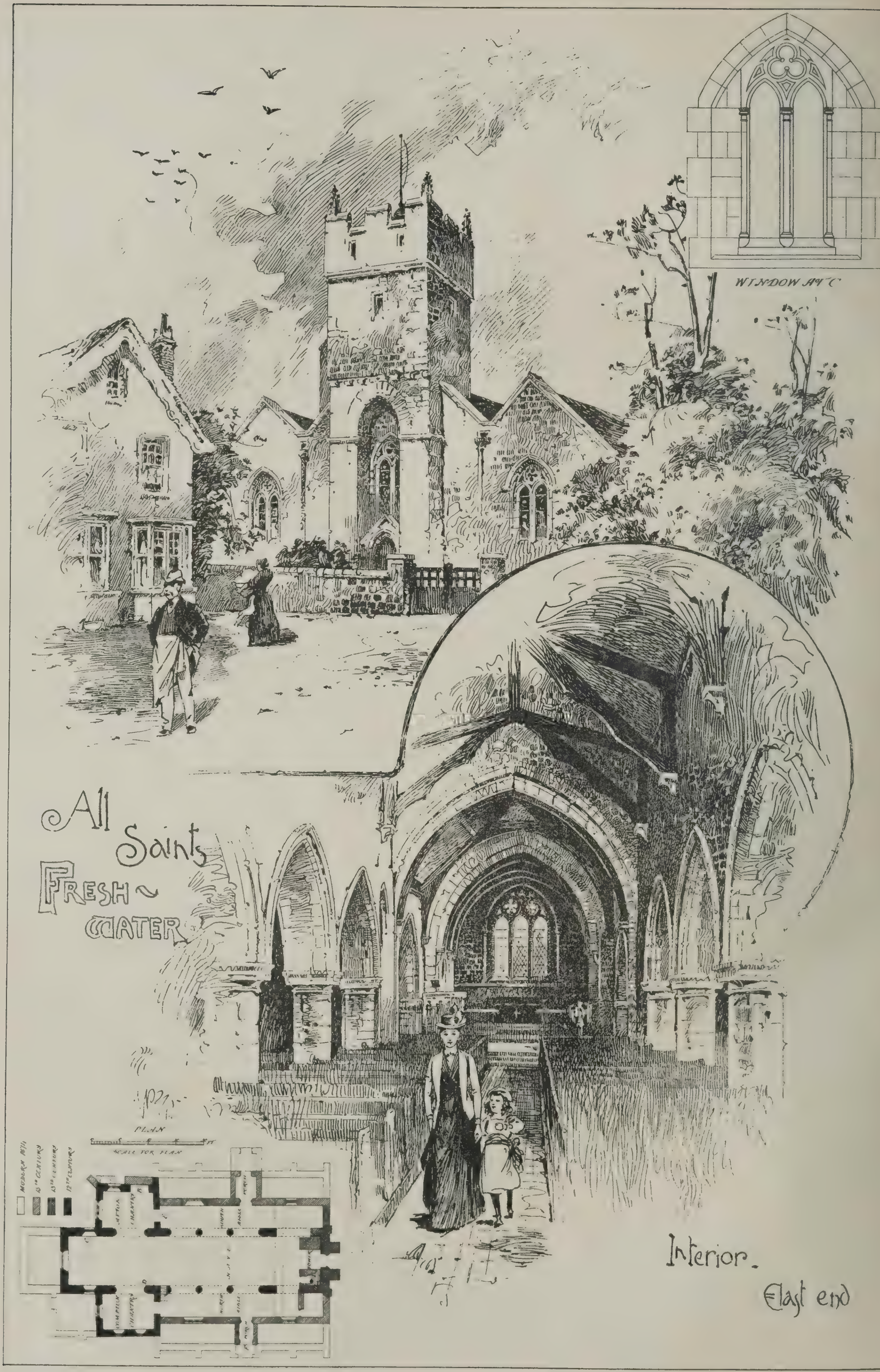

FROM "ARCHITECTURAL ANTIQUITIES OF THE I·OF·WIGHT" BY·PERCY·G·STONE·FR·I·B·A·

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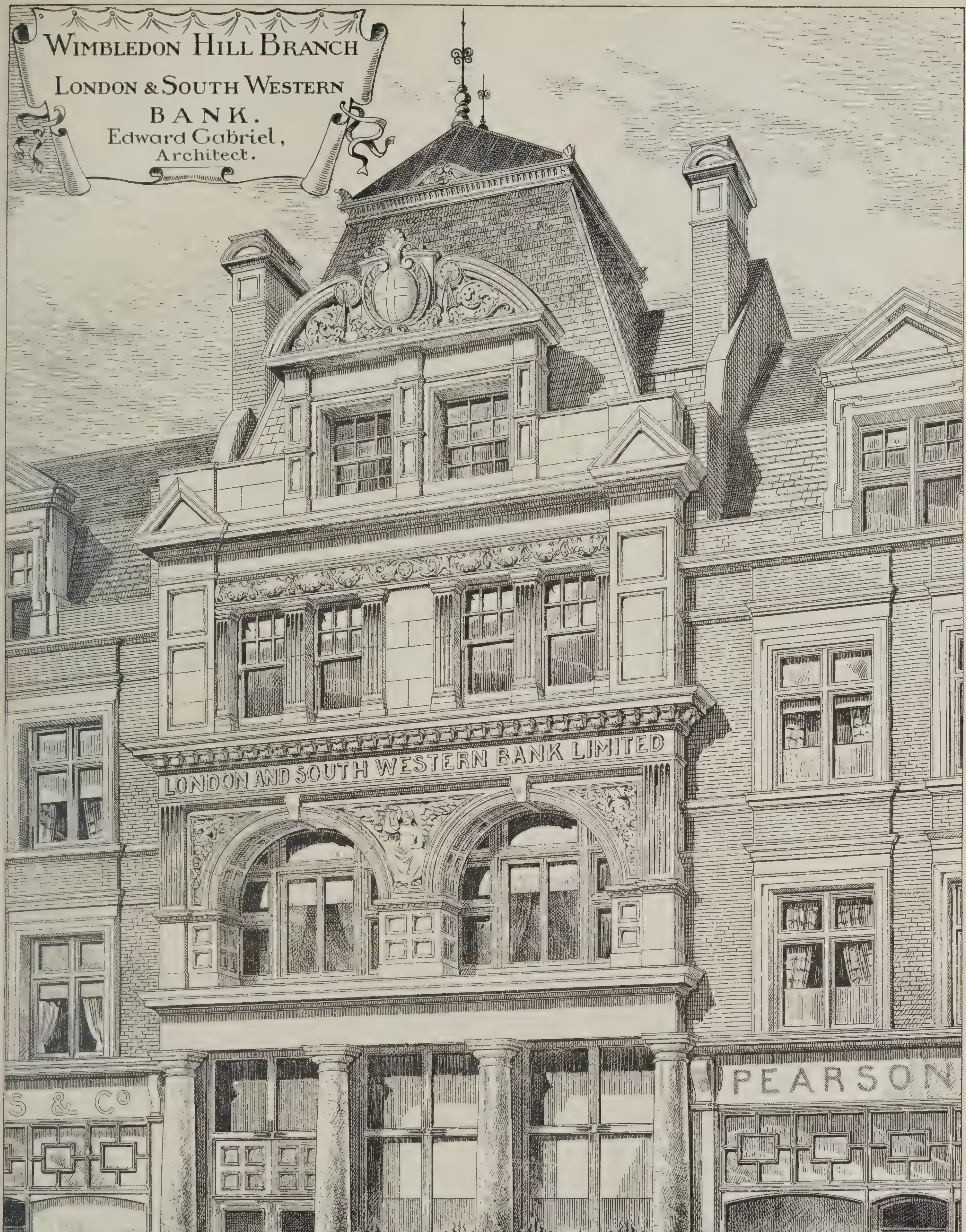

WIMBLEDON HILL BRANCH
LONDON & SOUTH WESTERN
BANK.
Edward Gabriel,
Architect.

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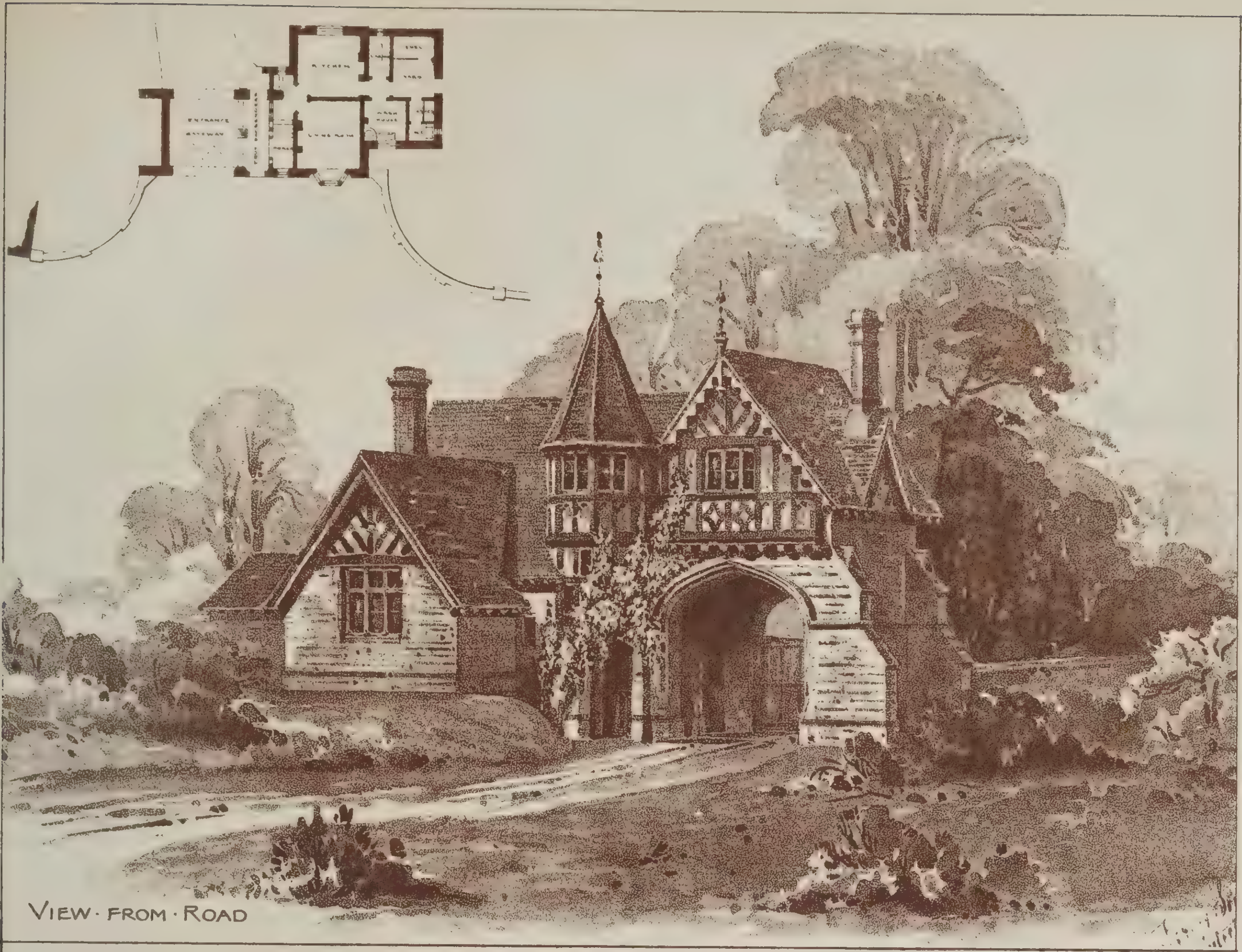
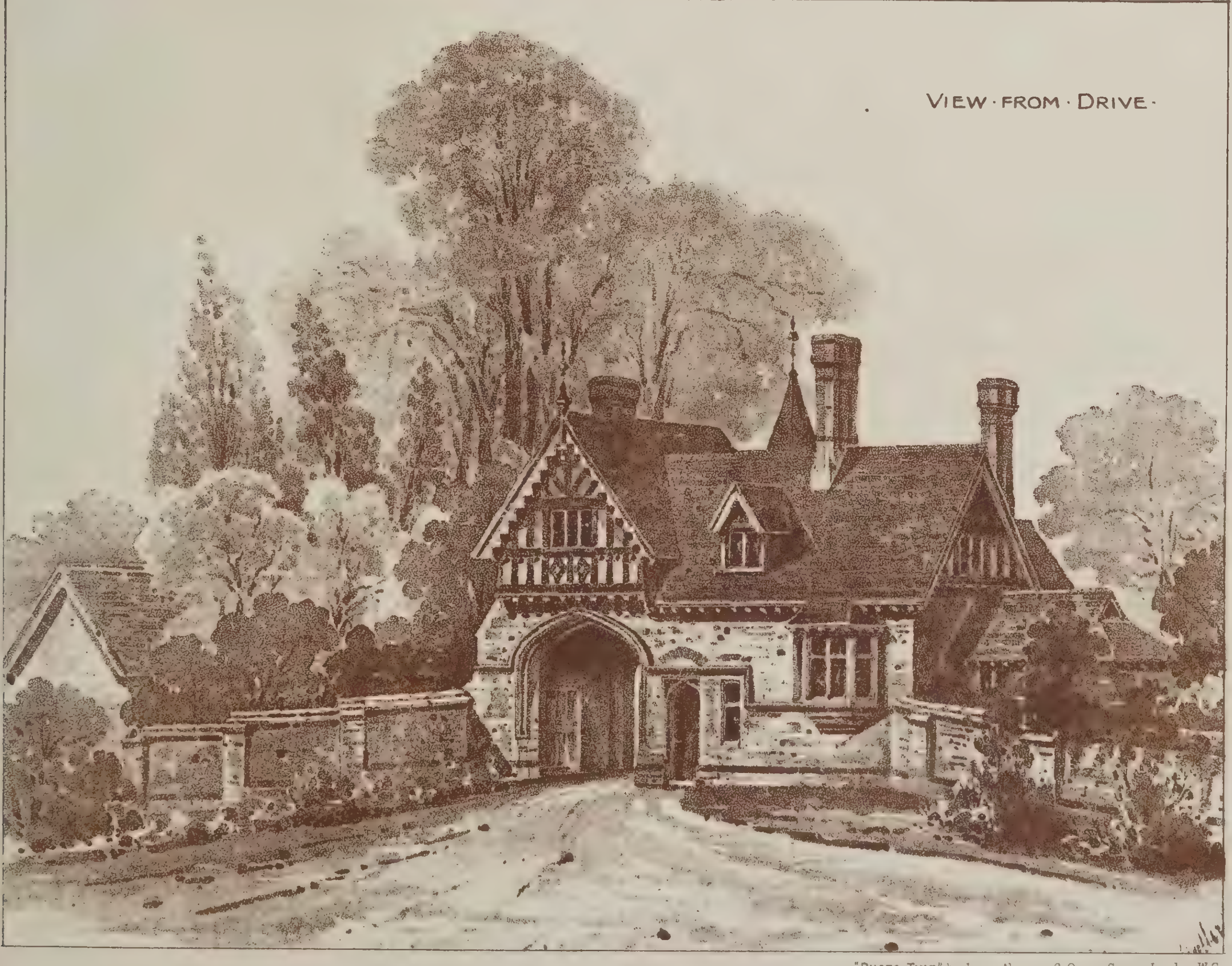


VIEW · FROM · ROAD

LODGE · AT · NEWENT · COURT · GLOUCESTERSHIRE · MESSRS WALLER & SON · ARCHTS



VIEW · FROM · DRIVE ·

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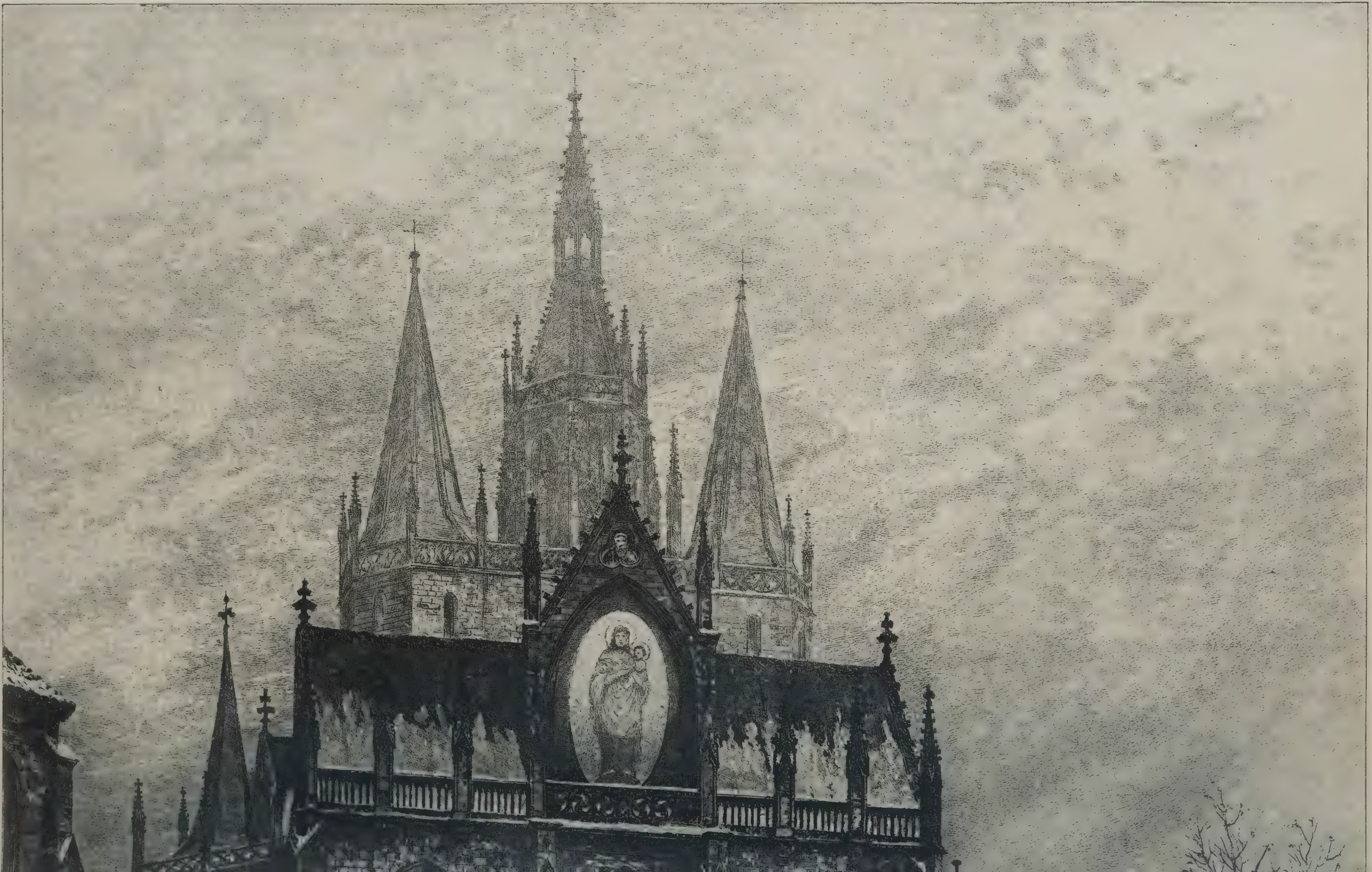

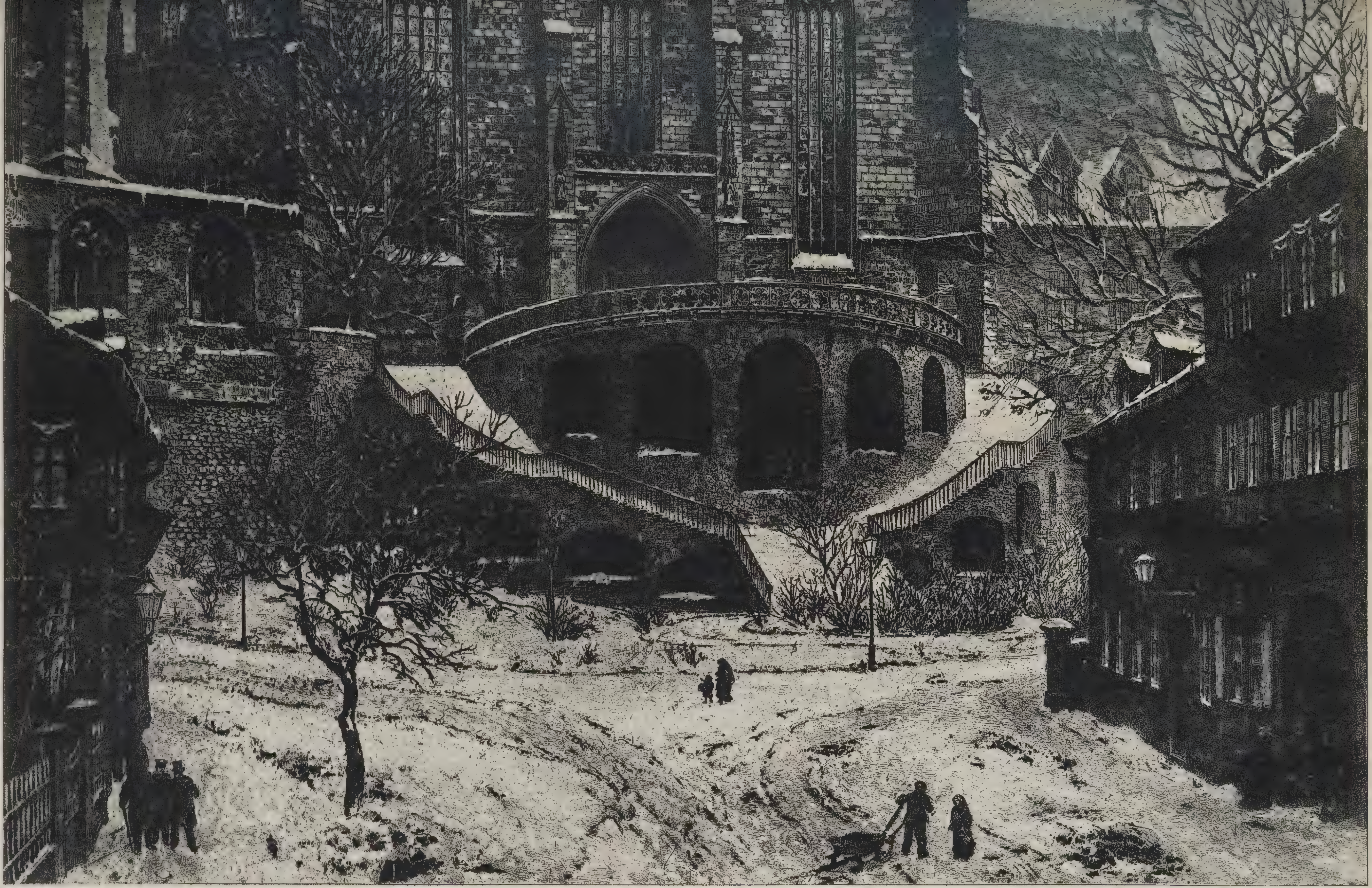

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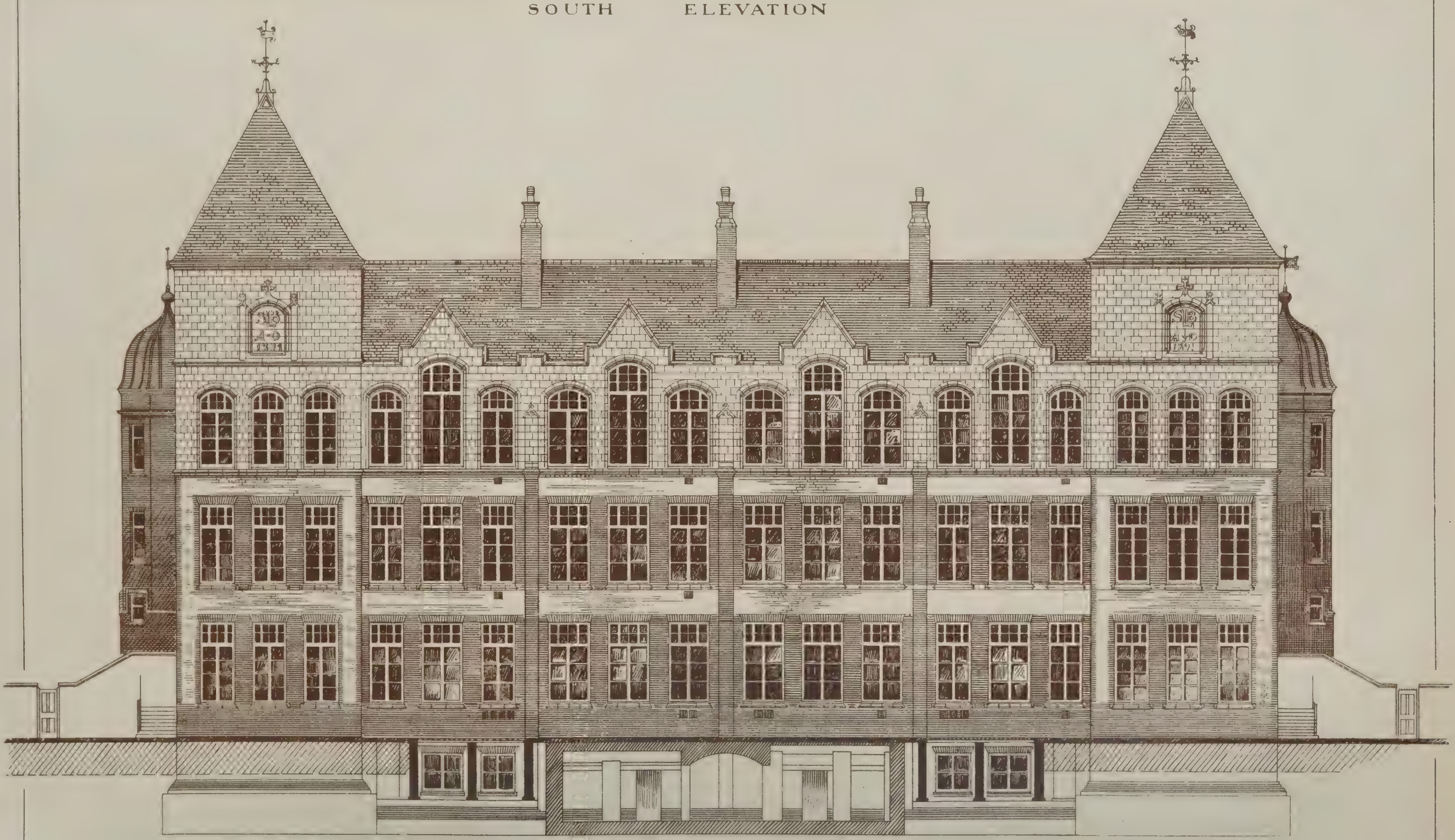
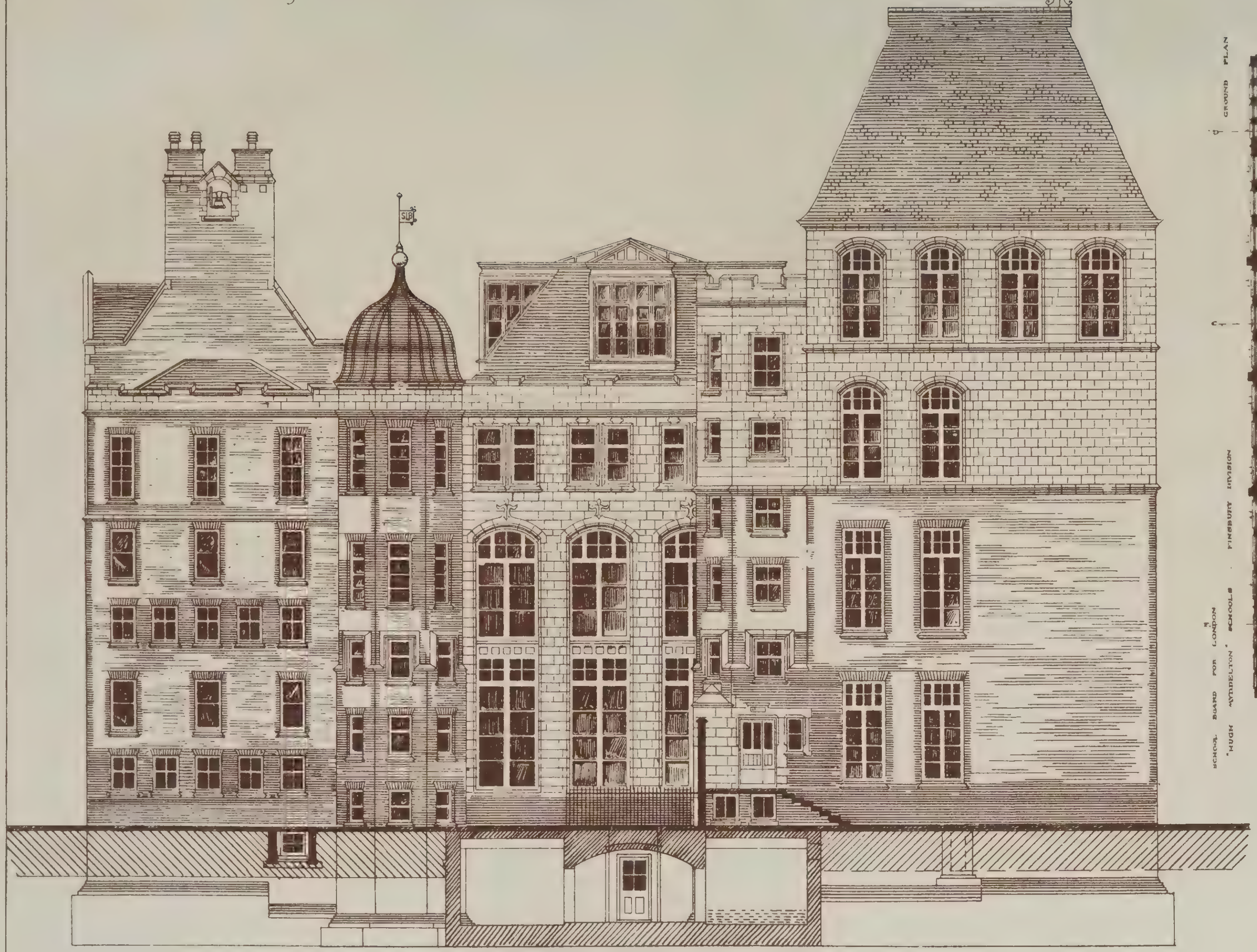


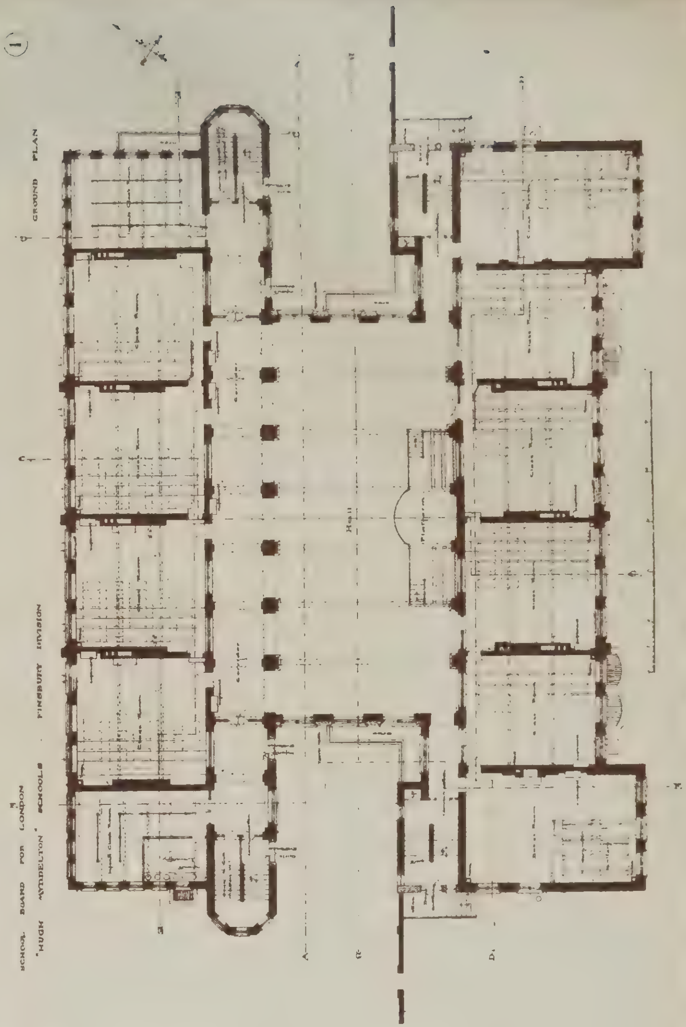
"HUGH MYDDELTON" SCHOOLS, CLERKENWELL.

◦ School ◦ Board ◦ for ◦ LONDON ◦

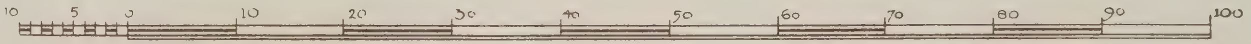
T. J. BAILEY, Architect.



WEST ELEVATION



SCALE OF FEET



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THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXII.—No. 1941.
FRIDAY, MARCH 18, 1892.

WINDOW-GLASS IN ARCHITECTURE.

THE papers on "Painted Glass" which were read at the Institute two or three weeks ago would have been more in place, perhaps, at the Architectural Association. Good enough as far as they went, they did not go far enough to be of much service to practising architects. They told them what they knew already, and little besides. And this was not because the authors had little to tell—undoubtedly they could, under more favourable conditions, have said a great deal which would have been extremely valuable. But it so happened that most, if not all, of them selected subjects which might well have occupied a whole evening, or several evenings; and yet were limited, in the length of their papers, to something which could be read in less than half an hour. The result was that, for the most part, they were occupied with the elementary facts of the matter. They skimmed over too large a surface, and had not time to go down to the treasures below.

Yet the treatment of painted glass, which was practically confined on this occasion to that of figure subjects, is only a small part of the question. It may be the highest part, but it is also, for most architects, the exceptional part. Every building, from the cheapest to the costliest, contains window-glazing; and to many people it is constantly in view through a great part of the day. How to improve "domestic" glass is, therefore, for most of us a more intimate and pressing question than how to deal with the "storied windows, richly dight," of churches and monumental structures. We have outlived the time when a gigantic sheet of "British plate" satisfied the highest ambition of the British householder. We are in a period which is trying, like the olden ones, to apply art to common things. But though common things in brickwork and woodwork and metalwork are getting their share of attention, common things in glazing seem to be rather neglected. It is rare to find anything of this sort with a trace of art about it between elaborate stained glass and plain 21oz. sheet.

Then, again, the essential things which pertain to glass—which distinguish good glass from bad—are largely things relating to colour and quality: to colour and texture, if one may use the latter word for want of a better. Now, these are precisely the things which words cannot describe, and which diagrams cannot display. To make it clear which glass is excellent and which is execrable, the only way is to show the glass itself, and to show it by daylight. The difficulty is, that this can seldom be done at an evening lecture. Specimens can be handed round, but their real tints and tones when sunlight passes through them can hardly even be guessed at. And a passing glance at such specimens is not enough. They need to be stored where an architect can return and study them at leisure. They should, in short, form part of a permanent and easily accessible collection. It need be little more than a collection of samples. It is not figures of saints and angels that are wanted. It is a lot of pieces of glass of all kinds and colours, old and new. The old pieces should be marked with their date, or approximate date, and place of origin; and the new pieces with their makers' names. They would have to be fixed in leads, perhaps, for security; but there must be no labels requesting visitors "not to touch." The object is to afford facilities for getting to know them thoroughly, both by sight and feeling.

With such a museum of samples as this—a museum which, even if occupied only one small and well-lighted room, would be infinitely better than nothing, every architect would have if in his power to ascertain what glazing materials were actually available, and would be able to design his work accordingly. Of course, the scheme is not ambitious enough to attract the support of the nation or of the public. We are not likely to see it carried out at South Kensington, where the examples of old glass which exist are very inconveniently placed for study. But it would be well worth the while of any first-rate firm, concerned in the manufacture, to put together such a collection, and to throw it open to architects. It would bring more business than an illustrated catalogue, and at a fraction of the cost.

ROYAL INSTITUTE OF PAINTERS IN WATER-COLOURS.

THE Piccadilly galleries are, as usual, crowded with pictures of varying merit. In the West Gallery, T. Austen Brown's "A Bait Gatherer"—a girl with bag of bait on her shoulder—is strongly suggestive of the French impressionist school; sombre and grey, but full of sentiment and earnestness. "A Summer Twilight" in the same room, and his masterly "Evening" in the east gallery—a young herdsman lighting his pipe, with his milch cow in the dark twilight—are powerfully painted studies. In the last the reflected light of the glowing pipe-light on the face of the young man is skilfully painted. The vice-president, H. G. Hine, has a delightful piece of Sussex downs above Lewes (6)—soft and broad in its undulating pastures contrasted against the dark, stormy sky. His other views—"Eastbourne" (259), "Rye" (314), and "Afterglow" (278)—are all suggestive of the same repose, and have a healthful sense of colour, light, and shade. We must assign high qualities to the broad treatment and strong natural colour of James Orrock's "Carting Sand, Hambledon Common" (19), whose work is full of vigour and atmosphere; to Alfred East's "Wet Weather" (30), a grey and very admirable view of a quaint Flemish-looking village street, in which the reflected light and dark mass of tower are feelingly treated; to A. W. Weedon's "Highland Cattle" (24); to Robert Fowler's No. 18, a subject very powerfully handled, suggestive of wind-swept forest from a stanza of Tennyson; and to Miss Mildred A. Butler's charming idyllic landscape with cattle in a meadow, is "Dolce far Niente" (26). Fresh and breezy H. Caffieri's "Off to the North Sea" (11); his skill as a painter of the sea and coast is shown in the nice grouping, tone, and soft atmosphere of "The Herring Season, Boulogne" (115). Yeend King has a clear and bright little sketch (22). Bathed in soft, sunny light is John White's "The Meeting of the Waters" (31), a cliff-encircled bay; his other work, "A Harvest for the Hearth," being remarkable for its delicate rendering and tone of a cottage exterior (292). At the end of the gallery, Professor Hans von Bartel's "Waves, Einsamar Strand" (58) is a large and masterly seascape. Waves are breaking upon the rocky coast, the curling billows and surf illumined by the grey-white light of a troubled sky, and the painter has given us a powerful impression with the aid of body colour. Edward Hargitt's Killarney scene (68) is grandly impressive; the mountain background, wooded slopes, and foreground are cleverly handled. J. W. Whymper has also a delightful view, "On the Slopes, Hazlemere" (77), and Claude Hayes skilfully depicts the rainy sky, with its playful gleams of light, in No. 84, and Jas. Hay a study of old books full of poetic meaning (83). The work of E. M. Wimperis is, as usual, strong and broad. His "Footbridge on the Marsh" (113) in this gallery has fresh colour, and his small sketch "At Wareham" (128) will be admired. Other landscapes to notice in this gallery are Leopold Rivers's "Harvest Time" (121), a fine afterglow effect; Miss Louise Rayner's "High Street, Oxford" (130), a clever drawing; H. R. Steer's No. 132, a feelingly-handled, solidly-painted sunset; John M. Bromley's "Wet Day on the Moors," a triumph of technical handling in the foreground, and vapours rising from the hills. Walter Bayes has a clever lamplight effect, "Boulevard des Italiens" (14), and in figure compositions and *genre* we award merit to Edgar Bundy's "Banter," a clever interior, with two gentlemen at table chaffing the waitress, admirable in the reflected light; also Miss Eleanor E. Manly's "Boots at the Holly Tree Inn," an episode from Dickens (52); Robt. Fowler's "Study of the Head of 'Lear'" (71), a clever study, also his "Witch of Atlas" (108), a half-draped classical figure study; G. G. Kilburne's "Melody from Mozart," a highly finished drawing-room scene (160), delicate in colour; and W. H. Weatherhead's pathetic group of sailors, lasses, and comrades, "Watching for the Missing Boat" (189). R. Phené Spiers has a nice drawing of a gable and mullioned window of "St. John's College, Oxford" (142), Chas. E. Herne a moonlight view of the towers of Westminster Abbey (168), and there are drawings by Albert Stevens (63), C. E. Holloway (92), Charles Earle (97), and a clever drawing of head and drapery by St. George Hare (106).

The President, Sir James Linton, has only one picture in the Central Gallery, an idealised study of a shepherdess standing with her crook held in her hands behind her; a dark, handsome type of countenance is turned to the spectator, a profusion of brown hair falls over her shoulders, and she is picturesquely clad in loose-sleeved body and corset. The lines—

> Ah me? When shall I marry me
> Lovers are plenty, but fail to relieve me,

convey the meaning of the forlorn lass. The drawing, and colour, and the hillside surroundings are painted with all Sir James's technical power and skill. Opposite is H. G. Hine's serenely-depicted "Afterglow," and over it C. MacIver Grierson's "A Proposal," a humorous incident, in which a bashful youth proposes to a young girl seated at a window—clever in its treatment and execution. John Fulleylove's dainty little study of a fireside (284) is a charming bit of colour, and Miss Channer's "Wrought-iron Door, Rouen Cathedral" (287), is drawn with feeling. "Florence from the Loggia of the Badia, Fiesole" (217), by Edwin Bale, is luminous in the sunlight effect, and the landscape seen through the arcade is happily rendered. The late Thos. Collier's vigorous, broad sketches (219, 220, 276, &c.) are full of healthful colour and freshness; we must praise, also, Thos. Huson's drawing and natural colour in "Earthing Up," George Wetherbee's luminous sketch "Morning by the Sea" (252), Geo. S. Elgood's "In the Cathedral, Treguier" (264), Count Seckendorff's "Acropolis" and "Lago Maggiore" (297)—masterly drawings in charming colour—J. Aumonier's bright sunlight market scene, Venetia (304), Miss Rose Barton's urchins seated on a gate overlooking a field of barley (307), Yeend King's bright sketches of "Winchester" (342), "Norwich" (388), W. Follen Bishop's solidly-handled pathway through a wood (404), and some seascapes by Edwin Hayes. Frank Dadd has one of his charmingly real studies of life, "A Tough Yarn," a young marine telling a story to a group of men in an inn parlour (332), the grouping and light from the partially-opened window being very clever. Other pleasing figure studies are by W. Rainey (361), Charles E. Wilson

(366), Towneley Green (402), Harry Tuck (324), J. Finnemore (340), F. M. Evans (215). The drawings by John Fulleylove, "An 'Adam' Drawing-room" and a "Sheraton Sideboard" are of interest, his largest work being "Venice" (395); another drawing of the Ducal Palace is by H. Pilleau (447). The East Gallery is strong. We can only glance at the very charming figure studies by H. Caffieri, whose "Boulogne Fisherwoman" (479), "Waiting" (491), and "Shrimpers" (593) are in every way worthy of this master's skill as a delineator of fisherfolk; luminous, they all breathe of the sea air and freshness, and as colour studies are unsurpassed. Edgar Bundy's "Gipsy's Warning" is a promising work of a new member. It reveals a powerful imagination, a sense of weirdlike mystery in the plot, and the execution and colour are both strong and dexterous. The gipsy girl looking at the ring given her by the young admirer, who is disappearing from view down a steep path in the wood below a tangled mass of thicket, and the old hag who is standing over the girl are drawn with masterly power. "Ludgate Hill in a Fog" (472), by H. G. Hine is a clever piece of smoky fog painting; further on, Joseph Nash gives us a large dismantled vessel on a blue sea, and his power as a marine painter is shown in his exhausted boat's crew, "The Morning of Another Day" (673). Another painter of seafaring life, W. H. Weatherhead (508), makes a strong appeal in his "Off to the Wreck," where a number of ruddy, gallant coastguardmen clad in life-belts are boldly going to the rescue; the various expressions of face, all turned towards the scene of disaster, are cleverly drawn, and in strong colour; Max Ludby (528) is admirable in the atmosphere and sunlight, "Off Greenwich"; Jules Lessare's sketches of Plymouth (533, 539) are also clever as sketches. Robert Fowler's "Fantasie from Schumann, Op. 17," is an idealised study of much beauty of colour. Important landscapes are Arthur Severn's "Threatening Clouds at Sunset" (580), a strong, livid sky study; James Orrock's "Harvest Moon" (589), a broadly-treated landscape of fine colour. Harry Hine's "View of Richmond" (604) is an important contribution of this master. It is broad, sketchy, and full of sunlight. A smaller sketch of Richmond is also worth notice (708). We have also a fine example of Mr. Bernard Evans in "Fountains Abbey" (618), beautiful and characteristic of the master. The ruin is seen through the branches of ancestral trees which are being swept by the wind; the sere and reddened leaves of autumn cover the ground, and this rich colour is enhanced by the cold grey abbey and sky. "Amid the Flowering Furze," by B. D. Sigmund, is bright. Incident and historic composition may be fitly represented by C. MacIver Grierson's "Peg Woffington's Visit to Triplet" (627), and W. W. Collins's "St. Augustine of Canterbury" (638), where Æthelberdht, King of Kent, and Bertha and Court are receiving Augustine, who, with his monks preceded by a cross of silver, is advancing up the Downs singing the Litany. The painter has taken Butler's version, and has depicted a brilliant and stately procession. Carlton A. Smith's pleasing "Who Cries First" (664) is a clever study of children, and Henry M. Rheam's "Wrecked"—a hard-working woman entirely dazed with the intelligence of her husband's fate—is a skilfully treated figure, and in the East Gallery Alfred W. Strutt's "Cavalier and Roundhead" will be noticed for its spirited presentment and drawing of two opposite phases of human life.

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GIVE AND TAKE.

As every land surveyor is well aware, the necessity for straightening a crooked boundary is of frequent occurrence. For example, Jones and Brown are owners of adjoining properties, the division fence between which is a crooked one. Jones is desirous, we will say, of laying his land out for building purposes, and as his crooked boundary would militate against his doing so to the best advantage, he proposes to Brown to straighten the division between them.

How shall the new boundary, or "give-and-take," line run so that Jones and Brown shall severally receive as much land as they give up? This is the problem of which we desire to find a simple solution.

First, let us assume (Fig. 1) that the boundary runs from A to C, through B, and consequently has one bend only in it.

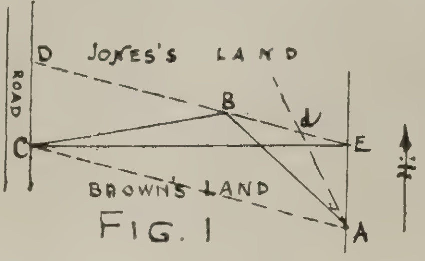

FIG. 1

We will also assume that it is desired that the new fence shall begin on the western boundary at C. As hitherto, we must find a new point on the eastern boundary for it to run to.

Join C A, and rule D E parallel to C A through B, cutting the eastern boundary in E. Join C E. E will be the required new point, and C E the required "give and take."

For before the boundary was straightened—

$$CDEA = \begin{cases} CBA \quad = \text{Brown's portion.} \\ \left.\begin{matrix} CDB \\ EBA \end{matrix}\right\} = \text{Jones' portion.} \end{cases}$$

And taking C E as new boundary—

$$CDEA = \begin{cases} CEA = \text{Brown's portion.} \\ CED = \text{Jones' portion.} \end{cases}$$

But C B A = C E A, being triangles with the same base A C, and between the same parallels; and (C D B + E B A) = C E D, for they are each the several remainders of C D E A after the deduction of C B A and C E A. In this case we have assumed the eastern and western boundaries to be parallel. Now suppose the eastern boundary to take the direction of A *d*, C B A will still equal *e d* A for the reasons named above. Therefore, no matter what direction the end boundary lines take, the process will hold good.

Now let us assume (Fig. 2) a boundary, A B C D, with two bends in it, viz., at B and C. Through C draw E F of indefinite length, and in any convenient direction. (It has already been shown that the end boundaries may assume any direction without invalidating the process.)

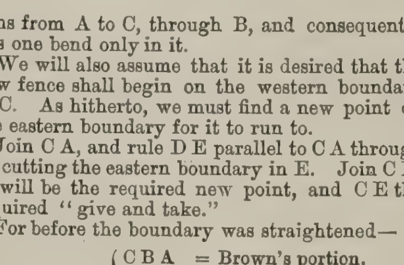

FIG 2

Join C A, draw H G parallel to C A. Join C G. Our boundary is now G C D, and has thus only one bend, viz., at C. Now proceed as before by joining D G and ruling K L parallel to it through C, and joining D L. D L will be the required boundary. The demonstrations are so obvious, being precisely as before only twice over (once for G A C H and again for G L K D), that it is unnecessary to repeat them. Boundaries with any number of bends in them may be taken in like manner.

It will readily be seen that the lines C A, D E in Fig. 1, and the corresponding ones, C A, H G and D G, K L, as also the lines G C and E F, all in Fig. 2, are only required for demonstration. In practice, the parallel ruler is placed on direction A C (Fig. 1), then it is run up to B, and the point E marked off with a "pricker," furnished with a very fine needle.

Also, in Fig. 2, the ruler is first placed on direction A C, then run down to B; the needle is held lightly but firmly at G, the ruler is swung round to direction G D, run up to C, and the point L marked off.

Changing A B C and D to 1, 2, 3, and 4 respectively, the directions for the process are briefly thus:—From 1 to 3 and back to 2, thence to 4 and back to 3; and (if there were more points) thence to 5 and back to 4, thence to 6 and back to 5, and so on. Thus the boundary (Fig. 3) would be resolved as below:—

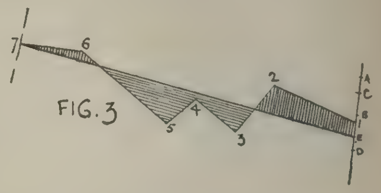

FIG. 3

1 to 3 and back to 2 gives A
A to 4 " " " 3 " B
B to 5 " " " 4 " C
C to 6 " " " 5 " D
D to 7 " " " 6 " E

And therefore the combined areas of the parts shaded by vertical lines are equal to those of the parts shaded by horizontal lines.

It will be observed that the point towards which we work (*e g.*, D in Fig. 2, and 7 in Fig. 3) is to be kept on the left-hand side as we work. Had it been desired to keep A (Fig. 2) or 1 (Fig. 3) as the fixed points, we should have had to turn the plans round and get these points on our left.

This method is also very useful in calculating the areas of figures with uneven boundaries.

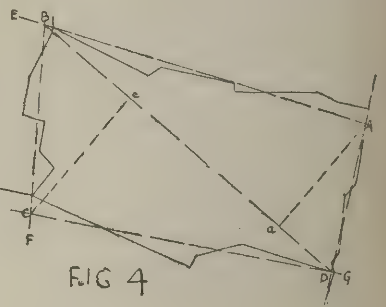

FIG 4

Fig. 4 represents a plan so worked out. Commencing with the northern boundary, A E will be found to be the direction of the "give and take." Then, working on A E, and having it on the right hand, B F will be found to be the direction of the western "give and take," cutting A E in B. Similarly working on B F, C G will be found to be the direction of the south "give and take," cutting B F in C, and working on C G, D A is the direction of the eastern "give and take," cutting C G in D. Thus the figure A B C D (in dotted lines) incloses exactly the same area as the original uneven sides (shown in hard lines), and by scaling the diagonal B D and the heights A *a*, C *c*, the area can be ascertained.

The writer has computed the area of a field 41a. 0r. 19p., and drawn to a scale of three chains to one inch (carefully checking each "give and take," and also checking the area by marking it from both diagonals in turn) in ten minutes, including working out the figures.

W. R.

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SHADOWS IN PERSPECTIVE.*—II.

By ARTHUR VYE PARMINTER.

BEFORE studying shadows in angular perspective, let us consider the shadows of two details of the last article. Let the student once thoroughly understand the shadows of these simple details, and he will find no further difficulty in determining those of more complicated drawing in parallel perspective.

We are studying at present the shadows thrown by rays of light parallel to the picture-plane on objects in parallel perspective. Fig. 3 is a detail in parallel perspective of shadows thrown by slanting and horizontal eaves. In Fig. 3*a* we have the eaves in three positions—

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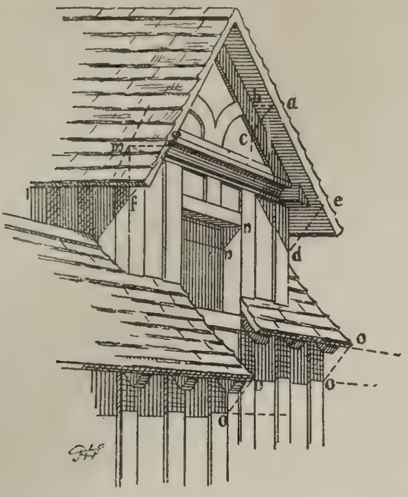

fig 3.

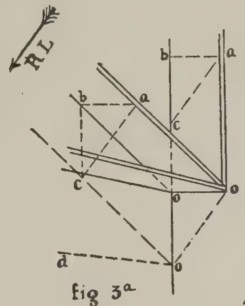

fig 3a

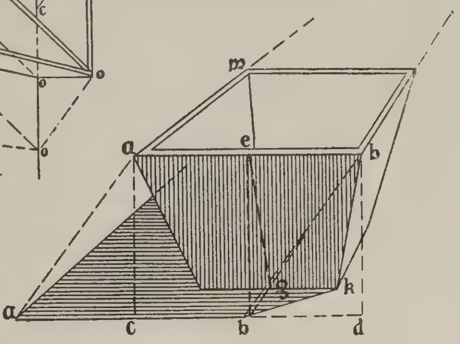

fig 4

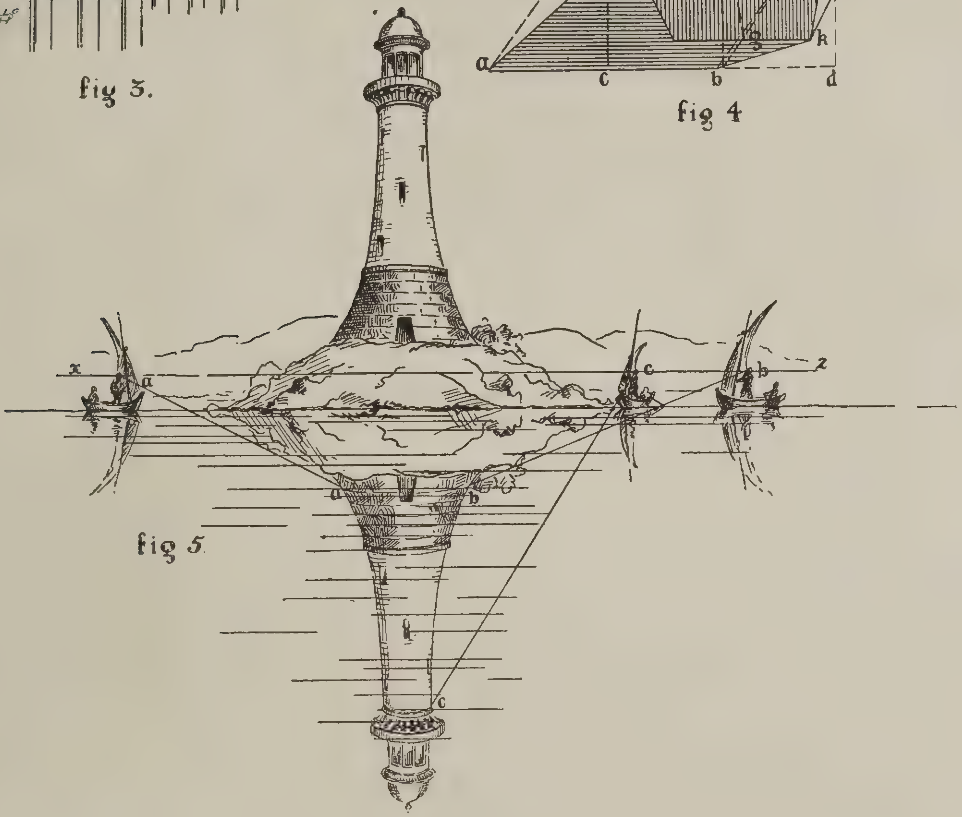

fig 5

horizontal, slanting, and vertical—each with the same amount of projection, *o*, *o*. The shadow thrown by the point *o* against the vertical wall-plane will measure the same vertically in both cases, *o o* and *b c*; the vertical eaves being in the same plane as the rays of light, will cast no shadow.

In Fig. 3, *b a* is the amount of projection of the eaves from the wall-plane; the line drawn from the point *a*, parallel to the direction of the rays of light R L, meets the vertical wall-plane *b c* at *c*; a line drawn through *c* parallel to the angle of the eaves will determine the shadow cast against the wall-plane. Also, the shadow line from the point *e* determines the point *a* on the vertical plane, and the distance of the shadow cast by the lower portion of the gable eaves.

Shadow lines drawn from the points *o*, *o*, and meeting wall-plane at *o o*, from which points we must draw lines from the direction of the vanishing point, determine the shadows thrown by the horizontal eaves.

To find the shadow cast by the eaves on the wall of the gable fronting the observer, we first determine the point *m*, where the wall-plane meets the slanting line of the roof; *g* on the horizontal line from the point is contained by the same plane as the wall, as is, therefore, the point where the light striking the eaves will first throw a shadow. The shadow line from point *g* meets the angle of the wall-plane at point *f*. The portion of the wall above this shadow line from point *f* is, therefore, in shadow.

In Fig. 4 we have to find the shadow thrown against the ground plane by the box, the rays of light still arriving parallel to the picture plane, but at any angle to the horizontal plane we may desire. The shadow will be cast by the upper edge *b a m*. The line *e g* bisects the front side of the box. The intersection of the vertical dropped from *e*, and the line drawn from the point *g* from the vanishing point gives us the point *b*; *e b* is, therefore, contained in the front vertical plane, *a c d b*, of the solid containing the box. The rays of light arriving parallel to the vertical plane are, therefore, contained by the front vertical plane *a c d b*. The shadow of the point *a* will, therefore be at *a* on the prolongation of the ground line *d c* of this plane. The shadow of the point *b* is necessarily at *b*. A line drawn from point *a* to the vanishing point, and a line from point *b* to the lower angle *k* of the box, will contain the shadow thrown. The front surface of the box is in natural shadow.

Thus to determine the shadows thrown by rays of light parallel to the picture plane, striking on objects in parallel perspective, we have at the point where the light strikes to find the intersection of a plane parallel to the picture plane, and therefore also parallel to the direction of the rays of light.

The reflection in water of an object is the inverse reproduction of the object. We will notice the simplest example in order to be able to follow at one and the same time the true shadows and reflection according to the rules of perspective.

In the reflection of an object the lines converge to the same vanishing point; the size and height measured from the water line are the same. In Fig. 5 the reflection of the lighthouse is similar to the construction itself. The observer stationed at *a* will see nearly the whole reflection, *b* nearly as much, but the observer at *c* sees only the portion from *c* to the summit of the lantern.

In the next article we will study the shadow of a building in angular perspective, the rays of light, however, still coming parallel to the picture plane. Also the true reflection of the building in water, determined by the rules of perspective.

"BUILDING NEWS" DESIGNING CLUB.

AN ARCHITECT'S CHIFFONIER.

We are unable to-day, on account of space, to give illustrations of the selected designs for Labourers' Cottages, the subject which was marked E, but we shall publish them shortly. We now print the two chosen designs for subject D—viz., "A Dining-room Chiffonier and Chair in Mahogany, suitable for an Architect's House." These were the instructions issued to competitors:—"The sideboard to be 5ft. long, and not more than 2ft. in the deepest part of the piece, which is to be 6ft. high. The lower part is to provide spacious cupboards for decanters, glass, &c. In the centre of the main body, below the sideboard level, a good deep drawer is to be arranged, suitable for accommodating a tablecloth, &c. In the upper part accommodation is to be contrived for the display of small works of art in glazed cupboards. The style to be left to the competitor. Scale 1in. to the foot. Plans of lower and upper part, tw elevations, a section, and sketch." We place "Smilash the Goth" first and "Nil Nisi Bonum" second, whilst "Black Prince" comes third. Both the first-named designs are illustrated herewith, and, unlike a building with varied accommodation, call for little description. The chiffonier in the first design has delicate details prettily suggested; but the piece is a trifle too cut up, to the general loss of convenience. In design the top shelf-like capping ill accords with the Geometric tracery-filling to the doors below and shaped glazings above. The little brackets supporting this shelf-finished covering are mean when contrasted with such florid items as the clustered shaftlets to the sort of pot-shelf underneath. This shelf a few inches above the floor would become a dust-trap, and in such a piece of furniture would be of little utility. The cats probably would sleep there, and possibly master's slippers might get stowed away. There is no one good drawer for the table-cloth, for if wide and long enough, the depth is insufficient. The design, as concerns the material stipulated, is not specially adapted, and the cross-garnet hinges, if done in brass, would look trumpery. In iron they scarcely would go with the mahogany and French polish. The second design clearly is intended for oak in execution, as it is too ponderous and heavy for a refined application of mahogany; the scantlings, indeed, suggest almost a largely-figured piece of pitch-pine. The chiffonier, from a practical point of view, has its merits, and if a trifle behind present tastes, no doubt would find many admirers among those with a fancy for puny coves and meaningless balustrades, as in the upper part. The niches below and the leaded glazings above remind us of the novelties inaugurated by the late Bruce Talbert, who in his day was a leader of modes in art furniture. The chairs in both designs call for no comment. We admire neither. "Black Prince," the author of the third design, for some things deserves to rank before either of the others, and his composition seems more adapted to mahogany. He disregards the stipulation as to the height required, and makes his upper part too unimportant. The big drawer in the centre is prettily treated, and the piece deserves to be called a chiffonier. His chair deserves to be called horrid. "Cruiser" sends a bandy-legged arm-chair, which, although curious-looking in elevation, would be nice enough in execution. The chiffonier would be lumpy, ugly, and dear. Its massive corner-posts call to mind the scale of billiard-table legs. "Signor C." draws very roughly, and shows want of care; but he has a taste for furniture which he would do well to cultivate. He has much to learn, and one lesson worth knowing is the power of taking pains. His perspective does not agree with the elevation, the top of which has a flap pasted over. "H." in a circle is barbaric in his crudity. "Signam" strives to be original, but his effort is not a success. The whole thing lacks refinement. "Amor Patriæ" believes in diagonal framing, and crossways matched boarding. We differ from him in taste, and advise him to change or improve it. "Boreas" is wanton in the frenzy of florid flutings, Rococo shapings, and extravagant expensiveness. The lower part of his design looks like the divided body of an old French coach. "Sphinx" comes last with a design better suited for a building in marble. His chair is drawn as if the spectator were looking from under the floor.

* * *

PRICES.* — XXXII.

(All Prices Include Profit.)

JOINER (*continued*).

NOTE.—The prices given for *circular* work are for hand labour; but where good and perfect machinery is used, the prices may be largely reduced—say, one-third; but then only when there is a fair quantity of a kind.

HARDWOOD DOORS: Spanish mahogany, ordinary sizes, *circular* on plan, to ordinary slow sweeps—

		£	s.	d.
2in. six-panel, square framed	per ft. sup.	0	10	6
Ditto ditto bead butt to square	ditto	0	11	0
Ditto ditto flush and ditto	ditto	0	11	6
Ditto ditto moulded one side	ditto	0	11	3
Ditto ditto two sides	ditto	0	12	0
Ditto ditto ditto and one side bolection moulded	ditto	0	12	4
Ditto top panels out for glass, not including loose beads	ditto	0	10	6
2in. six-panel, top panels sashed	per ft. sup.	0	11	6
Ditto ditto in small squares	ditto	0	12	6
Ditto stop-chamfered one side, and plain stops	ditto	0	11	4
Ditto ditto two sides	ditto	0	12	2
Ditto ditto raised panels one side	ditto	0	11	9
Ditto ditto two sides	ditto	0	13	0
Ditto ditto hung folding add	ditto	0	0	3
2½in. six-panel, square framed	ditto	0	12	0
Ditto ditto bead butt and square	ditto	0	12	6
Ditto ditto flush and ditto	ditto	0	13	0
Ditto ditto moulded one side	ditto	0	12	9
Ditto ditto ditto two sides	ditto	0	13	6
Ditto ditto ditto and one side bolection moulded	ditto	0	14	0
Ditto ditto top panels out for glass, not including loose beads	ditto	0	12	0
Ditto ditto top panel sashed	ditto	0	13	0
Ditto ditto ditto in small squares	ditto	0	14	0
Ditto ditto stop-chamfered one side including plain stops	ditto	0	12	9
Ditto ditto ditto two sides	ditto	0	13	6
Ditto ditto raised panels one side	ditto	0	13	3
Ditto ditto ditto two sides	ditto	0	14	6
Ditto ditto hung folding add	ditto	0	0	3

HARDWOOD DOORS: Wainscot or American walnut; ordinary sizes, *circular* on plan, to ordinary slow sweeps—

		£	s.	d.
1in. two-panel square framed	ditto	0	4	10
Ditto ditto bead butt	ditto	0	5	1
Ditto ditto ditto flush	ditto	0	5	3
Ditto ditto moulded one side	ditto	0	5	7
Ditto ditto ditto two sides	ditto	0	6	4
Ditto ditto ditto and one side bolection moulded	ditto	0	6	7
Ditto ditto stop-chamfered one side and plain stops	ditto	0	5	6
Ditto ditto ditto two sides	ditto	0	6	2
1¼in. ditto square-framed	ditto	0	5	6
Ditto ditto bead butt and square	ditto	0	5	9
Ditto ditto flush and ditto	ditto	0	5	11
Ditto ditto moulded one side	ditto	0	6	3
Ditto ditto ditto two sides	ditto	0	7	0
Ditto ditto ditto and one side bolection moulded	ditto	0	7	3
Ditto ditto stop-chamfered one side and plain stops	ditto	0	6	2
Ditto ditto ditto two sides	ditto	0	6	10
1½in. ditto square framed	ditto	0	6	0
Ditto ditto bead butt and square	ditto	0	6	3
Ditto ditto flush and ditto	ditto	0	6	5
Ditto ditto moulded one side	ditto	0	6	9
Ditto ditto ditto two sides	ditto	0	7	6
Ditto ditto ditto and one side bolection moulded	ditto	0	7	9
Ditto ditto stop-chamfered one side and plain stops	ditto	0	6	8
Ditto ditto ditto two sides	ditto	0	7	4
Ditto ditto raised panels one side	ditto	0	7	0
Ditto ditto top panel out for glass, not including loose beads	ditto	0	6	0
Ditto ditto top panel sashed	ditto	0	7	0
Ditto ditto ditto in small squares	ditto	0	8	0
Ditto ditto hung folding add	ditto	0	0	1½
2in. ditto square framed	ditto	0	6	6
Ditto ditto bead butt and ditto	ditto	0	7	0
Ditto ditto ditto flush	ditto	0	7	4
Ditto ditto moulded one side	ditto	0	7	3
Ditto ditto ditto two sides	ditto	0	8	0
Ditto ditto ditto and one side bolection moulded	ditto	0	8	4
Ditto ditto stop-chamfered one side including plain stops	ditto	0	7	2
Ditto ditto two sides	ditto	0	7	10
Ditto ditto top panel out for glass, not including loose beads	ditto	0	6	6
Ditto ditto top panel sashed	ditto	0	7	6
Ditto ditto ditto in small squares	ditto	0	8	6
Ditto ditto raised panels on one side	ditto	0	7	6
1¼in. four-panel, square framed	ditto	0	5	6
Ditto ditto bead butt and ditto	ditto	0	6	0
Ditto ditto ditto flush and ditto	ditto	0	6	4
Ditto ditto moulded one side	ditto	0	6	3
Ditto ditto ditto two sides	ditto	0	7	0
Ditto ditto ditto and bolection moulded on one side	ditto	0	7	6
Ditto ditto bead butt and moulded	ditto	0	6	9
Ditto ditto ditto flush and ditto	ditto	0	7	1
Ditto ditto stop-chamfered one side, and plain stops	ditto	0	6	2
Ditto ditto ditto two sides	ditto	0	6	10
Ditto ditto top panels out for glass, not including loose beads	ditto	0	5	6
Ditto ditto top panels sashed	ditto	0	6	3
Ditto ditto in small squares	ditto	0	6	9
Ditto ditto raised panels one side	ditto	0	6	6
Ditto ditto hung folding add	ditto	0	0	1½
1½in. four-panel, square framed	ditto	0	6	6
Ditto ditto bead butt and ditto	ditto	0	7	0
Ditto ditto ditto flush and ditto	ditto	0	7	4
Ditto ditto moulded one side	ditto	0	7	3
Ditto ditto ditto two sides	ditto	0	8	0
Ditto ditto ditto and one side bolection moulded	ditto	0	8	6
Ditto ditto bead butt and moulded	ditto	0	7	9
Ditto ditto ditto flush and ditto	ditto	0	8	1
Ditto ditto stop-chamfered one side and plain stops	ditto	0	7	8
Ditto ditto two sides	ditto	0	8	0
Ditto ditto top panels out for glass, not including loose beads	ditto	0	6	6
Ditto ditto top panels sashed	ditto	0	7	6
Ditto ditto in small squares	ditto	0	8	6
Ditto ditto raised panels one side	ditto	0	7	9
Ditto ditto hung folding, add	ditto	0	0	1½
2in. ditto square framed	ditto	0	7	6
Ditto ditto bead butt and ditto	ditto	0	8	0
Ditto ditto ditto flush ditto	ditto	0	8	4
Ditto ditto moulded one side	ditto	0	8	3
Ditto ditto ditto two sides	ditto	0	9	0
Ditto ditto ditto and one side bolection moulded	ditto	0	9	6
Ditto ditto bead butt and moulded	ditto	0	8	9
Ditto ditto ditto flush and ditto	ditto	0	9	1
Ditto ditto stop-chamfered one side, and plain stops	ditto	0	8	3
2in. four-panel, stop-chamfered two sides	per ft. sup.	0	9	0
Ditto ditto top panels out for glass, not including loose beads	ditto	0	7	6
Ditto ditto top panels sashed	ditto	0	8	6
Ditto ditto in small squares	ditto	0	9	6
Ditto ditto raised panels one side	ditto	0	8	9
Ditto ditto hung folding add	ditto	0	0	2
2½in. ditto square framed	ditto	0	8	9
Ditto ditto bead butt and ditto	ditto	0	9	3
Ditto ditto ditto flush and ditto	ditto	0	9	9
Ditto ditto moulded one side	ditto	0	9	6
Ditto ditto ditto two sides	ditto	0	10	3
Ditto ditto ditto and one side bolection moulded	ditto	0	10	9
Ditto ditto bead butt and moulded	ditto	0	10	0
Ditto ditto ditto flush ditto	ditto	0	10	6
Ditto ditto stop-chamfered one side and plain stops	ditto	0	9	6
Ditto ditto ditto two sides	ditto	0	10	3
Ditto ditto top panels out for glass, not including loose beads	ditto	0	8	9
Ditto ditto top panels sashed	ditto	0	10	0
Ditto ditto ditto in small squares	ditto	0	11	3
Ditto ditto raised panels one side	ditto	0	10	3
Ditto ditto hung folding add	ditto	0	0	3
1½in. six-panel square framed	ditto	0	6	6
Ditto ditto bead butt and ditto	ditto	0	7	2
Ditto ditto ditto flush and ditto	ditto	0	7	8
Ditto ditto moulded one side	ditto	0	7	4
Ditto ditto ditto two sides	ditto	0	8	2
Ditto ditto ditto and one side bolection moulded	ditto	0	8	9
Ditto ditto bead butt and moulded	ditto	0	8	0
Ditto ditto ditto flush and ditto	ditto	0	8	6
Ditto ditto stop-chamfered one side, and plain stops	ditto	0	7	3
Ditto ditto ditto two sides	ditto	0	8	0
Ditto ditto top panels out for glass, not including loose beads	ditto	0	6	6
Ditto ditto top panels sashed	ditto	0	7	6
Ditto ditto ditto in small squares	ditto	0	8	6
Ditto ditto raised panels one side	ditto	0	7	6
Ditto ditto hung folding add	ditto	0	0	1½
2in. ditto square framed	ditto	0	8	0
Ditto ditto bead butt and square	ditto	0	8	8
Ditto ditto ditto flush ditto	ditto	0	9	2
Ditto ditto moulded one side	ditto	0	8	10
Ditto ditto ditto two sides	ditto	0	11	8
Ditto ditto ditto and one side bolection moulded	ditto	0	12	2
Ditto ditto stop-chamfered one side, and plain stops	ditto	0	8	9
Ditto ditto ditto two sides	ditto	0	9	6
Ditto ditto top panels out for glass, not including loose beads	ditto	0	8	0
Ditto ditto top panels sashed	ditto	0	9	0
Ditto ditto ditto in small squares	ditto	0	10	0
Ditto ditto raised panels one side	ditto	0	9	3
Ditto ditto two sides	ditto	0	10	6
Ditto ditto hung folding add	ditto	0	0	2
2½in. ditto ditto square framed	ditto	0	9	9
Ditto ditto bead butt and ditto	ditto	0	10	5
Ditto ditto ditto flush ditto	ditto	0	10	11
Ditto ditto moulded one side	ditto	0	10	7
Ditto ditto ditto two sides	ditto	0	11	5
Ditto ditto bead butt and moulded	ditto	0	11	3
Ditto ditto ditto flush ditto	ditto	0	11	9
Ditto ditto moulded one side and bolection moulded the other	ditto	0	11	11
Ditto ditto stop-chamfered one side, and plain stops	ditto	0	10	6
Ditto ditto ditto two sides	ditto	0	11	3
Ditto ditto top panels out for glass, not including loose beads	ditto	0	9	9
Ditto ditto top panels sashed	ditto	0	10	9
Ditto ditto ditto in small squares	ditto	0	11	9
Ditto ditto raised panels one side	ditto	0	11	3
Ditto ditto ditto two sides	ditto	0	12	9
Ditto ditto hung folding add	ditto	0	0	3

HONDURAS MAHOGANY: Jamb linings fixed but not polished—

		£	s.	d.
1¼in. wrought jamb lining finished for polishing and single rebated (including deal blockings)	per ft. sup.	0	1	9
Ditto ditto double rebated	ditto	0	1	11
1½in. ditto single rebated	ditto	0	2	0
Ditto ditto double ditto	ditto	0	2	2
1¾in. ditto single ditto	ditto	0	2	3
Ditto ditto double ditto	ditto	0	2	5
2in. ditto single ditto	ditto	0	2	6
Ditto ditto double ditto	ditto	0	2	8
¾in. skeleton framed and with ½in. stop planted on	ditto	0	2	0
1in. ditto	ditto	0	2	3
1¼in. ditto	ditto	0	2	6
1½in. ditto	ditto	0	2	9
1¼in. (wide) with square panels framed	ditto	0	2	0
Ditto ditto moulded	ditto	0	2	3
1½in. ditto squared framed	ditto	0	2	3
Ditto ditto moulded	ditto	0	2	6
2in. square framed	ditto	0	2	9
Ditto ditto moulded	ditto	0	3	0
1¼in. double rebated to segment heads (measured separate)	ditto	0	3	6
1½in. ditto	ditto	0	4	0
1¾in. ditto	ditto	0	4	6
1¼in. double rebated to semi-heads	ditto	0	4	6
1½in. ditto	ditto	0	5	0
2in. ditto	ditto	0	6	0

SPANISH MAHOGANY: Jamb linings fixed but not polished—

		£	s.	d.
1¼in. wrought jamb linings finished for polishing and single rebated (including deal blockings)	per ft. sup.	0	2	6
Ditto double rebated	ditto	0	2	9
1½in. ditto single ditto	ditto	0	2	10
Ditto ditto double ditto	ditto	0	3	1
1¾in. ditto single ditto	ditto	0	3	3
Ditto ditto double ditto	ditto	0	3	6
2in. ditto single ditto	ditto	0	3	6
Ditto ditto double ditto	ditto	0	3	9
¾in. skeleton framed and with ½in. stop planted on	ditto	0	2	10

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		£	s.	d.
1in. skeleton framed and with ½in. stop planted on	per ft. sup.	0	3	2
1¼in. ditto ditto	ditto	0	3	6
1½in. ditto ditto	ditto	0	3	10
1¼in. (wide) with square framed panels	ditto	0	2	10
Ditto ditto moulded	ditto	0	3	2
1½in. square framed	ditto	0	3	2
Ditto ditto moulded	ditto	0	3	6
2in. square framed	ditto	0	3	10
Ditto ditto moulded	ditto	0	4	2
1¼in. double rebated to segment heads (measured separately)	ditto	0	5	0
1½in. ditto	ditto	0	5	6
1¾in. ditto	ditto	0	6	0
1¼ ditto ditto to semi heads	ditto	0	6	0
1½in. ditto	ditto	0	6	6
1¾in. ditto	ditto	0	7	0
2in. ditto	ditto	0	8	0
1¼in. squared framed segment heads	ditto	0	5	6
1½in. ditto ditto	ditto	0	6	0
1¾in. ditto ditto	ditto	0	7	0
2in. ditto ditto	ditto	0	7	9
1¼in. square framed semi heads	ditto	0	6	6
1½in. ditto	ditto	0	7	0
1¾in. ditto	ditto	0	8	0
2in. ditto	ditto	0	9	0

Wainscot or American walnut jamb linings, fixed but not polished—

		£	s.	d.
1¼in. wrot jamb lining, finished for polishing, and single-rebated, including deal backings	per ft. sup.	0	1	11
Ditto double-rebated	ditto	0	2	1
1½in. single ditto	ditto	0	2	2
Ditto double ditto	ditto	0	2	4
1¾in. single ditto	ditto	0	2	4
Ditto double ditto	ditto	0	2	6
2in. single ditto	ditto	0	2	9
Ditto double ditto	ditto	0	2	11
¾in. ditto skeleton framed, and with ½in. stop planted on	ditto	0	2	2
1in. ditto ditto	ditto	0	2	5
1¼in. ditto ditto	ditto	0	2	9
1½in. ditto ditto	ditto	0	3	0
1¼in. (wide) with square framed panels	ditto	0	2	2
Ditto ditto moulded	ditto	0	2	5
1½in. ditto square framed	ditto	0	2	5
Ditto ditto moulded	ditto	0	2	8
2in. ditto square framed	ditto	0	3	0
Ditto ditto moulded	ditto	0	3	3
1¼in. double-rebated to segment heads, measured separately	ditto	0	3	9
1½in. ditto ditto	ditto	0	4	4
1¾in. ditto ditto	ditto	0	4	8
2in. ditto ditto	ditto	0	5	9
1¼in. ditto to semi heads	ditto	0	4	9
1½in. ditto ditto	ditto	0	5	3
1¾in. ditto ditto	ditto	0	6	0
2in. ditto ditto	ditto	0	6	6
1¼in. square framed segment heads	ditto	0	4	3
1½in. ditto ditto	ditto	0	4	8
1¾in. ditto ditto	ditto	0	5	3
2in. ditto ditto	ditto	0	6	0
1¼in. square framed semi heads	ditto	0	5	3
1½in. ditto ditto	ditto	0	6	0
1¾in. ditto ditto	ditto	0	6	6
2in. ditto ditto	ditto	0	7	3
1¼in. framed and moulded, segment heads	ditto	0	5	0
1½in. ditto ditto	ditto	0	5	6
1¾in. ditto ditto	ditto	0	5	9
2in. ditto ditto	ditto	0	6	6
1in. framed and moulded, semi heads	ditto	0	6	0
1½in. ditto ditto	ditto	0	6	6
1¾in. ditto ditto	ditto	0	7	0
2in. ditto ditto	ditto	0	7	9

Architraves in hard woods—see No. XXV. of Prices.

Architrave grounds.

Honduras Mahogany, wrot and finished ready for polishing—

		£	s.	d.
⅜in. framed grounds	per ft. sup.	0	1	3
Ditto beaded or moulded	ditto	0	1	6
½in. ditto	ditto	0	1	4
Ditto and ditto	ditto	0	1	7
⅝in. ditto	ditto	0	1	5
Ditto and ditto	ditto	0	1	8
¾in. ditto	ditto	0	1	6
Ditto and ditto	ditto	0	1	9

Spanish Mahogany ditto—

		£	s.	d.
⅜in. framed grounds	ditto	0	1	9
Ditto and beaded or moulded	ditto	0	2	0
½in. ditto	ditto	0	1	11
Ditto and beaded	ditto	0	2	2
⅝in. ditto	ditto	0	2	1
Ditto and ditto	ditto	0	2	4
¾in. ditto	ditto	0	2	2
Ditto and ditto	ditto	0	2	5

Wainscot or American Walnut ditto—

		£	s.	d.
⅜in. framed grounds	ditto	0	1	4
Ditto beaded or moulded	ditto	0	1	7
½in. ditto	ditto	0	1	5
Ditto and ditto	ditto	0	1	8
⅝in. ditto	ditto	0	1	6
Ditto and ditto	ditto	0	1	9
¾in. ditto	ditto	0	1	7
Ditto and ditto	ditto	0	1	10

Sashes: Honduras mahogany, wrot, and prepared for polishing, and fixed—

		£	s.	d.
1½in. wrot and moulded sashes hung with butts	per ft. sup.	0	1	6
Ditto ditto with segment heads	ditto	0	1	10
Ditto ditto semi ditto	ditto	0	2	3
Ditto ditto circular on plan to slow sweep	ditto	0	4	0
Ditto ditto in small squares	ditto	0	2	0
Ditto ditto with segment heads	ditto	0	2	6
Ditto ditto with semi ditto	ditto	0	3	0
Ditto ditto circular on plan as last	ditto	0	5	0
2in. ditto and ditto	ditto	0	1	9
Ditto ditto with segment heads	ditto	0	2	1
Ditto ditto with semi ditto	ditto	0	2	6
2in. wrot. and moulded sashes, circular on plan to slow sweep	per ft. sup.	0	4	3
Ditto ditto in small squares	ditto	0	2	3
Ditto ditto with segment heads	ditto	0	2	9
Ditto ditto with semi ditto	ditto	0	3	3
Ditto ditto circular on plan to ditto	ditto	0	5	6
2¼in. ditto	ditto	0	1	11
Ditto ditto with segment heads	ditto	0	2	3
Ditto ditto with semi ditto	ditto	0	2	8
Ditto ditto circular on plan to slow sweeps	ditto	0	4	9
Ditto ditto small squares	ditto	0	2	5
Ditto ditto ditto segment headed	ditto	0	2	11
Ditto ditto ditto semi ditto	ditto	0	3	6
Ditto ditto ditto circular on plan as last	ditto	0	4	9
2½in. ditto ditto	ditto	0	2	1
Ditto ditto with segment head	ditto	0	2	6
Ditto ditto with semi ditto	ditto	0	3	0
Ditto ditto circular on plan as last	ditto	0	5	0
Ditto ditto small squares	ditto	0	2	7
Ditto ditto ditto segment headed	ditto	0	3	2
Ditto ditto ditto semi ditto	ditto	0	3	8
Ditto ditto ditto circular on plan to slow sweeps	ditto	0	6	6

Hardwood Sashes, hung in frames with lines and weights, have already been given, and following deal ones.

		£	s.	d.
Moulded horns to 1½in.	each	0	0	4
Ditto 2in.	ditto	0	0	5
Ditto 2½in.	ditto	0	0	6

Sashes: All as last, but Spanish mahogany, prepared for polishing—

		£	s.	d.
1½in. wrot and moulded sashes, hung with butts (butts not included)	per ft. sup.	0	2	2
Ditto ditto segment headed	ditto	0	2	7
Ditto ditto semi ditto	ditto	0	3	0
Ditto ditto circular on plan to slow sweeps	ditto	0	5	0
Ditto ditto small squares	ditto	0	2	9
Ditto ditto segment headed	ditto	0	3	4
Ditto ditto semi ditto	ditto	0	3	11
Ditto ditto circular on plan, &c.	ditto	0	6	9
2in. ditto	ditto	0	2	6
Ditto ditto segment headed	ditto	0	2	11
Ditto ditto semi ditto	ditto	0	3	4
Ditto ditto circular on plan, &c.	ditto	0	6	0
Ditto ditto small squares	ditto	0	3	1
Ditto ditto ditto segment headed	ditto	0	3	6
Ditto ditto ditto semi ditto	ditto	0	4	0
Ditto ditto ditto circular on plan, &c.	ditto	0	7	3
2¼in. ditto ditto	ditto	0	2	9
Ditto ditto segment headed	ditto	0	3	2
Ditto ditto semi ditto	ditto	0	3	5
Ditto ditto circular on plan, &c.	ditto	0	6	9
Ditto ditto small squares	ditto	0	3	4
Ditto ditto ditto segment headed	ditto	0	3	10
Ditto ditto ditto semi ditto	ditto	0	4	4
Ditto ditto circular on plan, &c.	ditto	0	7	6
2½in. ditto ditto	ditto	0	3	0
Ditto ditto segment headed	ditto	0	3	6
Ditto ditto semi ditto	ditto	0	4	0
Ditto ditto circular on plan, &c.	ditto	0	7	3
Ditto ditto ditto small squares	ditto	0	3	7
Ditto ditto ditto segment headed	ditto	0	4	2
Ditto ditto ditto semi ditto	ditto	0	4	9
Ditto ditto circular on plan, &c.	ditto	0	8	0

Sashes: All as last, but wainscot or American walnut prepared for polishing—

		£	s.	d.
1½in. wrought and moulded sashes, hung with butts (butts not included)	per ft. sup.	0	1	8
Ditto segment headed	ditto	0	2	0
Ditto semi ditto	ditto	0	2	5
Ditto circular on plan, &c.	ditto	0	4	0
Ditto small squares	ditto	0	2	2
Ditto ditto segment headed	ditto	0	2	9
Ditto ditto semi ditto	ditto	0	3	3
Ditto ditto circular on plan, &c.	ditto	0	5	4
2in. ditto ditto	ditto	0	1	11
Ditto ditto segment headed	ditto	0	2	3
Ditto ditto semi ditto	ditto	0	2	8
Ditto ditto circular on plan, &c.	ditto	0	4	9
Ditto ditto small squares	ditto	0	2	5
Ditto ditto ditto segment headed	ditto	0	3	0
Ditto ditto ditto semi ditto	ditto	0	3	6
Ditto ditto ditto circular on plan, &c.	ditto	0	5	9
2¼in. ditto ditto	ditto	0	2	2
Ditto ditto segment headed	ditto	0	2	6
Ditto ditto semi ditto	ditto	0	3	1
Ditto ditto circular on plan, &c.	ditto	0	5	0
Ditto ditto small squares	ditto	0	2	8
Ditto ditto segment headed	ditto	0	3	3
Ditto ditto ditto semi ditto	ditto	0	3	9
Ditto ditto ditto circular on plan, &c.	ditto	0	6	9
2½in. ditto ditto	ditto	0	2	4
Ditto ditto segment headed	ditto	0	2	9
Ditto ditto semi ditto	ditto	0	3	3
Ditto ditto circular on plan	ditto	0	5	9
Ditto ditto small squares	ditto	0	2	10
Ditto ditto ditto segment headed	ditto	0	3	5
Ditto ditto ditto semi ditto	ditto	0	4	0
Ditto ditto ditto circular on plan, &c.	ditto	0	7	0

Casements may be priced at the same prices as the plain sashes, all labours to rebates, beads, hook rebates, &c., being taken extra.

Shop-Front Sashes.—These are better taken at per foot run of bar, rail, &c., the width and thickness being stated. A list of prices follows this one of supers.

Honduras Mahogany: Prepared ready for polishing, and fixed—

		£	s.	d.
2in. moulded sashes with ordinary top and bottom rail and stiles and bars	per ft. sup.	0	1	6
Ditto ditto segment headed	ditto	0	2	0
Ditto ditto semi ditto	ditto	0	2	6
Ditto ditto circular on plan to ordinary sweeps	ditto	0	4	0
Ditto ditto to quick ditto	ditto	0	5	0
2¼in. ditto ditto	ditto	0	1	9
2¼in. moulded sashes, segment headed	per ft. sup.	0	2	3
Ditto ditto semi ditto	ditto	0	2	9
Ditto ditto circular on plan, &c.	ditto	0	4	6
Ditto ditto ditto to quick ditto	ditto	0	5	6
2½in. ditto ditto	ditto	0	2	0
Ditto ditto segment headed	ditto	0	2	6
Ditto ditto semi ditto	ditto	0	3	0
Ditto ditto circular on plan, &c.	ditto	0	4	9
Ditto ditto ditto quick sweep	ditto	0	5	9
3in. ditto ditto	ditto	0	2	6
Ditto ditto segment headed	ditto	0	3	2
Ditto ditto semi ditto	ditto	0	3	9
Ditto ditto circular on plan, &c.	ditto	0	5	6
Ditto ditto ditto quick sweep	ditto	0	6	6

Spanish Mahogany:

		£	s.	d.
2in. moulded sashes, as last	ditto	0	2	0
Ditto ditto segment headed	ditto	0	2	7
Ditto ditto semi ditto	ditto	0	3	2
Ditto ditto circular on plan, &c.	ditto	0	4	9
Ditto ditto ditto quick sweep	ditto	0	5	9
2¼in. ditto ditto	ditto	0	2	6
Ditto ditto segment headed	ditto	0	3	1
Ditto ditto semi ditto	ditto	0	3	8
Ditto ditto circular on plan, &c.	ditto	0	5	6
Ditto ditto ditto quick sweep	ditto	0	6	6
2½in. ditto ditto	ditto	0	2	9
Ditto ditto segment headed	ditto	0	3	4
Ditto ditto semi ditto	ditto	0	3	11
Ditto ditto circular on plan, &c.	ditto	0	6	0
Ditto ditto ditto quick sweep	ditto	0	7	0
3in. ditto ditto	ditto	0	3	6
Ditto ditto segment headed	ditto	0	4	2
Ditto ditto semi ditto	ditto	0	4	9
Ditto ditto circular on plan	ditto	0	7	6
Ditto ditto ditto quick sweep	ditto	0	8	6

Wainscot, or American Walnut:

		£	s.	d.
2in. moulded sashes, as last	ditto	0	1	8
Ditto ditto segment headed	ditto	0	2	2
Ditto ditto semi ditto	ditto	0	2	8
Ditto ditto circular on plan	ditto	0	4	3
Ditto ditto ditto quick sweep	ditto	0	5	3
2¼in. ditto ditto	ditto	0	1	11
Ditto ditto segment headed	ditto	0	2	5
Ditto ditto semi ditto	ditto	0	2	11
Ditto ditto circular on plan, &c.	ditto	0	4	9
Ditto ditto ditto quick sweep	ditto	0	5	9
2½in. ditto ditto	ditto	0	2	3
Ditto ditto segment headed	ditto	0	2	9
Ditto ditto semi ditto	ditto	0	3	5
Ditto ditto circular on plan, &c.	ditto	0	5	0
Ditto ditto ditto quick sweep	ditto	0	6	0
3in. ditto ditto	ditto	0	2	9
Ditto ditto segment headed	ditto	0	3	4
Ditto ditto semi ditto	ditto	0	3	11
Ditto ditto circular on plan, &c.	ditto	0	6	0
Ditto ditto ditto quick sweep	ditto	0	7	0

Note.—It will be necessary for those who have not followed this series of papers from the beginning, to refer to the introductory notes in No. I., in the Building News of March 6, 1891.

SOMETHING ABOUT CHIMNEYS.—IV.

By F. Dye.

At present we have only referred to pipe chimneys as being used to connect stoves, &c., with existing brick chimneys, when the stoves in question are fixed standing out in a room. Now it not infrequently happens that a stove is required in a room which being very long is insufficiently heated by its existing grate, which may be at one end, and the stove is introduced and placed at the other end with a view to afford heat at this cold part. Or it may be that a coachhouse has a stove put in it, and no chimney exists at all; or a temporary building may be run up, such as is done at our exhibitions, and in all these and other cases a smoke-pipe has most probably to be erected and carried up to the top of the building to form a complete chimney in itself.

There is no particular objection to this practice when circumstances make it desirable; but it has to be pointed out that the results are never so satisfactory as with a brick chimney. If the erection is to be of anything like a permanent character, then the use of pipes should be avoided, or at least sheet-iron should give place to some more lasting material. When pipes are carried out in the open air (as they have to be when forming the complete chimney), the ordinary plain sheet-iron is useless, and galvanised metal should only be used; otherwise the exposure will bring about its destruction in an exceedingly short time. Galvanised sheet is only suited for temporary works, as although the general surface of the metal is protected, there will be found a number of weak spots where rusting and a perishing action will set in without any delay.

In these works the same precautions have to be adopted as to soundness of joints and the general avoidance of leakages as explained in the last paper. As to the size of the pipe, it is necessary when making a complete chimney to be doubly sure that its area is sufficient for the following reason. All pipe chimneys, but sheet-iron pipe in particular, are of such a substance—that is, thickness—that they retain no heat in themselves as a brick chimney does. When the fire is extinguished, the chimney becomes cold in almost a matter of minutes, and the draught ceases. In addition to this, the whole of the chimney, especially that portion which is out in the open air, is subject to the cooling influence of the atmosphere at all times, whether the fire be alight or not. This all goes to show that a pipe chimney, under ordinary circumstances, is of much less efficiency in draught than a brick chimney, for the retention of heat (and its aid to the draught) that we get with masonry is absent from pipes.

This plainly shows that pipes have more sluggish draughts than brick chimneys, and, as explained in an earlier paper, the more sluggish the draught, the larger the chimney must be. This is why it is recommended to have pipe chimneys of full size when they are complete chimneys, and do not get the aid of the brickwork as they do when merely forming a connection. The cooling influences a pipe chimney is subjected to, particularly that part which is exposed outdoors, makes it absolutely necessary that it be of the fullest size, for it merely acts as a funnel or passage for the smoke to pass up through. The chimney in itself scarcely aids the draught in the least degree; whereas, if it is brickwork it is the chimney that accounts for quite half of the good results obtained. When a pipe chimney is used as a connection between a stove and a brick chimney, it is the latter that is chiefly accountable for whatever efficiency is experienced. In connection with a good brick chimney it may be quite possible for a smaller pipe to be used than if the pipe constitutes the whole of the chimney. As it is such a general rule to keep the pipe as small as possible, so as to make it less noticeable, it follows that many men have quite got the idea that small pipes are correct at all times. This is a great error, and almost invariably results in a failure of the chimney, if composed of pipe from top to bottom, and having no brickwork to aid it.

This fault, that is so pronounced with iron pipe flues, its rapid loss of heat, or the cooling influence the air has upon it when outside the building, can be obviated very successfully by a covering of some compound that is very poor in conducting heat; a non-conductor, as it is commonly called. To make the pipe approach a brick chimney in effectiveness, the covering must be of a nature to absorb and hold heat, as well as to prevent its ready transference through its substance or thickness. Silicate cotton is an exceedingly good material in this respect, but it is a little difficult of application. There are other patented compounds of a cement nature that can be applied very well, one of these being Leroy's composition, a material largely used for covering steam-boilers, &c., and is well spoken of. This remedy, however, is seldom resorted to, as the temporary nature of the work does not warrant it, and if this expense can be gone to, then, as a rule, a brick chimney may as well be put up. The cost would be but very little greater.

If it is required to erect a pipe chimney outside a house, and which is intended to be of a permanent character, then cast iron pipe or pipe of earthenware material is used. The cast pipe will last an endless period, as its substance, if of good quality, will be $\frac{5}{16}$in. or $\frac{3}{8}$in., and the joints are of a sound and lasting kind. This pipe requires supporting in a thoroughly substantial manner. Earthenware pipe, when used, is the kind that is made for drainage purposes, glazed inside and out. This latter pipe possesses the advantage of nearly approaching brickwork in its composition; in fact, the material of the pipe may be said to be identical with that which constitutes a brick. Earthenware pipes make splendid chimneys, but they are somewhat expensive, particularly in the means that have to be adopted to support them. Brick chimneys are now being built with glazed pipe linings, and the result is very satisfactory.

With every kind of pipe-chimney there should be provision made for sweeping. This is effected by means of doors, or plugs, at the elbows, or wherever the pipe takes an abrupt turn. Even if the angle is very obtuse, it should never be arranged for the sweep's brush and rods to push past it. The pipe itself may not be injured by so doing; but there is a tolerable certainty that the joints will be strained after it has happened a few times. The reader will also understand how necessary it is that all doors and such openings in pipes be carefully made, so that when closed no in-leakage of air occurs. The previous papers explained the question of leakage fully enough to make this understood without further description.

It occasionally happens that two stoves are required to be worked by one chimney. Possibly it may be, say, a portable cooking range and a stove or an independent boiler, both connected by pipes to an existing brick chimney. Or it may be that a range or grate already exists in the ordinary brick opening at the foot of the chimney, and some other heating or cooking appliance is connected into the same chimney either by a pipe or a branch brick flue. The most common instance of this latter is the almost general (but frequently unsatisfactory) practice of running the flue from a washing copper in a scullery into the chimney of the kitchen range.

This practice of working two stoves into one chimney is permissible, but it is so often improperly carried out that it becomes sometimes unsafe to recommend it. The only care, however, that it is necessary to exercise is to arrange that no cold air can be drawn into the chimney through either stove when it is not in use. That is to say, if both stoves are not in use at the same time, then proper provision must be made so that the flue from the stove not in use can be closed, shut off effectually. This is of great necessity, yet quite frequently neglected. It is the regular thing for one stove to be out of use while the other is at work. In fact, this is the rule rather than the exception.

If we have two stoves into one chimney, as Fig. 10, for instance, and both fires are alight, there will be a draught passing through each into the main chimney. There is nothing objectionable in this, provided each has its fire alight, as just mentioned, and it is understood that both are *close* stoves (or close fire kitchen-ranges). Each will furnish and contribute its supply of heated air, and also the hot gases, which go to make the draught themselves, and which also furnish heat to the brickwork in the way that has been explained. Now if we extinguish the fire in one of the appliances, what is the result? It is precisely the same as having a large-sized hole in an ordinary chimney by which cold air can pass directly in, and effect all its ill and troublesome results. It will be seen that when we put out the fire in one stove we do not put a stop to the pulling power of the chimney, and consequently cold air will be drawn through this particular stove into the chimney, and seriously affect the activity of the one that is working. The difference is all brought about by having cold air passing into the chimney instead of heated air and hot gases. The effect of such a free ingress of cold air is fully explained in Art. III.

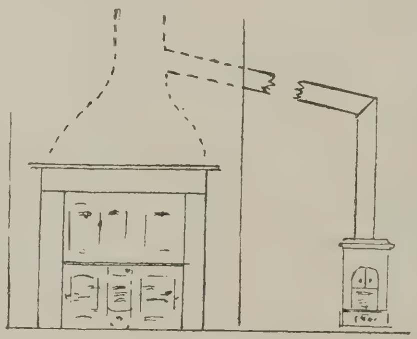


FIG. 10.

The method adopted to prevent this trouble is to provide a well-fitting damper to each pipe or branch chimney. This should be placed somewhere near the stoves where it can be got at easily. When a stove is not in use the damper is closed; but it will be understood that it should be one which when closed will really prevent air passing through. A sliding damper is best. Those dampers commonly used with pipe flues, and which are merely a disc of metal within the pipe and operated by a handle outside, are not satisfactory. They cannot be made to fit the pipe tightly—that is, in an airtight manner, and unless they are most accurately balanced, they will not remain as they are set. The draught itself will move them unless they are fitted very precisely.

The other particular points to be considered when working two stoves into one chimney is, firstly, to see that the chimney itself is of full size. A 9 by 9 chimney will not do this unless it is a high one with (consequently) a very effective draught, or unless the stoves are only of moderate size. The pipes (or branch chimneys) which connect the stove with the main chimney must both be of full size, the same as if one stove only was connected. The joints in the pipes must be sound, and all the other points already explained have to be thought out.

The most unusual experience the writer has had of working more than one stove into a chimney occurred at an exhibition. In this case a 5ft. close-fire cooking range, also a 3ft. cooking range, and an open grate, were all worked into one chimney, and they all worked successfully. There were, however, favourable features that helped results materially. In the first place, the chimney was a tolerably high and effective one; then it was of good size, measuring $18\frac{1}{2}$ by 14. Then the cooking ranges had iron flues instead of brickwork, and iron-flue ranges can be so easily rendered air or draught-tight everywhere. The only drawback was the grate, which was of the ordinary open description. This not only allowed of a rather free inflow of air that was practically cold, but the fact of its opening being so capacious was a great disadvantage, as it allowed the chimney to draw air this way out of proportion to that which went through the ranges, and the ranges were thus robbed of the draught which they needed really more than the grate did. However, the whole three worked very well, and it would have been hard to say they were not all worked by separate chimneys, so far as results were concerned. It is not recommended to carry works to such an extreme as this. In this case it was an experiment made from necessity, there being but one chimney at disposal, and three articles to be shown with fires alight in them.

There were no ill results in this case, as just explained, and if the three appliances had all been of the close-fire character, a certain amount of assurance would have been experienced, considering the size and the effectiveness of the brick chimney; but the open fire of the grate introduced serious doubts, for it was, to all intents and purposes, like making an opening in the chimney for the free admission of cold air, with all the disadvantages that have been explained. In addition to the fact that the inflowing air was cold, and unfavourable to the good results in two different ways, it will be seen what a drawback existed in having such a wide and clear opening into the chimney that an open grate has to have. It would be useless thinking to better results by reducing the passage or opening in question. An open grate will not work properly if the opening into the chimney is choked. It will smoke every time the fire is lighted, or fresh fuel is put on. In this case the opening had not only to be clear, but it had to be especially free, as the more sluggish the draught, the less it will bear being obstructed in carrying the smoke into the chimney. This grate did not, of course, have a keen draught to it, as although the chimney was very effective, the strength of its draught at each stove was practically reduced by two-thirds.

Mr. Orchardson, R.A., has been re-elected President of the Royal Birmingham Society of Artists.

The work of tunnelling under the river Clyde at Finnieston, Glasgow, is being rapidly pushed forward. Three parallel tunnels are included in the undertaking, the west for vehicles going north, the east for vehicles going south, and the tunnel between for pedestrians. The boring is conducted entirely from the south side of the river, and the west tunnel is now completed. Considerable progress has also been made with the east vehicular traffic. The tunnels will be each 16ft. in diameter.

The members of the Sanitary Inspectors' Association dined together on Saturday evening at the First Avenue Hotel, under the presidency of Dr. B. W. Richardson, who advocated the establishment in connection with the association of a school in which the laws of health, of chemistry, and of elementary physiology could be studied and taught. Then they must have a central home, with a laboratory and a library. Dr. E. L. Parke responded for "Science," and Mr. Thomas Woolner, R.A., in responding for "Art," made a strong appeal to sanitary inspectors to do what they could to remove that intolerable nuisance, the London dusthole.

CONTENTS.

Window-glass in Architecture ... 393
Royal Institute of Painters in Water-Colours ... 393
Give and Take ... 394
Shadows in Perspective.—II. ... 394
Building News Designing Club ... 395
Prices.—XXXII. ... 396
Something About Chimneys.—IV. ... 397
Our Illustrations ... 399
Wayside Notes ... 418
Competitions ... 418
The Building News Directory ... xv.
Architectural and Archæological Societies ... xvi
Walreddon Manor... 419
The Surveyors' Institution .. 419
Building Trades Evidence before the Labour Commission ... 420
The Building Exhibition ... 420
Underground Urinals and Lavatories ... 421
Building Intelligence ... 421
Correspondence ... 421
Intercommunication ... 422
Water Supply and Sanitary Matters ... 422
Legal ... 423
Legal Intelligence ... 423
Parliamentary Notes ... 424
Our Office Table ... 424
Meetings for the Ensuing Week ... 424
Trade News ... 425
Tenders ... 425

ILLUSTRATIONS.

HOTEL DE VILLE, OUDENARDE. — GIRLS' HIGH SCHOOL, BOLTON.—WALREDDON MANOR.—DESIGNS FOR AN ARCHITECT'S CHIFFONIER AND CHAIRS. — ROYAL ASYLUM, CHEADLE, CHESHIRE.—WESLEYAN CHAPEL, NUNEATON.—SIXTEENTH-CENTURY FOUNTAIN AT AUTUN.

Our Illustrations.

HOTEL DE VILLE, OUDENARDE.

Professor Hillespulle, the architect, has had the work of restoration in hand of this famous historic building, and to-day we are enabled, by the courtesy of M. Vincent Lenertz, the *Chef de Travaux Graphiques à L' Université*, at Louvain, to present our readers with a large scale detail of the dormers to the main façades. Other similar details of the work will follow at an early date from the same set of the architect's working drawings representing the ancient work. The present double page gives two elevations, one section, and three plans. A general view of the Hotel de Ville will be found in the Building News for April, 1889, by Mr. J. Murray Robertson, F.R.I.B.A., of Dundee. The building was built in 1526, and underwent some restoration about thirty years ago. The style is essentially a Flemish rendering of Gothic work elaborately treated. Inside are some curiously-carved chimneypieces. They bear the dates 1587 and 1595, the statues of Charles V. and of the Archduke Albert and Archduchess Isabella occupying conspicuous places. Bas-reliefs representing early municipal events are introduced in a grotesque fashion, and, though often crude, are historically interesting.

GIRLS' HIGH SCHOOL, BOLTON.

The Girls' High School at Bolton, which was recently opened by Mrs. Fawcett, is pleasantly situated adjoining the Bolton Park, but readily accessible from all the residential parts of the town. Accommodation is provided, exclusive of the assembly-room, for 360 girls, and the plan has been arranged to make the working and supervision of the school under the best possible circumstances. The entrance, staircase, hall, and corridors are very spacious and well lighted, with the wainscoting and woodwork stained a neutral green, and the upper part of the walls faced with red bricks, making a pleasant harmony of colour. The staircase and balustrading are stained a dark brown. Near the entrance on the ground floor is the office for the head mistress. The classrooms are so placed as to get the most cheerful outlook and be as sunny as possible; the woodwork in each is stained a different colour, and the walls of each in distinctive colours, but neutral in tone. On the first floor is the assembly-room, 43ft. long by 26ft. wide, with open timber roof having arched portion in centre, and the side spandrels filled in with moulded uprights; the roof trusses and timbers are all stained a dark oak colour, the plaster panels being a warm cream tone. Round the room the wainscot, about 5ft. high, is stained a neutral green, the same colour being used to the other woodwork. The walls are lined with red brick, and a red brick treatment is adopted for the fireplaces. The hall corridors and cloak-rooms are warmed by hot-water apparatus; all the rooms being heated by open fireplaces fitted with Shorland's Manchester Grate for heating and ventilation, and special exhaust flues are provided for the foul air. The teaching of cookery will be done in the kitchen, which is especially fitted for the purpose. Good cloak-rooms and lavatories are provided, and special sanitary arrangements are made throughout the building. There are large playgrounds, with tennis-courts laid with red cinders. The building was erected by a company interested in the higher education of girls, and registered with limited liability. It was necessary to keep the capital expenditure as low as possible, but with good sound building; and the architects had this in view when preparing the designs. The total inclusive cost, with the lighting, heating, decoration, forming playgrounds and tennis courts, is £2,870. Mr. William Townson, of Bolton, was the contractor for the whole of the works, and executed them in a very creditable manner, from the designs, and under the supervision of, Messrs. Bradshaw and Gass, F.R.I.B.A., architects, of Bolton.

WALREDDON MANOR.

(See description on page 421.)

THE ROYAL ASYLUM, CHEADLE, CHESHIRE.

This institution was erected, from the designs of Mr. R. Lane, in 1847, and the drawing here given shows the various alterations and additions that have been recently made under the immediate direction of the resident physician, Dr. Mould. An important addition is the large recreation hall in the centre of the new front. This room is fitted in oak, and richly decorated in colours. Besides the institution proper, there are many separate residences in connection with it—one of these is shown upon the drawing we publish. The various works have been carried out by workmen upon the estate, from the designs and under the superintendence of the architects, Messrs. Bell and Roper, of Manchester.

BUILDING NEWS DESIGNING CLUB: AN ARCHITECT'S CHIFFONIER.

(For description of these designs, see p. 395.)

RESTORATION OF WESLEYAN CHAPEL, ABBEY-STREET, NUNEATON.

The building in its original condition was a plain rectangular structure, about 60ft. long by 37ft. wide clear inside measurement, with a gable next Abbey-street containing entrance, plain brick elevations, lean-to vestries, and organ-loft at rear. The walls were in an insecure condition, and insufficient to sustain the thrust of roof. The following are the chief features of the mode in which the restorations have been carried out. Taking out front gable and extending to street boundary, and thus providing additional seating accommodation; two gallery entrance lobbies containing flight of stone steps in each (one gallery entrance being carried up to form tower and spire), and also convenient and spacious central main entrance and lobbies paved with granolithic pavement. The front and side walls and buttresses have been thickened and strengthened by a casing of 9in. brickwork, well bonded into old walls. The old windows have been removed, openings enlarged, and new stone-mullioned tracery windows inserted. This casing and strengthening, together with a large amount of underpinning to old foundations, and thick solid concrete foundations to new walls, have furnished the whole of the structure with befitting solidity and strength to carry the new galleries and roof. The lean-to buildings at rear have been unroofed and extended to give increased accommodation for vestries and space for new organ and choir-gallery. The main roof has been stripped, felted, and reslated, and extended to cover additional parts, thus improving the acoustic properties of the building, making it thoroughly impervious to weather, and assisting warming and ventilation. The interior accommodation has been largely increased by the new spacious side and end galleries, which are supported on ornamental iron columns; these are continued up to under side hammer-beams of principals. The old principals were of sound construction and good effect, but their appearance has been further improved by the insertion of carved and moulded yellow pine tracery in panels formed therein. The arch to old organ-loft has been removed, and the opening enlarged and spanned by new carved and moulded choir arch, bearing a carved inscription. The style adopted in the treatment of restoration may be described as Decorated Gothic. The elevation towards Abbey-street (the principal frontage) comprises tower and spire, main and gallery entrances (the main entrance being fitted with sliding, ornamental iron gates), front gable containing large three-light stone tracery windows, and finished with bold coping, finished at apex with carved gable finial, and at feet with moulded pinnacles. The side elevation is divided into six bays by bold buttresses, finished with stone gables and pinnacles. The elevation contains two ranges of double-light stone tracery windows, three of the bays being surmounted with gables, the other three with ornamental stone parapets. The gables to vestries on either side of chapel contain large rose tracery-windows. The materials used in the construction are best red-facing bricks of uniform colour for the general facings, relieved by stonework in moulded and carved string-courses, arches, weatherings, mullion and tracery windows, pinnacles, parapets, gables, &c. The upper portion of tower is built entirely of stone, and is constructed to contain a clock with four dials, the whole finished with pinnacles and gables, and timber-built and slated roof, ornamentally treated in lead and iron, and fitted with lightning conductor and weather vane on latest principles by Mr. J. Blackburn, of Nottingham. The stone used is Derbyshire "Coxbench." The contractors for the stonework were Messrs. Ollerenshaw and Co., of Bradford-street, Birmingham. The lead-lights for windows were supplied by Messrs. Stock, Sons, and Taylor, of Birmingham. The carpenter and joiner work has been executed by Mr. Thomas Smith, of Chilvers Coton, near Nuneaton. The architect is Mr. F. J. Yates, of Queen Chambers, 88, Colmore-row, Birmingham.

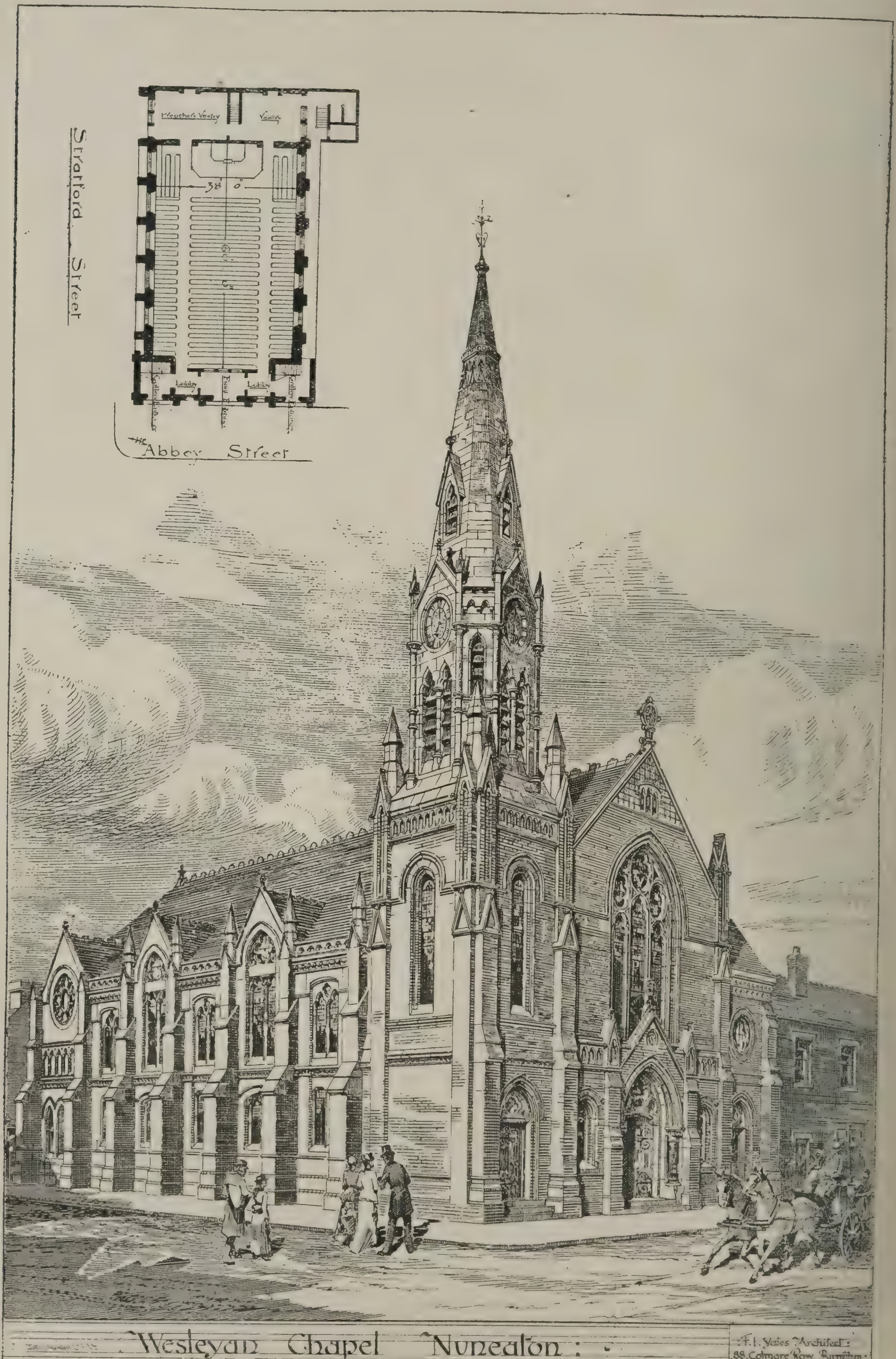
SIXTEENTH-CENTURY FOUNTAIN AT AUTUN.

M. Lucien Magne, the new professor of the History of Architecture at the Ecole des Beaux-Arts, has lately restored this charming example of the French Renaissance, which bears the following inscription: "Christo vitæ fonti Lazaroque redivivo d. 1543," showing that its dedication is the same as that of the cathedral at Autun. The triangular plan of the fountain is supposed to symbolise the Trinity, and the pelican in her piety sculptured on the apex carries further the symbolical idea, and is intended to represent the Blessed Sacrament. Whether the design was the work of Jean Goujon or not seems uncertain; but in execution the detail shows great refinement of parts and elegance of form in the main conception. The Roman gates of Autun, which Viollet-le-Duc restored, the supposed tomb of Divictiacus, and the ruined amphitheatre are, of course, well known, and so is the cathedral, which is a famous specimen of Burgundian work, with an uncommonly fine western porch, two bays deep, extending the whole width of the front. The sculptures to the caps of the cathedral are remarkably fine, as rich specimens of Byzantine origin, dating from about A.D. 1145. We are indebted to "Construction Moderne" for our drawing of the fountain here illustrated.

◆

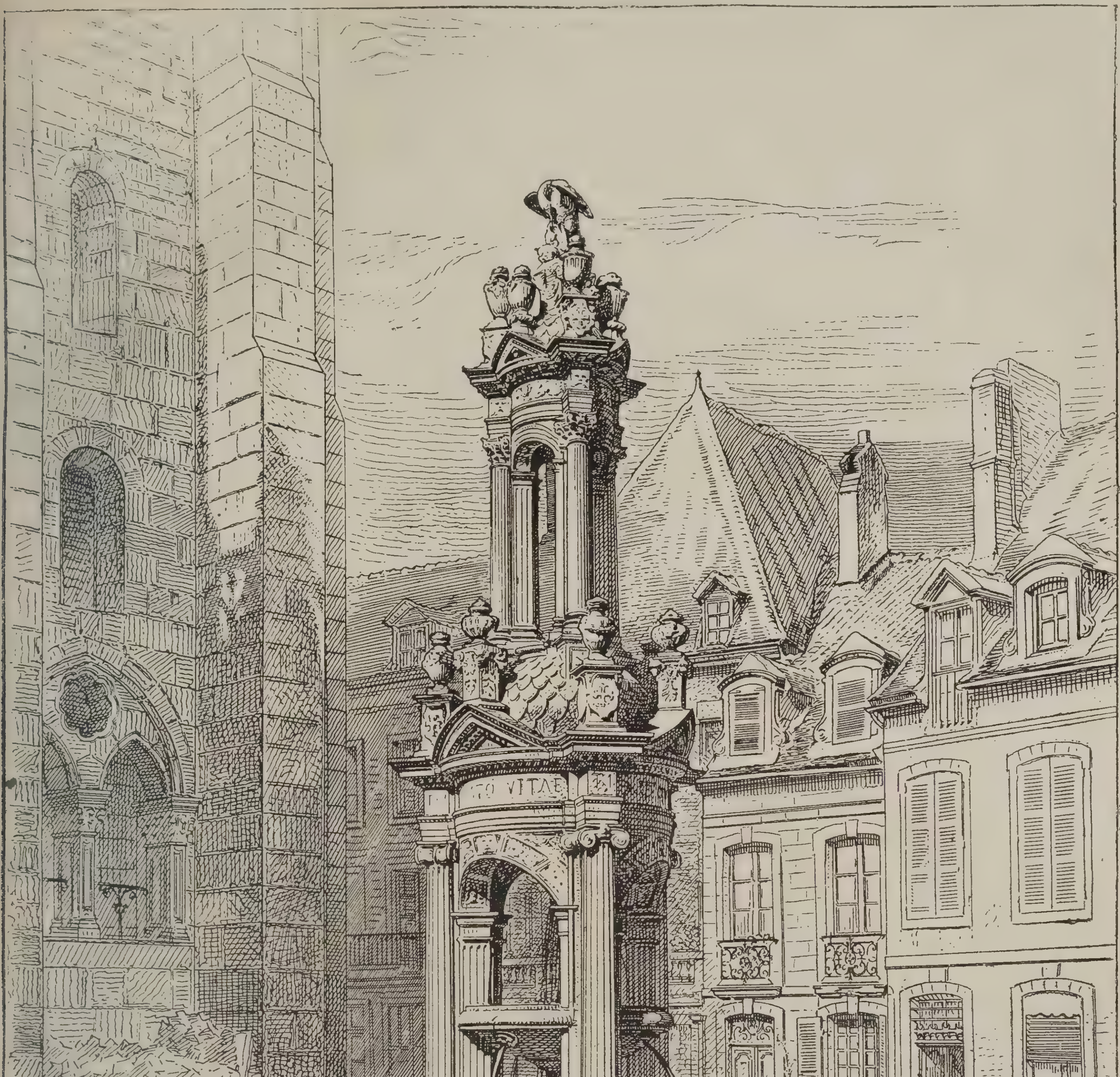
Messrs. C. Isler and Co., of London, have the contracts in hand for the water supply of the following towns:—Hastings, Leighton Buzzard, Rugeley, and Saltash, and are engaged at the following breweries:—The Home Brewery Co., Limited, Daybrook, Notts; Messrs. W. Hancock and Son, The Brewery, Wiveliscombe; Messrs. J. Young and Son, brewers, Dorking; Messrs. Goodman and Young, Stamford Hill Brewery, Stoke Newington, N.; and Messrs. Ware and Son, Pale Ale Brewery, Frant, Tunbridge Wells.

The Government has just completed the purchase of the coachworks property in Meadowside, Dundee, for the purpose of erecting a new post office. The site fronts Euclid-street and Constitution-road, as well as Meadowside. The purchase price is a little over £9,000. Messrs. Thompson have purchased from the Government the old post office for the purpose of erecting new newspaper offices.



Wesleyan Chapel Nuneaton :

F. J. Yates Architect:
88, Colmore Row Birmingham:



SIXTEENTH-CENTURY FOUNTAIN AT AUTUN.

WAYSIDE NOTES.

At two o'clock to-day will be offered for sale at the Auction Mart, by order of the City Corporation, the freehold site of one acre and three-quarters, known for the last fifty years as Farringdon Market. Here is an "opportunity that will not occur again" for someone to acquire about 75,000 superficial feet of City land, available for immediate developement, "possessing frontages of about 291ft. to Shoe-lane on the west, 227ft. to Stonecutter-street on the south, and an important frontage to Farringdon-street on the east." Any architect having great faith in the future of his business, might build himself most commodious premises here, and thus take all the trade of London. Seriously, the site is of enormous value, being in the chosen district of newspaper publishing and printing and colour printing. No such area of land in the City of London is likely to be put up for auction for many years to come.

The site of Farringdon Market was acquired in 1824, at which time an older market, erected close by in Farringdon-street, and covering the old Fleet Ditch, was destroyed by order of the Corporation in order to make room for great improvements. The market that covered the Fleet Ditch was a removal from the site whereon now stands the Mansion House—the old "Stocks Market," the establishment of which, wrote Old Stowe, "goeth back time out of mind." Addison relates how, sailing one summer morning from Richmond in a market boat loaded with peaches for Covent Garden Market, they were joined by other market boats, till they sailed down quite an Armada. The fruit boats put up at Strand Bridge for Covent Garden; but others, laden with vegetables, continued to the nearest point of embarkation for the Stocks Market referred to. At one time, it is supposed, the site of old Farringdon Market was a burial-ground, the receptacle of the remains of Chatterton.

There was an interesting case in the Worship-street Police Court on Monday last. The London County Council held a summons against Messrs. Carwardine and Co., millers, of the City-road, in respect to a certain windmill erected by the defendants over their premises. The solicitor and surveyor of the Council endeavoured to persuade the judge that the windmill and its accessories constituted a "sky-sign." The windmill in question seems to have been rather notorious in its way; it is reported as having "attracted attention in all parts of London." Now a windmill is such a picturesque object in these days of steam and electric motive power, that I feel at once attracted towards Messrs. Carwardine's mill, albeit that it has doubtless one of the modern Flemish disc-like wheels, and is not on such a fantastic model as the windmills mistaken by Don Quixote for an army of giants. It grieves me that I have not seen this windmill, and I have a mind to go out of my way some half-mile or so when next "up and down the City-road," in order that I may satisfy the importunities of curiosity. Being thus friendly disposed toward the windmill tribe in general, I am glad that Mr. Rose gave judgment for the defendants in this case, and that the County Council, if they want to prove anything further in support of their objection to the mill, will have to take their complaint into a higher court. The Council's solicitor, Mr. Burton, stated that, as the Council attached the utmost importance to the matter, he should be compelled to appeal. I fear that he will have a bad case.

The mill was proved to serve a useful purpose in the way of grinding corn, driving a dynamo, and doing other work. It had the name of the owners, and the words "oatmeal" and "wheatmeal" on the regulating fan at the back, and the guard-rail to a gallery half-way up the frame-work is formed of the letters forming the name of the firm. It seems to me that, if there is anything wrong in this, it could be also wrong for a man to build, say, a tall mansard roof, and write thereon the legend "Jones and Co." The County Council have done good service to Londoners in their action relative to sky-signs generally; but the regulations relating to such should not be allowed to trammel enterprise in legitimate ways. One often asks, Why are not windmills more employed? In these day of accumulators when electrical energy can be so readily stored, the windmill would seem to be just the mechanical means to adopt whenever there is a breath of wind. What the County Council should look after is that attempts are not made to erect sham windmills for the sake of advertisement. This was the supposition in the City-road case, but it has not been proved. Two pairs of mill-stones, with a capacity of from seven to eleven sacks a day, a dynamo storing a 28-cell accumulator, and a hoist to raise a 2½ cwt. sack, is making fairly good use of what is not, after all, a gigantic wheel.

The members of the Royal Commission to inquire into the Metropolitan water supply have been appointed, with Lord Balfour of Burleigh as chairman. Mr. Richie states the reference as follows:—"Whether, taking into consideration the growth of the population of the Metropolis, and the districts within the limits of the Metropolitan Water Companies, and also the needs of the localities not supplied by any Metropolitan Company, but within the watersheds of the Thames and the Lea, the present sources of supply of these companies are adequate in quantity and quality, and if inadequate, whether such supply as may be required can be obtained within the watersheds referred to, having due regard to the claims of the districts outside the Metropolis, but within the watersheds, or will have to be obtained outside the watersheds of the Thames and Lea." This is just what is wanted to be known, and until the Commission has issued its report, all talk about the future of the London water supply should be suspended.

Mr. Frank Lockwood, Q.C., M.P., has been lecturing at York on "The Law and the Lawyers of Pickwick." This seems to suggest an opportunity for someone to discourse upon "The Architecture and the Architect of Martin Chuzzlewit." All the Pecksniff race, says Dickens, firmly believe there never could have been such a person as Pecksniff. It would be for the lecturer to show that, on the contrary, the architectural profession quite appreciates Mr. P. as a character, and believes that there are many Tom Pinch's in the world. The improbability of Martin, after only a few weeks of pupilage, designing a grammar-school that could be carried into execution might also be pointed out, and due stress should be laid upon the truth of Mr. Pecksniff's belief that one should always be up and about, as "one never knows what it may lead to."

It was fitting that your last number containing the report of the Institute's debate on the "Amended Suggestions for the Conduct of Architectural Competitions" should also contain a batch of wails from competitors and others. As Mr. Waterhouse said, there could be no more important matter brought before the Institute than that of competitions. It is only to be regretted that the Institute has not more power for good in cases of competitions that are unfairly conducted. Something really formidable is required in the way of a Competitions Committee—some section of the Institute that would take *energetic action* in every instance of questionable dealings. How little we really advance in the way of the conduct of competitions may be judged from your correspondence last week. Nothing but complaint, either of conduct or conditions. I understand, by the bye, notwithstanding the nature of the Halifax Artisans' Dwellings Competition, so great has been the demand for particulars that the promoters ran out of copies, and have been obliged to refuse the applications of many architects! What shall be said about this? Either there is a great dearth of work, and men are seizing upon any chance of a job, or the Halifax people thought to economise in their printer's bill. With the air full of complaint of awards, beggarly conditions such as those from Halifax offered to the profession, and architects laying hold of competitions like drowning men grasping at straws, the subject of their conduct is certainly all important. I much doubt, though, whether the mere revision of old "suggestions" will help on matters much. If the Institute would deal with the question in a more thorough manner, and make a point of taking up the cudgels in defence of the profession whenever unfair dealings were evidenced, it might then just be possible that we should notice real improvement. It is wanted badly enough.

I am glad to see Professor Banister-Fletcher's name down for election as a Member next Tuesday at the Society of Architects' meeting. The Society may congratulate itself on his adhesion, and ought to set itself seriously to help him in his excellent work at King's College. Professor Banister-Fletcher has there grappled with the needs of architectural education after a masterly and practical fashion, and is doing work the full value of which will not be felt till the students who are availing themselves of the golden opportunities he has made theirs come to take their share in professional work. I should like to see the professor elected President of the Society of Architects next year, when Mr. W. H. Seth-Smith resigns the chair, and to know that the growing power and popularity of the Society of Architects will, under his auspices, enter on a new phase of usefulness to art, none the less beneficial because controlled by the practical and common-sense qualities Professor Fletcher has always manifested. Goth.

COMPETITIONS.

Hertford.—Residents in the united parishes, and subscribers to the fund for the rebuilding of All Saints' Church, recently gutted by fire, visited the Shire Hall in good numbers on Tuesday and Wednesday in last week, for the purpose of inspecting portfolios sent in by the following six ecclesiastical architects:—Sir Arthur W. Blomfield, A.R.A., Mr. John O. Scott, Messrs. James Brooks and Son, Mr. T. G. Jackson, A.R.A., Messrs. G. F. Bodley, A.R.A., and T. Garner, all of London, and Messrs. Paley, Austin, and Paley, of Lancaster. The drawings, photographs, and plans of various churches erected and in course of erection in different parts of the country were examined with interest. One drawing, shown by another architect, was on view for a time; but as the sender was not one of the invited six it was removed. The committee held a joint meeting on Friday afternoon, when they appointed as architects for the reconstruction Messrs. Paley, Austin, and Paley.

CHIPS.

The memorial stone of the East Free Church, in course of erection at Stonefield, Blantyre, was laid on Saturday afternoon. The area of the church will accommodate 400, and the gallery 100 persons; and the estimated cost is £1,600.

The will of the late Mr. Henry Smith, the well-known timber merchant, of Northampton, has been proved, the personalty being sworn at £89,661 13s. 1d. and £35,777 9s. 10d. net.

A statue of Mary Queen of Scots, the gift of the ladies of Edinburgh, is about to be placed in one of the niches of the Scottish Portrait Gallery. The sketch-model submitted by Mr. Birnie Rhind, of Edinburgh, has just been adopted by the committee, and has also been approved by the architect of the Gallery, Dr. Rowand Anderson. If funds permit, the figure of the Queen will be flanked by statues of Maitland of Lethington and Bishop Lesley.

At the last meeting of the London School Board it was decided to order Mr. W. Graham, one of the clerks of works for repairs, to submit his resignation.

At Saturday's annual meeting of the Shropshire County Council, a subscription portrait of Mr. Alfred Salwey, who has just been re-elected chairman, was presented to that body. It was painted by the Hon. John Collier, and will be hung in the grand jury room at Shrewsbury.

The fourteenth annual dinner of the Builders' Clerks' Benevolent Institution will be held at the Holborn Restaurant on Wednesday week, the 30th inst. Mr. Colin G. Patrick, the president, will take the chair.

The foundation-stone of a new synagogue was laid on Sunday at the corner of Dennington-park-road and West-end-lane, West Hampstead. The building will cost £11,000, and will accommodate 700 persons. The building was illustrated by exterior and interior views and a plan in our issue of Dec. 11, 1891. Mr. Delissa Joseph, of Basinghall-street, E.C., is the architect, and Messrs. John Allen and Sons are the builders.

WALREDDON MANOR.

[WITH LITHOGRAPHIC ILLUSTRATIONS.]

WALREDDON MANOR is situated two and a half miles from Tavistock. Through the town from the railway station, past the municipal buildings and markets, turn to the right past the fine hotel and the ruins of the Abbey (founded 961), turn to the left when you get to the Drake Memorial and Fitzford Gateway, over a bridge spanning the Tavy, rushing along its rocky bed; another turn to the right takes you past model cottage dwellings on the right and the cemetery with its fine chapel on the left, and the road commences to rise up and up, while the hedges get nearer and nearer, till, after a very steep pull, you drive along a straight bit of road bordered by beech trees, and pull up at a little low lodge and massive gateway entering the drive, which runs parallel with the road under a fine avenue of beech trees for a couple of hundred yards, and, making a sudden S-shaped turn, leads you to the front door of the manor house of Walreddon. Shorn of many glories and mutilated in the front, it possesses an historic interest, and has an old-world charm such as no modern house replete with the latest improvements could possess. Shut in from the E. and N. by fine beech trees, it opens out on the S. and W. to beautiful sunny sloping meadows, which gently decline towards the woods, through which the beautiful Tavy rushes over its boulders and waterfalls a mile away. Beyond, steep-wooded hills cutting up against the skyline inclose this beautiful amphitheatre. It is a house to be charmed with, built substantially of rough grey stone, in places covered with cement and all toned with age, and encrusted with lichens and mosses, the windows and door dressings of boldly-moulded granite; the roof covered with small slates, blackened and coloured by time. Take it from which way you will, it is picturesque. The interior is no less interesting. Old-fashioned doorways, doors with strap hinges and studded with nails, odd unexpected steps over which you stumble, deep recessed window seats to every window, all the rooms panelled, most unexpected turns in the passages, ghostly cupboards, and "creepy" corners. In one of the bedrooms at the east end is a cupboard, where modern forethought has placed the legend "beware of the hole." In the floor are boards which lift up, and deep down a 5ft. square well you see a glimmer of daylight. This was once a hiding place, and in it were lately discovered a number of chicken and pork bones, showing that at some time it was the sleeping, dining, and hiding place of some gentleman under a cloud. The dining-room is different in its present aspect from the time when it was part of the hall, "a noble apartment, long, large, and massive, with a vaulted ceiling; at the further end appear the arms and supporters of Edward VI. carved in stone. The ancient hall hath a fine appearance at night, when a huge fire of logs and billets, as the flames go roaring and cracking up the chimney, casts a red glare around, glancing on the armour and lighting up the old portraits with so bright a beam that I could almost fancy them about to step from their frames to lead up the revels as in days of yore before war and rebellion were rife in the land to put to flight all honest mirth" (extract from a letter to Courtenay of Walreddon). Nothing remains of this picture but the the quaint-looking arms forming an interesting feature in the frieze at the end of the room.

At Walreddon was born in 1596 a child who afterwards became a notable woman. Mary Fitz her name was, and she afterwards became known and celebrated as Lady Howard. Now, as to this good lady a nice, grizzly, blood-curdling legend obtained until this day, and it is this: There was once a wicked woman called Lady Howard or the Old Lady, who every night for her sins rides in a coach made of bones drawn by headless horses from Fitzford to Okehampton Castle. In front of the coach runs a sable hound with one eye in the middle of its forehead. Arrived at Okehampton, the hound plucks three blades of grass, and the *cortége* returns to Fitzford, where the grass is laid on a certain stone. This is Lady Howard's penance, and it will last till every blade of grass in Okehampton Park is plucked, or the world comes to an end. What were her sins? She married four husbands, and murdered three of them, and the grizzly coach is said to be made of the bones of these dear departed. She also murdered two of her children in Betsy Grimbal's tower, part of the old abbey. What evil deed connects her name with the old oak that till lately hung over the river near Tavistock, I don't know, but it was always called Lady Howard's tree. These are traditions, and I don't believe them. It is difficult to get at facts and dates, but she was actually married four times, and she lived at Walreddon; and Mrs. Bray, the authoress of "Courtenay of Walreddon," says that in 1642 Col. Holbame, who captured so many houses in the west, came before Walreddon with a strong body of men to invest it in the name of the Parliament. This plucky woman parleyed herself with Col. Holbame and said: "This mansion and all that it contains are mine by right of inheritance, and also in right of my having kept my oath of allegiance inviolate to King Charles. In the name, then, of God and the king, I now tell you that no gates of mine shall open at the command of a rebel servant for his rebel masters. Away, then, with you from my doors, or stay and do your worst, for here, surrounded by my people 'will I die in their defence. Now is your summons answered?'" After being reduced to great extremities by a long siege, the garrison was relieved by a force under Sir Nicholas Slamming, the rebels retreating to Plymouth. No doubt Lady Howard has been much maligned by tradition. She certainly was married four times, but she certainly did not murder either husband or children. She was first married at the age of twelve. At that time the iniquitous law of wardship established by Henry VIII., which ruled that when a man who held land "in capit 2" from the crown, died, his heir, if a minor, belonged to the king, who received all rents and profits till the minor was of age. He could marry wards moreover to whom he would, and the wardships and marriage of minors went to the highest bidder. Her first husband, Sir Allan Percy writes this letter to his friend, Dudley Carleton, afterwards Ambassador at Venice: "My Lord (his brother the Earl) and I have met without any repitition of what is paste, and hath promised to pay that money for me which I was a suitor to the Kynge conditionally that I marry the warde; if I *sell her* I must paye it backe." This husband only lived three years, and Lady Mary did not live with him. However, she took matters into her own hands, and married again a very short time after she became a widow. An extract from a contemporary letter reads:—"Sir Allan Percy is gone the way of all flesh, dying, his lady the way of all quicke flesh, having stolen out of my Lady Elizabeth Hatton's house in London in the edge of an evening, and coupled herself in marriage with Mr. Darcy, my Lord Darcy's eldest son." This husband did not live more than a few months after marriage. Her third wedding took place in the same year, when she became the wife of Sir Chas. Howard, fourth son of Thomas, Earl of Suffolk, by whom she had two daughters. Her last husband was Sir Richard Granville, grandson of Sir Richard who commanded the *Revenge*, one of the ships that scattered the Armada. This marriage was far from happy. Lady Howard died in 1671, and was buried at Tavistock Church. An inventory of her goods and chattels shows her a rich woman. The total amounted to £9,179 10s. 6d., not, of course, including land, houses, &c. Among the items "her wearing apparel and money in her purse, £1,000." She must have had almost as many gowns as Queen Elizabeth. She had "21 riding and labouring horses valued at £100, also the furniture belonging, £40," and a "sedan which, with the corn in the corn-chamber and several other intensills, is considered to be worth £25." So there was no coach, and the ghostly chariot dwindles into a harmless sedan chair carried by two of her ladyship's footmen. The black hound is a fancy touch thrown in by fervid local imagination. The inventory speaks of her "perfumed bed, her jewels, worth £500, and her bookes, and other things in her closett, worth £50." These sketches and notes were made during a short holiday spent at Walreddon during the past summer.

J. NICHOLSON JOHNSTON.

* * *

THE SURVEYORS' INSTITUTION.

AT the ordinary general meeting of this institution, held on Monday evening last at 12, Great George-street, an interesting discussion took place on the subject of the Government "Small Agricultural Holdings Bill," now before Parliament. Mr. W. G. S. Rolleston, of Leicester, who opened the discussion, was of opinion that the Bill, if not faultless, was at least an honest and capable attempt by practical men to deal with a subject which on all hands it was agreed was of the utmost importance. The avowed object sought was the retention of the agricultural labourer on the land, and in order to attain this end it was proposed to render his labour more profitable, as well as more congenial, by enabling him to purchase on easy terms, or to rent at a moderate price, sufficient land to occupy either his whole time or only his spare moments. The County Councils were to be empowered to acquire land for the purpose of disposing of it to the "labouring classes." But that very phrase, "labouring classes," begged, he thought, the whole question. There were very few real labourers who were in a position to find even the one-fourth of the purchase money required by the Bill. The County Councils, again, were to convey to the purchaser an indefeasible title, and to him it seemed a very great pity that the opportunity was not taken to enforce registration of title to all land which was thus conveyed. Then it would, he thought, be very necessary to have an expert's opinion as to what was a reasonable price at which the County Council should buy or sell, and provision should be made for larger sales to co-operative farming societies. There was not sufficient provision to insure that proper cultivation should be carried out, and the Council might have to take back, in very poor condition, a plot let to an improvident or incapable occupier. On the other hand, they should have power to re enter in the case of a plot which had been greatly improved in value by the construction of a railway, or from similar causes. The Bill sought to establish that it was wise to invest public money to foster a private industry, if that industry were so essential that its existence was of primary importance to the community, and he thought the end justified the means.

Mr. M. Jeans (Marlborough) was of opinion that no agricultural labourers could find the requisite one-fourth of the purchase money and sufficient capital to work and stock the land. How could he even take ten acres without capital, and how hope to get anything like a living out of the land? The money was to be raised by the County Councils on the security of the county rate, and the liability was to be limited to 1d. in the pound; but how could it be so limited?

Mr. H. H. Smith said experience taught him that there was little or no disposition or ability on the part of the labouring classes to buy land, and in several instances of which he knew the experiment had been nearly or quite a failure. It was impossible to let small holdings at the same rent as large, for the rent represented the value of the land *plus* the cost of equipment. Take 20 acres at, say, £30 per acre, equal £600. The house and buildings could not be erected for less than £300 (a very moderate estimate, we should say), making a total outlay of £900. Of this the purchaser would pay, if he could, £225, leave the interest of £225 as a perpetual rent, charge and pay off the remaining £450 in fifty years. A very simple arithmetical calculation would show that he must pay a rent of something like £34 per annum, and how at the present price of farm produce was he to do this?

Mr. Kemsley said that he knew of many large farmers who had failed while the smaller men had held their own during the last few years, and it was certainly a fact that where a number of small holdings existed, the larger farmers had a better chance of obtaining casual labour in times of pressure. The Bill must not, he thought, be taken too seriously, but, if passed, it would undoubtedly do good, although in an indirect rather than a direct way.

Mr. T. Chatfeild Clarke welcomed the Bill as an attempt to deal with the question of agricultural labour, but he thought the gist of the whole matter lay in the point whether compulsion was or was not an essential part of the scheme, and on this point the Bill was weaker than that brought in by Mr. Jesse Collings.

Mr. W. Wright, Mr. D. Walker, Q.C., Mr. D. Watney, Mr. C. Oakley, and other speakers continued the debate, the general feeling appearing to be that something was very necessary to be done, in order to induce the labourer to remain on or come back to the land, and that any honest attempt to attain this end was worth very careful consideration from all practical men.

The greatest chance of doing this lay in providing better cottages, more accessible gardens and allotments, and by generally making his life as attractive as, or even more so than, would be his lot if he migrated to the town.

BUILDING TRADES EVIDENCE BEFORE THE LABOUR COMMISSION.

THE Building Trades Section of the Labour Commission resumed its sittings at Westminster Hall on Tuesday, Mr. Mundella, M.P., presiding. Mr. D. B. Macgregor, Secretary of the Glasgow Master Masons' Association, stated that since the year 1884 an annual conference of representatives of the Master Masons' Association and the Operative Masons' Association had been held, at which all questions relating to the trade were discussed. The conference fixed a standard rate of wages for the year, and regulated the hours of labour and conditions of employment, and the system had worked admirably, entirely putting an end to strikes in the industry, and satisfying both employers and employed. The two associations worked harmoniously together, and the decisions arrived at by the joint committee were binding throughout the trade in the district. Mr. F. Moore, a non-Unionist carpenter and joiner engaged in the building trade in London, denounced the system of overtime as a deadly evil, resulting in the wearing out of the men both physically and mentally. The system could not be wholly got rid of; but, by better management on the part of the employers, it could to a great extent be minimised. He advocated a legislative enactment to prevent systematic overtime in the building trade; but he did not consider a legal eight hours day would be practicable in the trade, as the difficulties in the way were too great. The sanitary condition of the workshops was very bad, and the inspectors were hardly ever seen. In many isolated shops at present foremen who might be quite ignorant of the trade were engaged for their capacity to push and drive the men, and it was notorious that many foremen received bribes from inefficient men to give them continuous work. To a certain extent the association of the men in trade unions had had the effect of protecting the men against such abuses, which, he admitted, would be very much greater were it not for the unions. The tendency of unions, however, was to secure a uniformity of payment to men irrespective of their efficiency, and so to deprive the men of all inducements to exert themselves. He considered that the proper course to pursue would be to give all the men the trade union rate of wages as a minimum, while very good workmen should receive a sum in addition. The number of unionists in the building trades was less than one-fifth of the total number of carpenters and joiners in London, and he ascribed the paucity of membership largely to the fact that the meetings were held in public-houses. He advocated the establishment of standing Boards of Arbitration, with a referee in case of disagreements, and condemned the practice of giving public contracts to the lowest tenders as being one of the main causes of the sweating and driving of the men. Mr. G. Sunley, General Secretary of the National Amalgamated Society of House and Ship Painters and Decorators, advocated arbitration as the best means for the settlement of disputes. Unionist workmen as a rule were superior to non-unionists. He was in favour of the fixing of a minimum wage, and the Employers' Liability Act should be amended so as to prevent employers from shifting the responsibility for accidents on the shoulders of the insurance societies. Mr. W. Phillips, of the London and Counties House-Painters' Society, suggested the appointment of a qualified inspector to see that this class of work was properly done. On Wednesday, Mr. Albert Emmett, secretary of the Operative Bricklayers' Society of the Ashton-under-Lyne district, said that the union decided all questions affecting wages, conditions of labour, and the hours. Since 1879 their relations with their employers had been very cordial. They did not want any interference of Parliament with the hours of labour. Mr. J. Stirk, of the Operative Stonemasons' Society, Leeds, said the number of unionists and non-unionists was about equal. They had about 16,000, and their hours were 50 for 36 weeks in the summer, and 43 for 16 weeks in winter. The Employers' Liability Bill had had the effect of improving the scaffolding, and there had not been an accident that he was aware of during the last ten years. Mr. Thomas Corbett, representing the Operative Brickmakers' Society, of Nottingham, advocated the prohibition of machine-made bricks for houses, as they retained the damp. The Commission resolved on Wednesday to present to Parliament the evidence taken by the three sub-committees up to Christmas, together with an abstract and analysis thereof.

THE BUILDING EXHIBITION.

THERE is once again a Building Exhibition at the Agricultural Hall, but exhibits really of interest to the architect and builder are comparatively few. One of the best shows is made by Messrs. Baird, Thompson, and Co., of 165, Queen Victoria-street, E.C., and Glasgow, where several automatic and mechanical ventilating appliances are to be seen, adapted for buildings of various kinds, also for steamships and railway carriages. The "Grahtryx" patent drain-test apparatus, the self-acting dry-earth closets are specialities of this firm, who are also the sole proprietors of the "Æolus" water-spray ventilator, so well known for its many useful applications. Warming and cooling arrangements and electric bells are also fitted up by this firm. Messrs. Carter and Co., of the Encaustic Tile Works, Poole, Dorset (Stand 56), have an important display—near the main entrance end of hall—of examples of encaustic, glazed, enamelled, and embossed tiles in the varied artistic forms of floors, dadoes, wall-linings, pilasters, friezes, and ceilings. We especially draw attention to the tile patterns and colours in those numbered 6,990, 7,000, and the very nicely toned mosaic designs. The show of tile dadoes is worth attention for the harmony of colour and quiet designs, chiefly those with greyish-greens, citron, and other tints, having surbase mouldings and embossed friezes, with a panel centre. Some hand-painted tiles are shown, also tiles for stove-cheeks. On the floor of stand are several kinds of slabbed hearths, fender kerbs, and mosaic floors. We have lately spoken in high terms of Messrs. Carter and Co.'s designs when noticing their published catalogue, and architects may see here for themselves the tiles themselves, and their suitability for decoration and faïence work.

For parquetry and joinery, Turpin's parquet floor, joinery, and wood carving, 22, Queen's-road, Bayswater, stand 62, should be examined for some excellent inch thick parquet, also for Turpin's $\frac{5}{16}$in. thick parquet suitable for laying on old floors, or for dadoes, wall linings, and other decorative purposes. Examples of these kinds in several patterns and an "Antiseptic" beech block floor may be seen. The specimens of joinery and wood-carving are worth attention, especially an oak carved chimneypiece. A large stand (65), of Fredk. Jones and Co., Perren-street, Ryland-road, N.W., exhibits a large quantity of British-made silicate cotton or "slag-wool," both in its crude state and in its various applications. As our readers are aware, this pure mineral fibre is now largely used to prevent the transmission of heat, cold, and sound in floors, roofs, partitions, and for other purposes. The exhibit shows some capital specimens of these applications, like sound-proof and fireproof plastering (Hitchin's patent), also the fibrous slabs and wire netting slabs, which facilitate plastering for partitions, floors, and roofs. Possessing fireproof as well as damp-proof properties, architects would do well to specify these slabs in all buildings of importance. Messrs. Mellowes and Co., Sheffield (66), exhibit examples of their "Eclipse" patent imperishable glazing in tin, lead, and steel bars. The roofs shown are worth attention. Not only conservatories and horticultural buildings, but market, bath, arcade, and other roofs have been constructed upon this system. The Hand-Carved Wood Supply Co., 258, 260, Old-street, E.C., show some good specimens of hand-carved woodwork of a very superior kind. These comprise overdoors, panels, carved fittings, pedimental accessories, capitals, brackets, newels, and balusters, and a variety of ornamental carvings. On the north side of hall Mr. F. A. Fawkes, Chelmsford, has a stand showing his high-class joinery for architectural purposes. A doorway of Renaissance design suitable for a handsome hall or reception room is exhibited, with overdoors or pediments, enriched architraves, raised panels, dadoes, also two chimneypieces of wood, one with an overmantel, and shelf supported on pillars and bevelled glass mirror, and another with six panels of bevelled glass in the overmantel. These are well designed and finished in a superior style of workmanship. The plain and enriched mouldings are in good taste suitable for skirtings, surbase mouldings, picture rails cornices, and we see some excellent sections of mouldings adapted as casings for electric wires.

The St. Pancras Ironwork Co., St. Pancras-road, N.W., has a large stall (No. 114) in which we find several specialities; the model stable and fitting of stalls and loose-box comprise all that is sanitary and necessary for stables of a superior construction. We notice also several patented improvements: a spiral iron staircase of light and ornamental design, a wide entrance or conservatory staircase of iron with the treads having chilled ribs cast on them to give a foothold, and with risers and balustrades of light design. Amongst the variety of pavements and floor lights glazed, tiled lights in various colours and patterns, we notice a self-balanced safety cellar-flap glazed with primatic lenses, and a new patent self-locking coal-hole plate, which, by the action of the hinged levers, is secured immediately the plate is let down—a very simple and effective fastening.

Messrs. Fambrini and Daniels, Excelsior Art Concrete Works, Lincoln, and 307, High Holborn, show (117) a number of specimens of their imperishable concrete masonry, which is extensively used. These have been modelled with architectural skill for various ornamental features. An altar-table of stone colour, a large traceried window, a copy of those in cloisters of Lincoln cathedral, also of stone tint, and a pillar-box are exhibited of excellent manufacture. For window tracery and dressings, pediments, sills, architraves, balustrades, panels, and all decorative masonry, this concrete production is well adapted. It requires no preservative solutions like stone, it is truer in line and more uniform in colour than terracotta, and is more solid in building. Some red panels in relief are shown which are worth attention. The concrete masonry can be made in red, buff, cream, or any colour.

For high-class joinery and mouldings, designed on architectural principles, and executed with extreme care and clearness, Mr. Samuel Elliott's (Albert Works, Newbury) stand (153) is worth a visit. Here we see mouldings in all hard and soft woods, adapted for every purpose, from cornice and architrave mouldings to the most minute and delicate cabinet-work. The architraves, with bold ovolo between small reed-like members, are very effective. We see, also, casings for electric wires, and a model of a window fitted with Elliott's patent "perfect simplex" weather-bar for a French casement opening inwards, one of the puzzles of the architect. This consists of a trough-shaped metal groove let into the inner side of window-sill, and another smaller [-shaped metal bar fixed to the lower edge of bottom rail of casement, which comes in contact with the first. The weather-bars are made in steel, zinc, and brass. No rain can be forced through the casement; all that enters escapes by a water-channel from the sill-bar. The weather-bar can be applied to old casements by a simple operation, which is also shown by a model.

At the east end of hall, next the wall, a very important stand is occupied by Messrs. Mark Fawcett and Co., constructional engineers, 50, Queen Anne's-gate, S.W. The system of patent fireproof and ventilating floors and roofs, known as Fawcett's, is well known to our readers. Here full-size model floors are exhibited, showing how the tubular lintel, or hollow red tube of clay, is laid on the flanges of iron joists, placed with their centres 2ft. apart. The lintels are fixed with their diagonals at right angles to the joists, thus appearing slantwise in looking at them as laid. The lintels are filled in with specially-prepared concrete, which also covers them at top and takes a direct bearing upon the bottom flange of joists, thus relieving the lintels of the floor load, which form merely a fireproof centring, and reducing the dead weight of floor about 25 per cent. Being hollow, cold air can be admitted into any of the lintels. Below, the flat bottom of lintels encases the bottom flange of joists, and it is keyed for plaster, making a strong and fire-resisting floor.

We cannot leave the hall without directing attention to the electric Blackman, or Blackman fan and motor combined (Watel's patent), as employed by the committee of the International

Electro-Technical Exhibition, Frankfort-on-Main, exhibited by the Blackman Ventilating Co., 63, Fore-street, E.C. It is one of the best ventilating agencies we know of; the fan can be easily fixed and driven, and is very economical for working where an electric current is available. We may say a good example may be seen at work at the present Electrical Exhibition at the Crystal Palace. Blackman's air-warmer is a useful apparatus which can be worked in connection with a 24in. Blackman fan.

UNDERGROUND URINALS AND LAVATORIES.

AN improved underground convenience has been constructed at the junction of Vauxhall Bridge-road and Victoria-street, Westminster, close to Victoria Station, by Messrs. Doulton and Co., for the St. George, Hanover-square, Vestry. The chamber is an elongated rectangle on plan, with semi-circular ends, and forms on the street level a useful area of paving at this busy junction. At the southern end is a circular stairway approach, railed off from the road, while the larger portion is paved with lens lights over the conveniences, and rising from its centre is a handsome cast-iron clock turret, with four clock dials. Descending the semicircular steps, the side walls of which are lined with white glazed bricks, we reach a small lobby occupied by a caretaker's box, and fronting the entrance is a lavatory fitted up with a lift-up basin of Messrs. Doulton's manufacture with a looking-glass over. Ranged along the side wall and circular end are thirteen urinals without basins. Each is semicircular in plan, lined by white glazed stoneware, with dished receptacles level with the paving. The stoneware lining is finished at the top with Rouge Royal marble, splayed to the form of the receptacle, and gives a quite decorative appearance to the range. At the foot the liquid is drained off into a small channel running along the front of the range of urinals, thereby being more accessible for cleaning and flushing. Above the range is fitted over each urinal one of Doulton's automatic flushing tanks which flushes at intervals. These tanks are ornamentally inclosed in Rouge Royal marble cases with glass fronts, and harmonise with the marble cappings of the range. One very important feature is the manhole inspection chamber in the gangway. By opening the flap the drains from each closet are seen side by side, and form open white glazed stoneware channels, so that the discharge from each basin is open to inspection or cleaning. Of this kind of interceptor there are two provided. The closets are five in number, and are fitted up in a manner that leaves nothing to be desired. The apparatus is Messrs. Doulton's "Simplicitas," which is a pedestal form of closet—one piece of white stoneware without any wooden casing, which can be washed down, and looks exceedingly cleanly. The seat is hinged, and falls against the wall, and automatically retains this position. The ventilation has not been overlooked, a shaft being carried up the clock-tower for that purpose. The fittings for the supply of water, the lighting, and general treatment of this combined lavatory and latrine are very efficient, simple, and effective, and Messrs. Doulton's improved sanitary appliances are here put to a useful public service.

* * *

At the half-yearly meeting of the North Cornwall Railway Company it was announced that of the second section, that from Launceston to Delabole, five miles of the permanent way was laid, and the first eight miles, from Launceston to Tresmeer, of this section will be opened this summer.

The newly-erected gymnasium at Leamington College was opened on Saturday. It has been erected, at a cost of £1,300, from the plans, and under the superintendence, of Mr. W. H. Lloyd, of Birmingham and Leamington. Its internal dimensions are 70ft. by 35ft., and height to tie-beams of the roof 20ft. The height to the apex of the roof is about 35ft. The roof is constructed of wrought timber, and is covered with boarding. Mr. Bowen, of Leamington, was the builder.

The annual meeting of the London Labourers' Dwellings Society (Limited) was held on March 10. Mr. Richard Foster presided, and announced a dividend of 4 per cent., £600 being also added to the reserve fund, which is thereby increased to £3,700. Sixty-one tenements have been recently erected in New Gravel-lane. The present share capital of the society is £77,600 in shares of £100 each, fully paid.

Building Intelligence.

CANTERBURY.—The report of Messrs. Smirke and Collard, M.R.I.B.A., upon the proposed new town hall for the city, has been received, together with plans. The authors suggest that the present building presents no feature worthy of preservation, either architecturally or from sentiment, the outer walls having only been erected within the last hundred years. While no other position in the town is so convenient and prominent as that occupied by the present Guildhall, its site is insufficient for the requisite accommodation. They consider that it would be necessary to acquire for the purpose of extension Nos. 12 and 13, High-street, a public-house, and No. 9, Guildhall-street, and in the rear thereof two other buildings. Messrs. Smirke and Collard's plans provide for a Guildhall 48ft. by 24ft., council-chamber 37ft. by 22ft. 6in., judge's room, barristers' room, solicitors' room, town clerk's, surveyor's, inspector's offices, &c. They approximately estimate that the buildings would not cost more than £15,000, which, together with £5,000, the outside value of the property proposed to be acquired, would make a total of £20,000 required to carry out the scheme.

MARKET-ROAD, N.—The new premises for Mr. John Southern in Market-road, Caledonian-road, are now nearing completion. A spacious ground floor for the housing of pantechnicon vans has been provided, and an upper floor arranged as stables. The stable floor and the floor of the inclined horse-run are constructed entirely of steel and concrete, the stable floor being paved with chamfered blue-bricks, and the run laid with pich-pine battens, oak fillets securing a grip for the horses. The ground floor is now being paved with wood blocks. In the stables is accommodation for twenty-eight horses. The elevation to Market-road is executed in picked gault bricks, with red brick quoins and gauged brick arches, Messrs. Brown, of Braintree, supplying the moulded bricks for cornices. Messrs. Treggon and Co. have fitted up the galvanised iron mangers, and the wood-block flooring is being laid by the Improved Wood Block Paving Company. The rolled steel girders were manufactured by Messrs. Dorman, Long, and Co., of Middlesbrough, and Messrs. Matthew T. Shaw and Co. supplied the rolled steel joists, and the cast-iron columns and girder-boxes. The builders are Messrs. G. H. and A. Bywaters, of 10, King-street, Regent-street, W., and the whole of the architectural and engineering works have been erected from the designs, and under the superintendence of the architect, Mr. R. Owen Allsop.

CHIPS.

The Bath City Council adopted on Tuesday a scheme for the covering of the whole site adjacent to the baths, pump-room, and Roman bath, and erecting thereon a concert room, smoking, conversation, and music rooms. The estimated cost is £45,000.

A meeting of the creditors of Mr. Charles Shepherd, builder, was held on Tuesday at the Angel Hotel, Cardiff. It was stated that Mr. Shepherd's losses were on account of contracts in Cardiff and Barry. The unsecured liabilities amounted to £11,454 5s. 2d., and the assets to £3,677 5s. 10d. An offer of 6s. in the £1 was accepted, a committee of inspection being appointed to ascertain whether more could be made out of the estate.

The borough surveyor of Southampton has been instructed by the Hartley Council to prepare the necessary plans for the erection of an engineering laboratory in connection with the Hartley Institution.

The tenth anniversary of the Society for Preserving Memorials of the Dead will be marked by a two days' excursion in the neighbourhood of Bishop's Stortford. The meeting will be held in the second or third week of June, the first day being devoted to Essex churches and the second to those in Hertfordshire. Mr. E. H. Martineau, F.R.I.B.A., has been elected a member of council of the society in the place of Mr. Charles Barry, F.S.A., resigned.

The fever hospital, Darwen, is being warmed and ventilated by means of Shorland's patent Manchester stoves, the same being supplied by Mr. E. H. Shorland, of Manchester.

Messrs. W. and G. Shearburn, architects and surveyors, have opened an office at Effingham House, Arundel-street, in connection with their Dorking business.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

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The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two the minimum charge being 5s. for four lines.

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The charge for advertisements for "Situations Vacant" or "Situations Wanted" is ONE SHILLING for TWENTY-FOUR WORDS, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., L., LI., LIII., LIV., LVIII., LIX., and LX. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

GEODESY. (You send us sketches of two methods of entering chainage and offsets, one showing a column of two lines drawn down the field-book, representing the chain-line, and another method having only a single line. The latter, no doubt, is more convenient; but unless the figures of the chainage are clearly written, the single line is apt to obscure them, and make an entry of three figures difficult to read. For this reason, and for being able to make a column useful in entering any obstacle crossed, we prefer the old plan, that marked A.

RECEIVED.—G. T. S.—R. S. T. Co.—Jas. Jno. D.—C. and B.—O. S. and Co.—Robt. Silverlake.

"BUILDING NEWS" DESIGNING CLUB.

DRAWINGS RECEIVED.—"Old Postage Stamp," "Jamrack," "Black Prince."

Correspondence.

TERRACOTTA.

To the Editor of the BUILDING NEWS.

SIR,—I am indebted to Mr. E. Lloyd Edwards, of Ruabon, for his opening compliment in his remarks on my article of the 4th inst. Permit me to say it was not my intention to convey the idea that all blocks not perfectly dried when placed in the kiln whiten on their faces; but I am prepared to reiterate that there is considerable risk in firing blocks imperfectly dried, and laden with mechanical moisture; and that the white faces and scum-like discoloration are more frequently caused in that way than in any other in good clays, owing to the amount of steam generated in the kiln in the process of firing. Mr. Edwards says: The scum "appears in those blocks which are made in plaster moulds; those made by machinery and properly burnt being universally good in colour." It is easy to understand that the plaster of Paris moulds may play some part in causing the scum, when we consider that the plaster is gypsum, thought to be the result of the evaporation of sea-water. The writer's experience is so different to that of Mr. Edwards that it has fallen to his lot to reject large quantities of machine-made goods from the same very excellent marls which he (Mr. Edwards) is now working, though not from his works, solely on account of white faces and scum, due, the writer thinks, to no other cause than that he has already described. The writer did not *advocate* the application of water and a brush to the blocks before putting them in the kiln; he simply described it as one of the methods practised, and which he believes to be productive of much the same bad result as that attributed to dusting the super-saturated plaster moulds, in the article on "Manufacture." The writer of these articles gained some of his experience on the beds of marl which Mr. Edwards is now working.—I am, &c.,

THE WRITER OF "NOTES ON TERRACOTTA."

THE WILES OF THE HEATING CONTRACTOR.

SIR,—Every respectable hot-water engineer who is honestly entitled to be so called will thank you most heartily for your article in your issue of March 4 on the "Wiles of the Heating Contractor," which it is earnestly to be hoped will have the effect of saving the present "small minority" of "honourable exceptions" from further diminution through the competition and "lowest tender" system of the present day. Honest and respectable engineers generally retire from it; they know they have no chance with the "lowest tender," and will not risk their reputation by "wriggling"; the field, therefore, is very often left to such. Is it to be wondered at that there are so many failures? I have for years shunned open competition, except in special cases, and yet have a fair share of work intrusted to me, principally through recommendation and reputation, and at this moment am finishing some heating work which is the fourth in succession without competition, recommended from one job to another by reputation simply, and each from people unknown to me, one of these being for the entire removal of the old system, which, although of recent date, was an utter failure, and has been replaced with a new arrangement. Such an instance is only one out of many in my experience and that of many others. I am fully alive to the difficulties that architects have to contend with by having their hands often tied in matter of cost. At the same time, seeing that the subsequent blame falls on them, I think the time has arrived when, through the general wailing as to failures, they may take some kind of stand to insure success, by asking only those to compete who can show a favourable record of work done, which should not shut out the rising and deserving new beginner, but which *will* shut out from the trade those who *never knew* it—the *unscrupulous*—and it is to be hoped also those who never intend to pay the manufacturer for the goods they get, and by which contracts are often successfully taken. If architects and others would work in this direction we should hear very little of failures, if any. It would be to the interest of client, architect, engineer, and manufacturer, the latter of whom would make fewer bad debts, and, therefore, be able to sell cheaper to safe and prompt cash payers, and tend to reduce the cost by more honourable means. Apologising for trespassing on your valuable space.—Yours truly, ENGINEER.

HALIFAX ARTISANS' DWELLINGS COMPETITION.

SIR,—I was glad to see "A Non-Competitor's" letter in your issue of March 11th, and by way of adding a few additional points, which I think ought to have due publicity, I send the following for your consideration.

The committee furnish plans on separate sheets of the sites, to a scale of 30ft., and then state the two sites should be on one sheet in the competition, and require each competitor to enlarge the site plans to 16ft. to an inch to serve as block plans, the labour of which might have been saved the competitors by making the litho site plans to 16ft., in lieu of 30ft. scale. The promoters attempt to bind the competitors fast, and leave themselves loose. I notice there is no assessor appointed by them, so the presumption is they will themselves be the adjudicators, and then the question arises, What are their qualifications? In the recent "Bath Competition" the work of the chosen design, I understand, has been let for an amount greatly in excess of that stipulated: but this seemingly crucial test appears to have been no bar to the work going forward, the promoters (virtually the same as in the present competition, being members of the Corporation) apparently not feeling bound in honour to carry out their own stipulations. The promoters arrogate too much to themselves when they bind competitors, even to the size of drawings, and state, as by condition No. 7, "Each design must be accompanied by a concise report, giving a description of the buildings proposed to be erected, and the materials to be used in their construction, also an estimate calculated at the price per cube foot, which the architect considers the buildings will cost, the estimate to include stoves, grates, and cupboards, gas and water fittings, and the completion of the buildings ready for occupation." Further clenching the stringency by condition 9: "Should any of the designs sent in not comply in every respect with the conditions and instructions they will be rejected, and the author shall not be entitled to any compensation." On the other hand, the committee do not bind themselves to employ the architect who shall, in their opinion, be considered first and second in order of merit.

This competition is, to all intents, a dual one, seeing there are two sites, neither of which will be easy to manipulate, on account of the falling nature of the same, and one of them is further hampered, so far as utilising the area, by having a circular frontage to the main street.

As there is nothing said to the contrary, I presume this is an open competition. If so, the premiums are small—£20 and £30; especially seeing there will require to be got out two complete sets of drawings, &c. (to suit each site). Besides, the detailed requirements are harassing for preliminary purposes. A prize winner in this instance will have little to exult about, taking into consideration the time and expense he will have gone to, irrespective of the risk run in obtaining it. The drafters of these conditions have evidently been at the work before, and it is a pity they cannot be made to compete themselves on the lines they lay down. A NON-GAMBLER.

"SOMETHING ABOUT CHIMNEYS."

SIR,—On page 331 of your last issue, Mr. Dye, the writer of the above, says he does not remember seeing a "blower" fixed with a "dog-grate." Any one interested in fires and chimneys, going through Eaton Hall, the Cheshire residence of the Duke of Westminster, would see that in the principal apartments "blowers" of plain plate-glass are fixed. If Mr. Dye could obtain any information as to these, and let your readers know, it would be useful news.—Yours,

G. A. HUMPHREYS, M.S.A.

Llandudno, March 10.

CHIPS.

The Harrogate town council have advanced the salary of their borough surveyor, Mr. S. Stead, from £200 to £250 a year.

New Wesleyan schools at Uphill, near Bristol, accommodating 100 children, were opened on Thursday in last week. Mr. Robert Shorney was the contractor.

A new floating carriage bridge for the ferry service between Southampton and Woolston was placed in position on Saturday. It has been built by Messrs. Day, Summers, and Co., of Northam Ironworks, and runs in alternation with the existing floating bridge.

Mr. J. Roddis, of Birmingham, has just completed and despatched to Sierra Leone a memorial cross and tablet to the memory of the family of the Rev. O. Moore.

Messrs. W. Potts and Sons, of Leeds, have started a new large turret striking clock at the New Courts of Justice, York, this week. It strikes the hours on a large bell of 15cwt. of best bell metal, with Lord Grimthorpe's gravity escapement and compensation pendulum, and shows the time on four external illuminated dials. It has been made from instructions received from the architect, Mr. Huon A. Matear, Liverpool, for the Lord Mayor and Corporation of York. Messrs. Potts are also making a chime-clock for Bishop Burton Hall, near Beverley.

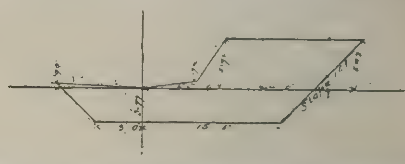
Intercommunication.

QUESTIONS.

[10744.]—**Sewer Ventilation**.—Could any kind reader mention the most successful method of ventilating the main sewers of a town, other than by the ordinary manhole ventilators? Holman's gas pillars are adopted by some of the authorities in the London suburbs. Is this system a continued success, or has it been superseded by any other? If so, by what system?—J. V. P.

[10745.]—**Half-Timber Work**.—I am designing a detached dwelling-house, and propose to decorate the gables with half-timber work—viz., struts, with the spaces between filled in with cement. Would some kind reader enlighten me on the following points:—What should be the scantling of the timber? How fixed to brick wall? By wood nogs or plugs? And how far should the woodwork project beyond finished face of cement?—BLACK AND WHITE.

[10746.]—**Reducing Cross Section to Triangle.**—Would some one of your numerous readers kindly show me how to reduce the above cross-section to one triangle by the 34th Prop. of the First Book of Euclid? I have tried, but failed in solving it.—CROSS SECTION.



REPLIES.

[10740.]—**Builder's Book-Keeping.**—If "W. N., Gosport," or any other reader will write to me, I can let them have worked examples of a good system for contracting or jobbing builder.—F. J. W., Eastbourne House, Argyle-street, Ryde, I.W.

[10741.]—**Parish Map.**—If "W. F. T." will use the indelible brown ink manufactured by O. Percival, 16, Leech-street, Levenshulme, Manchester, he will find it will not wash up. I used other ink some years ago with the same result as "W. F. T.," and tried several methods of fixing, but failed.—R. B. MACCOLL.

WATER SUPPLY AND SANITARY MATTERS.

HEMSWORTH WATERWORKS.—On Wednesday, March 9, a Local Government Board inquiry commenced at Wakefield, relative to an application of the Hemsworth rural sanitary authority for a provisional order to acquire lands and easements otherwise than by agreement. There was no opposition on the part of the landowners concerned; but the project, which is to supply water to no less than nine townships, was opposed by ratepayers in some of the contributory places, and the inquiry was adjourned to Monday, the 14th inst., and again to March 29. The scheme is to supply an ultimate population estimated at 25,000 with 350,000 gallons of water to be purchased from the joint boards of Dewsbury and Heckmondwike, with whom a provisional agreement has been completed. The supply will be by gravitation. Mr. M. Paterson, M.I.C.E., gave evidence, and stated that he had investigated the existing supply, which consists of surface wells and springs, more or less polluted, and entirely inadequate to the needs of the district; that he had failed to find a sufficient local supply, and that this was the best and cheapest scheme for a combined supply. He also stated that it had been agreed to supply the high levels of two townships on the line of pipes, and also the township of High Hoyland.

RICHMOND, SURREY.—The Local Government Board inquiry into the scheme promoted by the Corporation of Richmond for an extension of the boundaries of the borough was concluded on Friday before Colonel W. M. Ducat. The case on behalf of the opponents was further proceeded with, and speeches were delivered in opposition to the scheme by Mr. Leigh Clare, for the Mortlake Vestry; by Mr. F. W. Bush, Q.C., as an owner of property within the proposed added area; and by Mr. Veitch. on behalf of Mr. Fitzgerald, a landowner in Mortlake, whose property is proposed to be brought within the extended boundaries. Mr. Bidder, Q C., replied on behalf of the Corporation, and the inspector will report to the Local Government Board, and, in the event of the scheme being sanctioned, it will require the confirmation of Parliament before it can become operative. The inquiry occupied five days.

SLEAFORD.—In boring for water at Sleaford, in Lincolnshire, for the supply of some large new maltings for Messrs. Bass and Co., of Burton-on-Trent, the hydraulic engineers, Messrs. Le Grand and Sutcliff, of London, have just struck, at a depth of 156ft. in the limestone beds of the Lower Oolite formation, a powerful artesian spring, which rises to 12ft. 6in. above the ground, and rushes out of the bore pipe at the rate of over 12,000 gallons per hour, or nearly a ton of water per minute.

Legal.

EMPLOYERS' LIABILITIES.

THE liability of employers for accidents happening to workmen whilst in their service is a subject of special interest to the building world, not only because of the numerous accidents that do and must occur therein, but also on account of the complications that arise from the working together upon the same job of several sets of contractors and their men. The recent case of "Wild v. Waygood and Co." (*Times*, March 5), reported in our last issue, is important because it brings out so clearly the increased risks that have nowadays to be run by employers in regard to such accidents, and to protect themselves against which the only reliable plan appears to be a system of insurance. In this case the plaintiff was a workman in the employ of the builders engaged upon a house at Manchester, where the defendants were putting up a lift. A joiner in the service of the defendants at work on this lift found himself short-handed, and asked the plaintiff's foreman to let the plaintiff help him, to which the foreman agreed. Whilst the plaintiff was working with the defendants' joiner, and, of course, following his directions about a matter he did not understand, he was told to put a plank across the lift, and did so. Then the machine was started, and the plaintiff fell and was injured. The County Court jury gave him a verdict, which a Divisional Court set aside; but which the Court of Appeal has now finally restored, at the same time laying down the law.

The action was based upon S. 1, subs. 3, of the Employers' Liability Act, 1880, to come within which, as Lord Justice Lindley plainly and usefully pointed out, a plaintiff must prove five things:—1. Injury to him whilst a workman in defendant's employ. 2. Negligence by person giving orders in same employ. 3. That he was bound to obey this person's orders. 4. That he did so. 5. That injury resulted from his so doing. Yet all these five points were held proved by the Court of Appeal upon the simple fact that plaintiff was at the time helping the defendants' joiner, and so was in their employ; that he followed his orders, which were negligent, as was practically shown by the resulting injury, which was indirectly caused by his so doing. Certainly the Court of Appeal gave a more generous construction of this clause, and one more favourable to workmen than has been given before; and, indeed, they overruled an earlier authority in the case of "Howard v. Bennett" (58 *L. J.*, Q. B. 129), which had been relied upon by the defendants to show that the injury had not directly resulted from the order, and so they were not liable. Obviously unless the plaintiff had been told to put the plank where he did the accident would not have happened, and this was enough for the Court of Appeal. But, of course, the whole moral of the case is that unskilled hands should not be taken on to do work of this kind in so haphazard a way, and that employers should have good foremen of their own.

Fred Wetherfield, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

Dubious.—Work.—Time-Sheets.—There being no specification and no agreement as to price or payment, the architect, on behalf of the owner, can go into the labour charged for and the prices of the extra work, although daily time-sheets were furnished by the builder every week. But, of course, these sheets will be some evidence in his favour of the work that was done, and of its acceptance by the owner, who ordered the extras himself.

X.—Land.—Right of Way.—If the effect of the lease as to this piece of land is simply to provide a right of way over it to the yard adjoining, then I think you are at liberty to build above and across it, if you can do so without building upon it, and without reducing the right of way mentioned.

F.R.I.B.A.—Ancient Lights.—I am obliged by your letter. The case of "Pendarves v. Munro" speaks for itself in the reprint to which I refer. I hardly know who you mean by "Lord Chief Justice Bacon." If it is Vice-Chancellor Bacon, you will find that his decision in "Fowlers v. Walker," as confirmed by the Court of Appeal has just been followed in the very case I noted, and to which you object. It is very good of the "profession generally" to accept one case rather than another; but, after all, it is the Courts that decide the law.

Builder.—Local Authority.—It appears that your only remedy is against the architect, who, as you say, stated he had obtained you the necessary consent of the L.C.C., which he had not done. If you can prove your statement, you appear to have a good ground of action for damages against him. But I do not see how the freeholder can be made responsible.

LEGAL INTELLIGENCE.

Is a Model Windmill a Sky Sign?—Messrs. Carwardine and Co., millers, 84 and 86, City-road, were summoned to Worship-street Police Court on Monday by the London County Council, to answer a complaint of "unlawfully retaining a sky sign without the license of the Council," contrary to 54 and 55 Vic. cap. 78. Mr. Burton, solicitor, from the office of the Council, in opening the case, said that the sky sign in question was a windmill, and its continuance raised one of the most important questions which had been tried under the Act. Section 2 of the Sky Signs Act, 54 and 55 Vic. cap 78, defined "any word, letter, model, sign, device, or representation in the nature of an advertisement, announcement, or direction, supported on or attached to any post, pole, or standard framework . . . over any house, building, or structure . . . visible against the sky from any point against the street or public way." The windmill was erected over the premises of the defendants on a framework some 50ft. in height. It was admitted that the windmill served a useful purpose in that it ground grain, kept going a dynamo for the lighting by electricity of an arc lamp, and did other work. But the vane of the wheel bore an advertisement (painted words), and round a gallery, beneath the wheel, was the name of Carwardine. Thus in two directions it was an advertisement, and if further proof of the intention of the erection were required, it was found in the fact that the wheel was lit up at night by the electric light. The solicitor for the defence said it was denied that the erection came within the Act. Mr. Burton said that if this erection was declared not to be a sky sign, London would soon be overshadowed with various erections which, so long as they worked in some useful degree, might be in wood or pasteboard. Mr. Dobastoe, surveyor, in the employ of the Council, produced a small-scale model of the erection, and explained that the framework bearing the wheel was constructed of 10in. timber pinned to the floor on the third story of the premises and rising about 50ft. For the defence, it was submitted that the construction was not a sky sign or advertisement at all, but that it was a necessary erection for the factory. Mr. Rose asked if it was contended that where a sky sign fulfilled also a useful purpose the latter fact removed it from the Act. The solicitor replied that if set up "mainly" for use, though incidentally advertising something, it was not within the Act. Mr. Williams, an engineer, and constructor of the wheel in question, said that the amount of work done by it was seven sacks a day. Mr. Rose said the amount of work was important, and asked the average. The witness said he thought it was from seven to eleven sacks a day, besides working the hoist, driving a dynamo, and having also a pumping arrangement, though that was not used. Mr. Rose, in giving his decision, said that he was impressed with the importance of this case. He did not wish, however, to limit, by his decision, the usefulness of any invention or to restrict the use of the wind, and, under all circumstances, he had come to the conclusion that this erection was not a sky sign within the meaning of the Act, but mainly a windmill, though incidentally an advertisement. Judgment would be for the defendants, but he would grant a case for the High Court. Mr. Burton said he should be compelled to take a case, as the County Council attached the utmost importance to the matter.

Is a School Infirmary a "Public Building"?—Samuel J. Jerrard, builder, Lewisham, was summoned to the Lambeth police-court on the 10th inst. by Mr. Ellis Marsland, M.S.A., District Surveyor for Camberwell, for an infringement of the Metropolitan Building Act, 1855. The complainant said the proceedings were brought under Section 22 of the Metropolitan Building Act, and the question at issue was whether the building was a public one. The complainant received notice from the defendant for the erection of an infirmary in the grounds of Dulwich College. Complainant, after seeing the plans, came to the conclusion that it was a public building within the meaning of the Act, and found that a corridor, in connection with it and the college, and the stairs, were being constructed with wood, contrary to the Act, which required fireproof material. Mr. Biron said the whole question depended upon whether it was a public building or not. The complainant contended it came under the heading of "Hospitals," which was mentioned in the section of the Act. Mr. Biron said there was scarcely a large school which had not an infirmary attached to it, and that was for the exclusive use of the scholars; but such structures were in no sense "public buildings" or "hospitals" within the meaning of the Act. He thought the summons was misconceived, and dismissed it with £3 3s. costs against the district surveyor.

Arbitration as to Reigate Hill.—The War Office having determined to acquire, for military purposes, the summit of Reigate Hill, forming part of the Surrey estate of Viscount Oxenbridge, an inquiry has recently been held at the Surveyors' Institution, before Mr. A. Garrard, for the purpose of assessing the amount payable as compensation to his lordship. For the claimant Mr. E. H. Bousfield assessed the value of the land absolutely taken (about 14 acres) at £150 an acre, and estimated the consequential damage to the rest of the hill and adjacent properties (about 108 acres) at from £10 to £75 an acre, and in this he was supported by Mr. Vigers and Mr. Driver. For the War Office Mr. Elwell was retained as surveyor. The evidence of Mr. Daniel Watney was to the effect that the land taken was worth £100 an acre, plus timber, worth £334, and there would be no damage to the rest of the estate. In this he was supported by Mr. R. G. Clutton and Mr. Lees. The umpire, having heard counsel on both sides, reserved his award.

Duroline Roofing and the Building Acts.—At North London Police-court on the 3rd inst., Mr. Thomas Burton, solicitor, from the London County Council, asked Mr. Haden Corser to reinstate a case which had already been heard and dismissed. This was the summons by the London County Council against the Patent Duroline Roofing Company, Queen Victoria-street, for using material as roofing which was alleged not to be incombustible as required by the Metropolitan Building Act. This same material had been used on the roof of the Royal Aquarium, and had been several times before the Courts. The London County Council took the case to the Appeal Court, and the Judges ordered the case to be sent back to the magistrate for conviction. Mr. Corser said that now he was told by the Judges of the Queen's Bench that he was wrong he would be happy to tell the man to take the roofing off; but he would like to be shown where he had the authority to order a man to come up to be convicted when the summons against him had been heard and dismissed. He might order the man to come, and the latter might snap his fingers; and if an order for imprisonment was issued, there was nothing to prevent the man bringing an action for false imprisonment. The Judges had the power to finally decide such a case, but the magistrate could not reopen it. Mr. Burton said that, as the magistrate refused to reinstate the case, he must apply for a *mandamus*. Mr. Corser.—I should be glad to obey the Queen's Bench if I was protected, but I am not.

Builder v. Architect.—On Tuesday in the Queen's Bench Division, before Mr. Justice Denman and a common jury, George Lyford, a builder, of 266, Uxbridge-road, sued Thos. Hayward for money alleged to be due for work done. The defence was that the architect's certificates were obtained by fraud, and that the work was not done according to the contract. Plaintiff's case was that defendant carried on building operations chiefly by means of mortgages. In December, 1889, he wanted to build a warehouse at 67 and 69 City-road, the property of the Ecclesiastical Commissioners. He employed Mr. Hobden as architect, and plaintiff's tender was accepted at £1,873. The plans were submitted to the surveyor of the Ecclesiastical Commissioners; but they required the building to be a little shorter, and plaintiff's estimate was reduced to £1,750. Plaintiff alleged that the conditions of the contract were reduced accordingly, although the contract was signed in the original form. The defendant now alleged that the building had been made still shorter than approved by the Ecclesiastical Commissioners without his knowledge, and that the architect also knew this and gave false certificates. This architect, Hobden, however, had become security for £1,500 of the mortgage on the building. George Lyford gave evidence in support of his counsel's statement, and said £1,400 only had been paid him up to now. Cross-examined: He admitted several alterations from the original specifications, but said this was by instructions. He had paid Hobden £166 in 13 months. That included 2½ per cent. for taking out measurements. The commission was paid on the original amount of £1,873. He denied paying Hobden anything beyond his usual charges. Robert W. Hobden, of 14, Devonshire-street, Bishopsgate-street, said he had been an architect and surveyor for over twenty years. He was first instructed in the present matter by the defendant. He thought the work had been fairly done, although there were one or two slight discrepancies. Wherever the contract had been departed from, it was by the defendant's instructions. In cross-examination, he admitted the building was smaller than the plans as approved by the Ecclesiastical Commissioners, and that he did not inform the defendant Hayward of the fact.—Mr. Monson and Mr. Johnson, surveyors, and Mr. Richardson, a builder, gave evidence in favour of the style in which the work was done. At this stage of the case, at his lordship's suggestion, a consultation was held, and defendant consented to a verdict for the plaintiff for £530, with costs. This amount was arrived at through the plaintiff having done work outside the contract, and for which he also sued the defendant.

PARLIAMENTARY NOTES.

Architects' Registration Bill.—The second reading of this measure, which has been introduced by Mr. L. Atherley-Jones, Mr. Justin McCarthy, and Mr. Octavius V. Morgan, has been fixed for the 2nd of June.

Plumbers' Registration Bill. — The Select Committee of the House of Commons on the Plumbers' Registration Bill met on Friday, when Mr. Lees Knowles was appointed chairman. Petitions in favour of the Bill have been received from the United Operative Plumbers' Association of Great Britain and Ireland, the British Medical Association, the Sanitary Association of Scotland, and from Newcastle, Sheffield, Leeds, Liverpool, Sunderland, West Hartlepool, Aberdeen, and other towns. The first sitting was held on Monday. Mr. W. R. E. Coles, clerk to the Worshipful Company of Plumbers, said the present movement began when the British Medical Association, in 1878, expressed its opinion upon the unsanitary way in which plumbers' work was often done. The National Health Society took the matter up, and, in conjunction with the Society of Arts, instituted a system of lectures to plumbers combined with examinations. In 1884 the Plumbers' Company caused a series of investigations to be made, and ultimately convened a representative congress of the plumbers of London and the provinces in order to ascertain the condition of the plumbing trade and the possibility of the removal of the evils suffered by the public. The conclusions to which the congress came pointed to the necessity for the extension of the existing system of special instruction to plumbers. In order to encourage the plumbers, the company granted its freedom to those who passed qualifying examinations of the higher class. The Bill would provide for a system of examination being carried out in each locality. It had been estimated that one-third of the illnesses in the United Kingdom were attributable to defective plumbers' work. In one instance where inquiry had been made, it was found that out of 443 houses visited in connection with scarlet fever and kindred diseases, 334 were in an unsanitary condition owing to defective plumbing. Plumbers' work was a battle with sewer gas and polluted water, and more sickness and death were caused by sewer gas and bad water than by anything else. On Wednesday Mr. Thomas Anderton, president of the United Operative Plumbers' Association of Great Britain and Ireland, said the association numbered between 5,000 and 6,000 members. About twenty years ago a "down grade" movement in the plumbing trade commenced, and the men did not do their work as well. When the prosperity of the trade increased, about fifteen years ago, more men came into it who had no practical knowledge of it. Apprentices were then taken without any limit, and were expected to learn six or seven different trades. He thought better protection for the public would be secured by a system of registration by Act of Parliament than under a voluntary system. Mr. H. L. Smith, secretary of the National Association for the Promotion of Technical Education, said that association strongly advocated the present scheme.

The Metropolitan Water Supply.—The Royal Commission to inquire into the Metropolitan water supply consists of the following members:—Lord Balfour of Burleigh (chairman), Sir George Barclay Bruce, C.E., Professor James Dewar, F.R.S., Sir Archibald Geikie, Mr. George Henry Hill, C.E., Mr. James Mansergh, C.E., Dr. William Ogle. The reference was as follows:—"Whether, taking into consideration the growth of the population of the metropolis, and the districts within the limits of the Metropolitan Water Companies, and also the needs of the localities not supplied by any Metropolitan company, but within the watersheds of the Thames and the Lea, the present sources of supply of these companies are adequate in quantity and quality, and, if inadequate, whether such supply as may be required can be obtained within the watersheds referred to, having due regard to the claims of the districts outside the Metropolis, but within these watersheds, or will have to be obtained outside the watersheds of the Thames and the Lea."

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The Blackman Ventilating Co. (Limited), 63, Fore-street, London, E.C., who are now placing the Blackman-Smead system of warming and ventilating in the Norwich Castle Museum, Norwich, have been awarded the contract for ventilating and warming the new board school at Street, Somerset. They are also rearranging the drying in the large laundries at the Lancashire County Asylum, Whittingham, and in the Cheshire County Asylum, Upton. The Blackman system of natural air drying is being applied, and all steam-pipes and the ordinary "horses" are being displaced and removed.

Our Office Table.

Mr. G. A. T. Middleton, the active secretary of the S.A., is going to utilise the Easter holidays enjoyably and beneficially, by conducting a limited party of architectural tourists through a most interesting sketching district of Brittany. The cost of the trip, which will last a week, will be six-and-a-half guineas per head, including all fares and hotel charges. The party will leave Waterloo at 5.50 p.m. on Wednesday, April 13th, and will arrive at St. Malo the following morning. Dinan will be reached on Saturday, and Sunday will be spent at St. Brieuc, and the party will finish up at Dol on Wednesday, returning thence to St. Malo that day, and arriving home in London early on Thursday morning, April 20th. With favourable weather, there will probably be no lack of applications to bear Mr. Middleton pleasant company. Tickets must be ordered of him by April 1st, at 42, Bolingbroke-grove, Wandsworth-common, S.W.

The unexpected death of Mr. Edward Augustus Freeman, D.C.L., LL.D., the brilliant and erudite writer on Gothic architecture and English history, will be widely regretted. Mr. Freeman, who died of small-pox at Alicante, in Spain, on Wednesday morning, was in his 70th year. A scholar of Trinity College, Oxford, he has been widely known since 1884 as the Regius Professor of Modern History in that University. His first published work was the "History of Architecture," which appeared in 1849, and was followed in the following year by an "Essay on Window Tracery," and, in 1851, by "The Architecture of Llandaff Cathedral," all works displaying wide reading, much original research, and great analytical powers. "The History of Wells Cathedral" was a masterly criticism of the church and conventual buildings, and affords a clear historical record of its development. To Messrs. Longmans' series of "Historic Towns" he contributed, in 1887, a volume on "Exeter." His *magnum opus* is "The Norman Conquest," which was published between 1867 and 1876, but his articles, spread over some thirty years of the *Saturday Review*, describing in his picturesque style, with graphic touches, various Continental cities visited by him were no mere pot-boilers, but bore traces of equally painstaking accumulation of facts and skill in marshalling evidence. He occasionally joined excursions of the leading archæological societies, where his brusque manner and fierce contradictions were patiently borne with by brother *savants*, as it was recognised that Freeman's theories were always based on long study spread over a wide field. Although the possessor of the honorary degrees of D.C.L. from Oxford and of LL.D. from both Cambridge and Edinburgh, nothing annoyed him more than to be addressed as "Dr." Freeman. "Don't 'doctor' me," was the quick retort to such a salutation. He was an honorary Fellow of the R.I.B.A., and a corresponding member of numerous foreign academies and learned societies.

The latest suggestion of a site for Mr. Henry Tate's gallery of modern pictures is made by Sir E. F. Du Cane, who advocates the acquisition for the purpose of Milbank Prison. It occupies a space facing the river about 1,000ft. square, as large as the whole area between Cromwell-road and Imperial Institute-road, at South Kensington, and with a frontage to the Embankment and the river equal to that occupied by the Natural History Museum. While the conditions of air, light, and space are therefore good, the only question is as to the accessibility of the site, and Sir Edmund points out that it is midway between Vauxhall and Lambeth bridges, and within half a mile of the Houses of Parliament. He admits that some 500 yards of the only approach from Westminster is narrow, and bordered by shabby houses. We fear that Mr. Tate's offer must be regarded as definitely withdrawn.

The chief damage resulting from the mysterious explosion of picric acid at the Lobau barracks in Paris on Tuesday is the injury inflicted on the stained glass in the well-known church of St. Gervais. The windows in this church were formerly filled with some of the best glass of Cousin and Pinaigrier, and though it had suffered much, it was still the finest in Paris. Perhaps the best glass is that in the second chapel on the south side of the choir, executed in 1531, and representing the "Judgement of Solomon." In the Lady-chapel are fragments of Pinaigrier's work, and some modern glass from the works at Choisy-le-Roi.

Sir Albert Rollit's Bill to amend the Public Health Acts has been introduced at the instance of the Municipal Corporations Association. It deals with private street improvements.

The annual meeting of the Phœnix Philanthropic Society of House Painters, the oldest benefit society of painters, was held on Saturday last at the society house, 28, London-street, Fitzroy-square. First established in 1823 under the title of "The Chapter of Communication," this society has had an interesting history. It has paid over £20,000 in sick and funeral benefits. Some years ago it was threatened with failure, from a too liberal scale of benefits. For the usual weekly subscription it endeavoured to assure to its members, not only the customary sick benefits, but a superannuation pension more than double that proposed by Mr. Chamberlain's scheme. In ten years £2,500 was paid as superannuation pensions. A reconstruction of the rules placed the society on a sounder financial basis, and the balance-sheet for the past year shows that, for the sixth time in succession, a satisfactory increase has been made in the capital of the society, and that it now amounts to £6 10s. per member. The society is not a trade union, all the funds being applied only for relief of sickness and the assurance of a small sum at death. There is, however, a separate winter fund for relief of members out of employment. None but duly-qualified painters can become members, and for many years it has numbered among its members most of the foremen and leading workmen of the first West-end firms.

A long, acrimonious, and occasionally desultory, discussion took place at the meeting of the London School Board yesterday (Thursday) afternoon, as to the question whether the Government should be asked to appoint a Select Committee or Royal Commission, with power to call for the necessary papers and persons, to investigate upon oath the methods by which sites have been acquired, and schools erected by this Board. Sir Cameron Gull moved a resolution to this effect, the matter arising out of a letter from Mr. E. R. Robson, F.S.A., late architect to the board, calling attention to the attacks on the board made in the House of Commons by Mr. Dixon Hartland last week, and offering every information and assistance in his power. An amendment, moved by Mr. Laing, offering to give the Government every facility for the conduct of an inquiry, either by committee or commission, as they are prepared to institute, was lost by 25 votes to 23. An amendment was then proposed by Sir R. Temple, M.P., stating that while the board is willing to facilitate any inquiry, should the Government direct the same on its own responsibility, the board does not consider any further inquiry into cases already dealt with necessary. This was carried by a bare majority, the numbers being 24 to 23.

MEETINGS FOR THE ENSUING WEEK.

Monday.—Royal Institute of British Architects. "Byzantine Art," by Professor Geo. Aitchison, A.R.A. 8 p.m.
Liverpool Architectural Society. Paper by Henry Hartley, F.R.I.B.A.
Tuesday.—Society of Architects. "The Practice of an Architect and Surveyor," by Ernest Day, J.P., F.R.I.B.A., M.S.A. St. James's Hall, Piccadilly. 8 p.m.
Institution of Civil Engineers. "Fluctuations of Average Annual Rainfall," by A. R. Binnie.
Wednesday. — Society of Arts "Manufacture and Industrial Application of Indiarubber Tubing," by Gilbert R. Redgrave. 8 p.m.
Thursday.—Society of Arts. "The Opium Question," by G. H. M. Batten. 4.30 p m.
Friday.—A. A. Lyric Club. Concert.
Royal Institution. "Posy Rings," by Dr. John Evans. 9 p.m.

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A fine collection of valuable paintings has been lent by the Earl of Dudley, and will be on view at the Fine Art Gallery, Peckham-road, Camberwell, on Sunday and following days.

The Bethesda slate quarrymen have been granted an increase of 5 per cent. in their wages.

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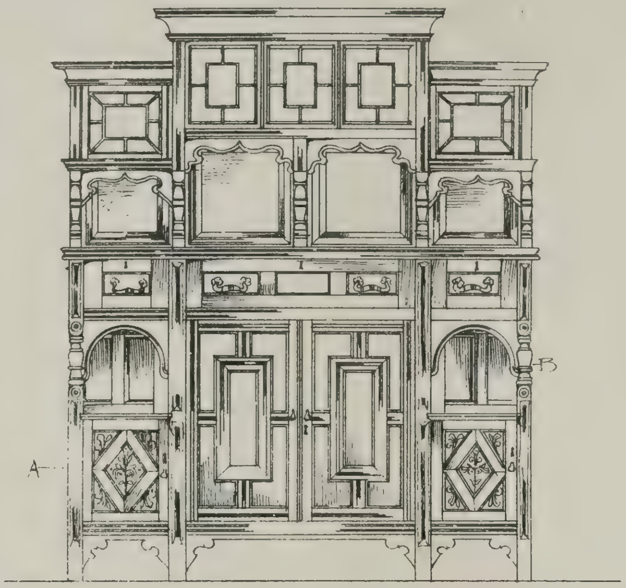
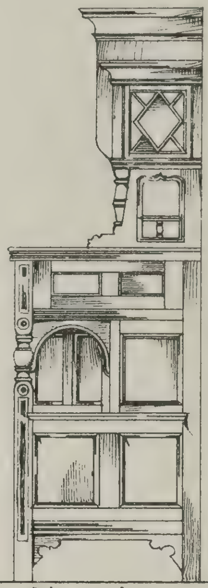
"BUILDING NEWS" DESIGNING CLUB:

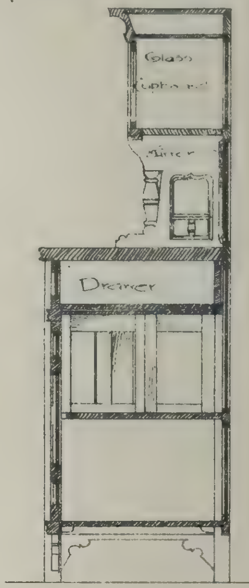
An Architect's Chiffonier and Chair: by "Nil Nisi Bonum":



Front Elevation



Side Elevation



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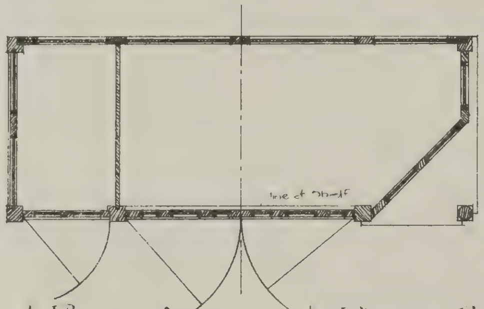

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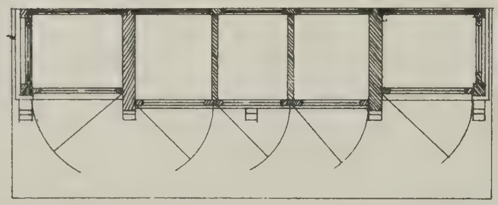

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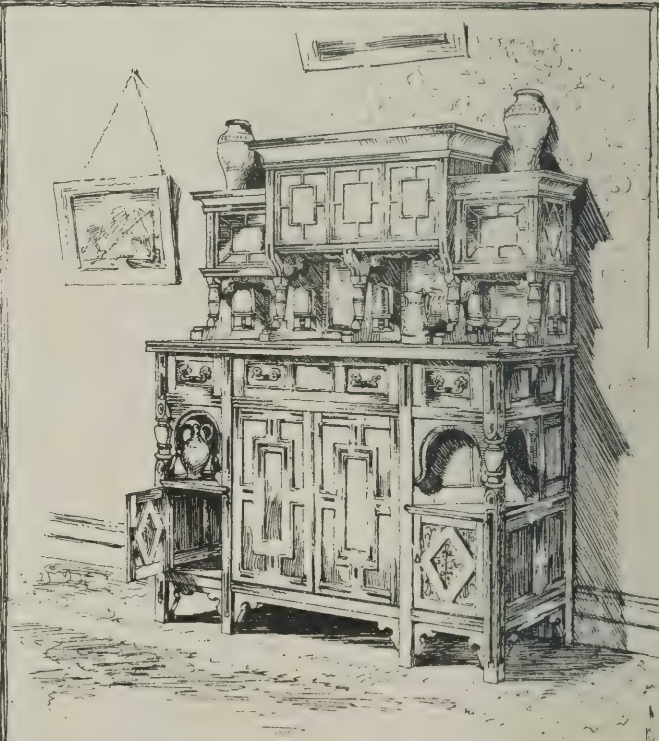
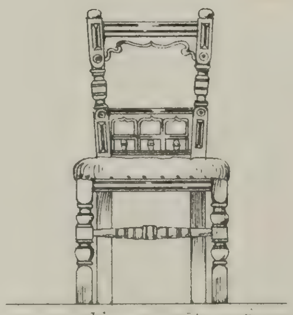
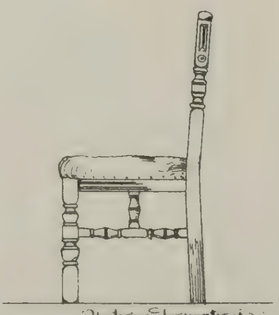


Perspective Sketch:

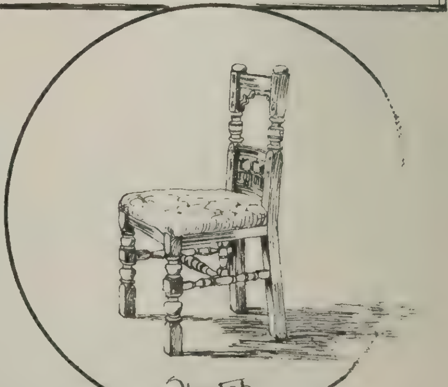
The Chair:



Front Elevation



Side Elevation



Sketch:

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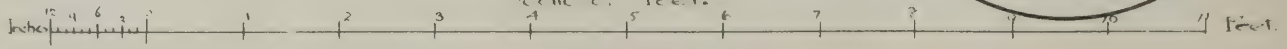

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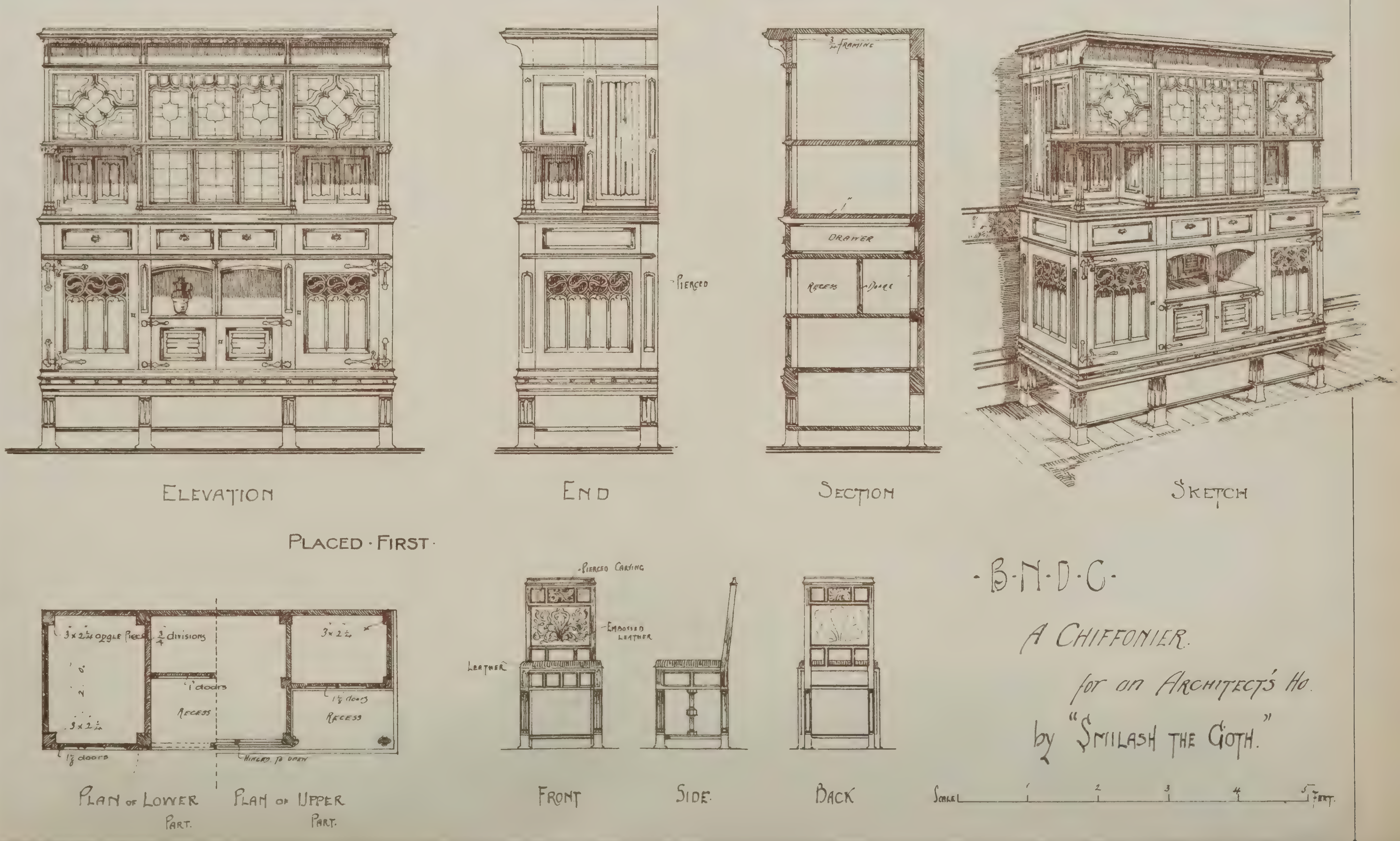
THE BUILDING NEWS, MAR. 18, 1892.



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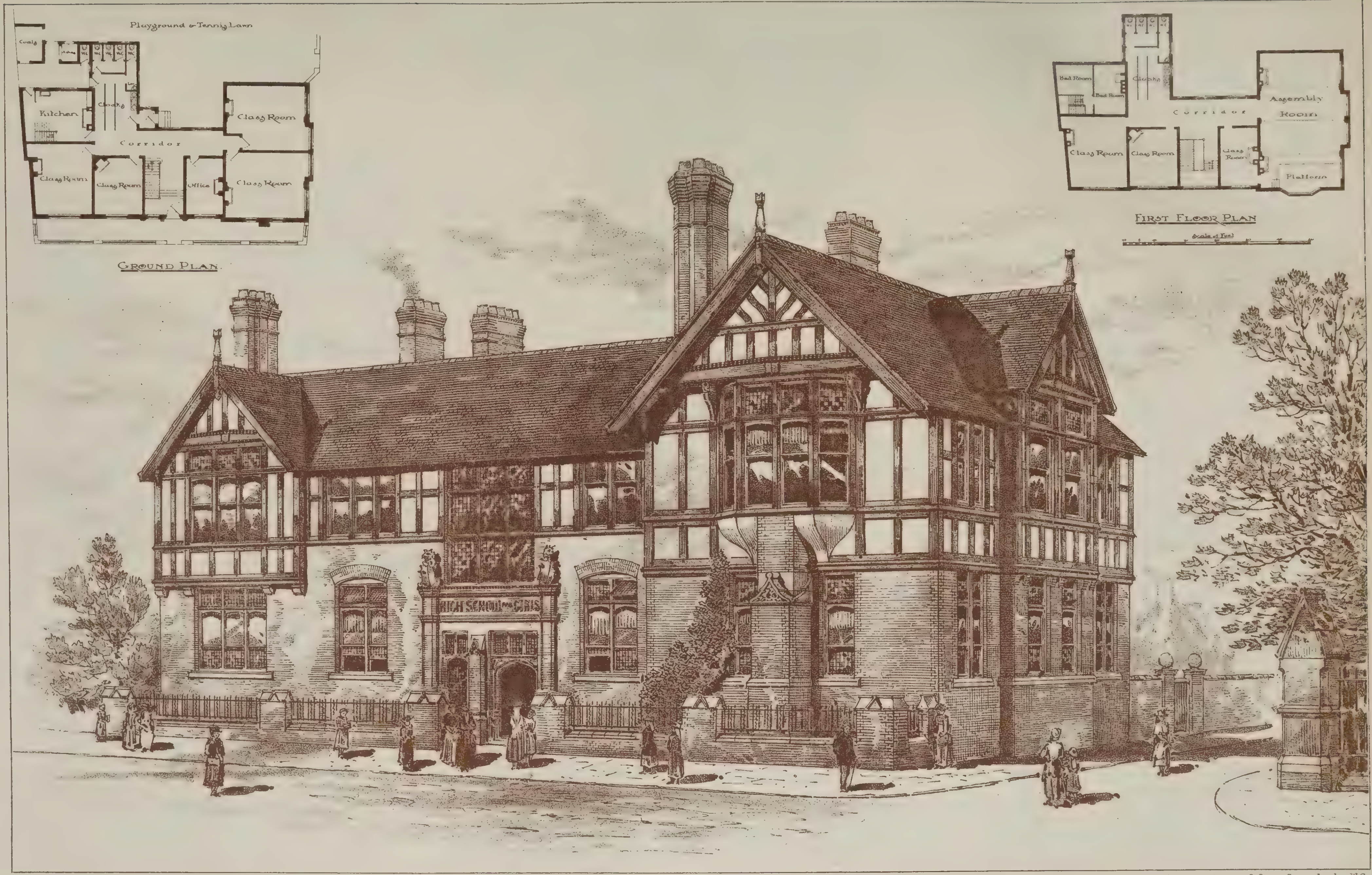

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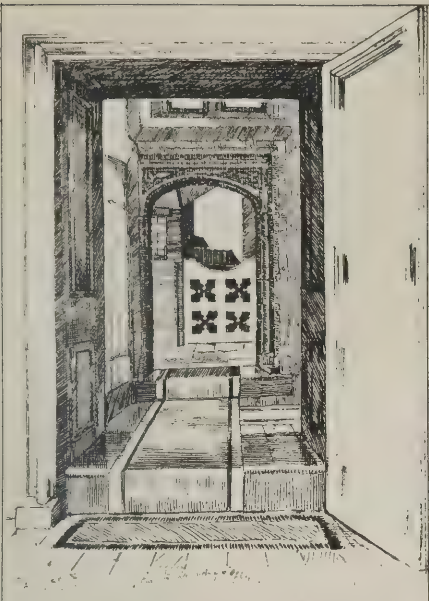
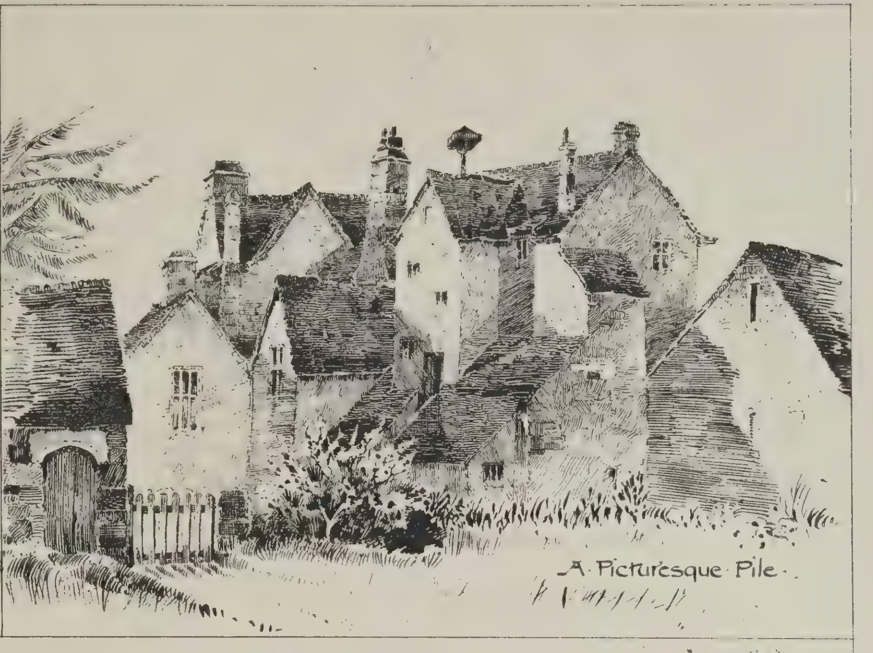
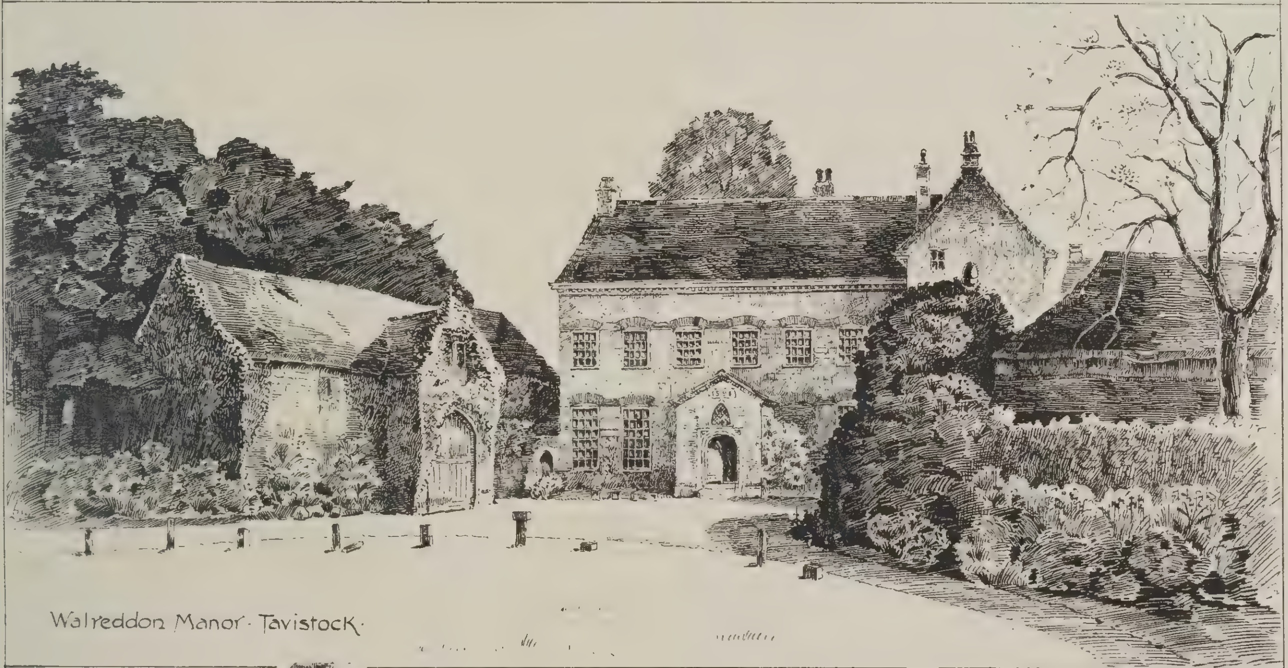
HIGH·SCHOOL·FOR·GIRLS·BOLTON· MESSRS BRADSHAW·AND·GASS·ARCHTS



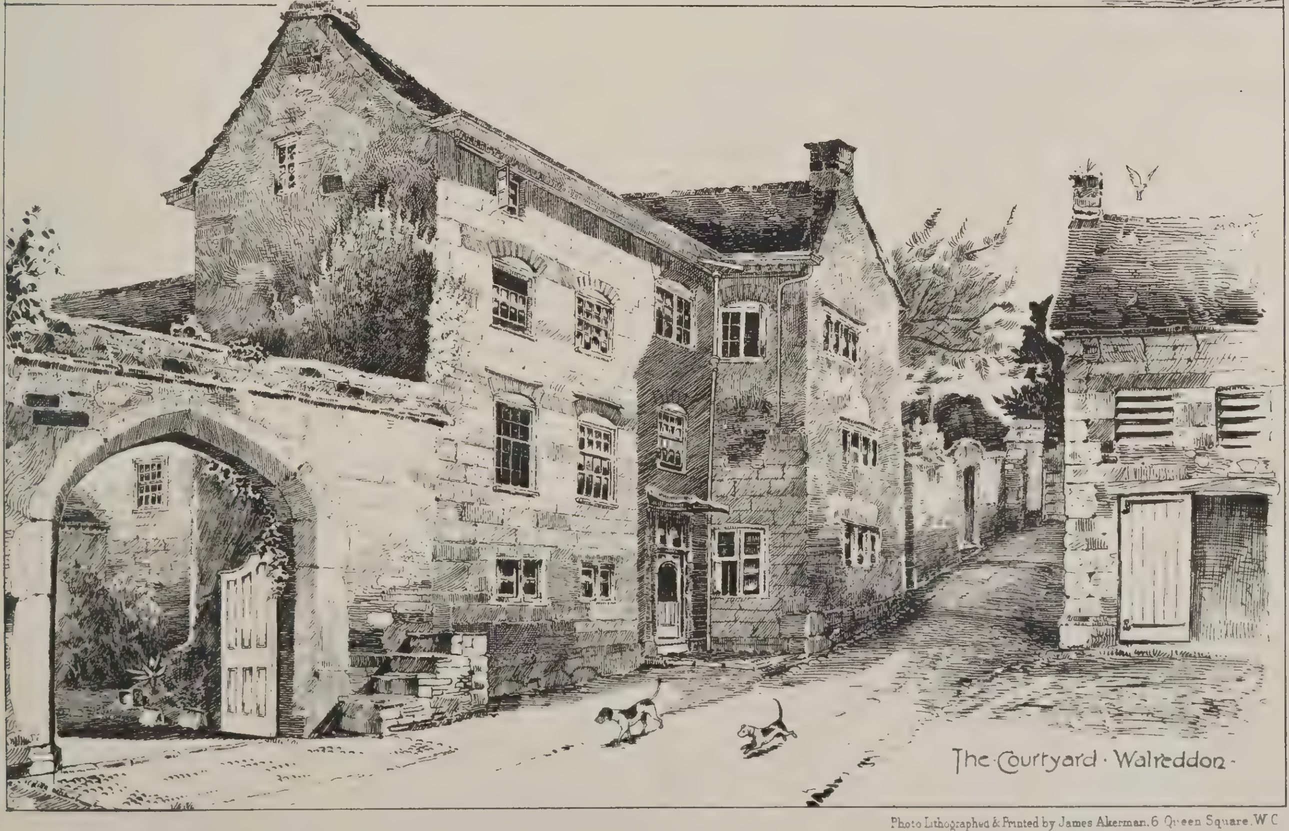
Passage & Archway from Dining Rm



A Picturesque Pile.



Walreddon Manor, Tavistock.



The Courtyard, Walreddon.

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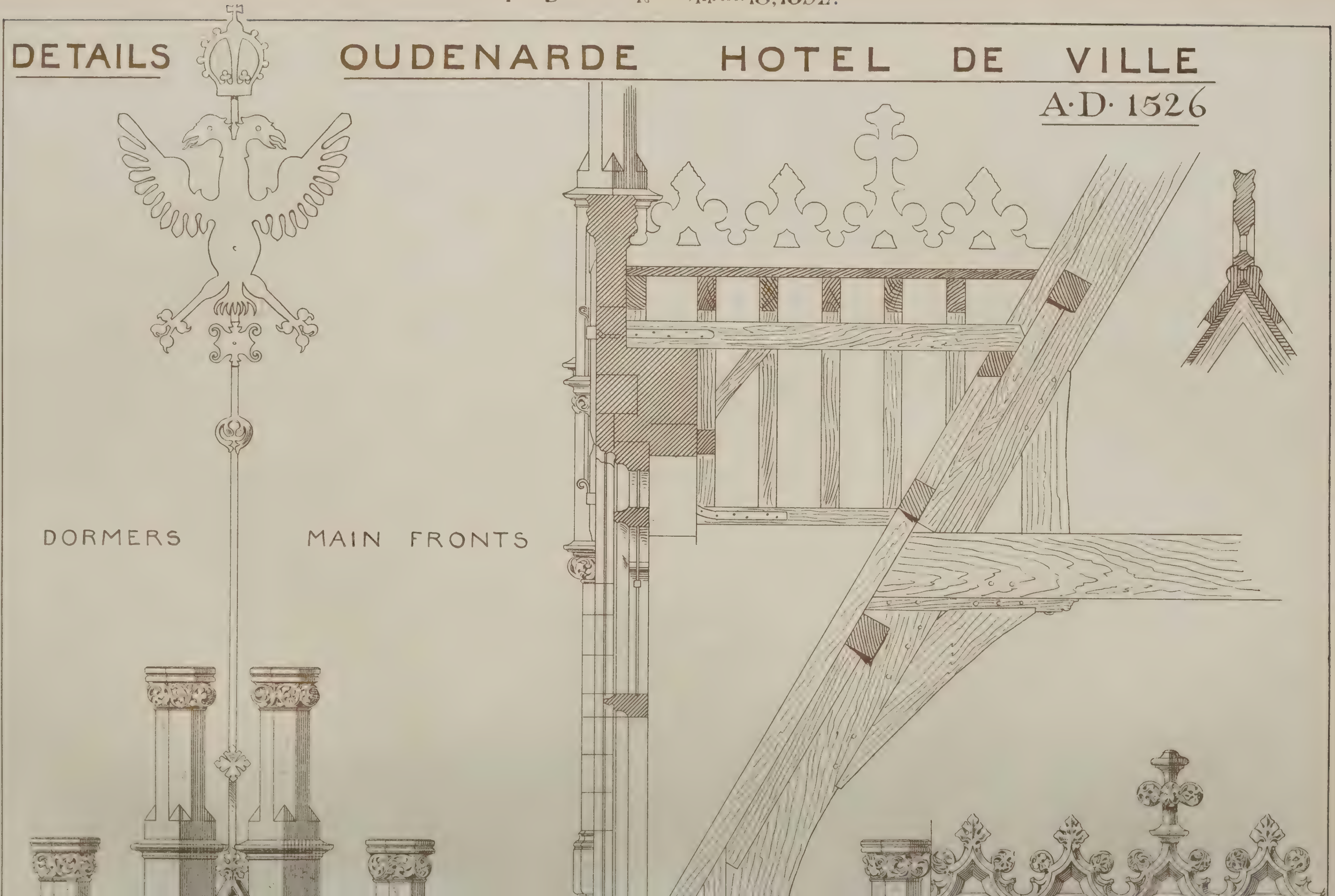
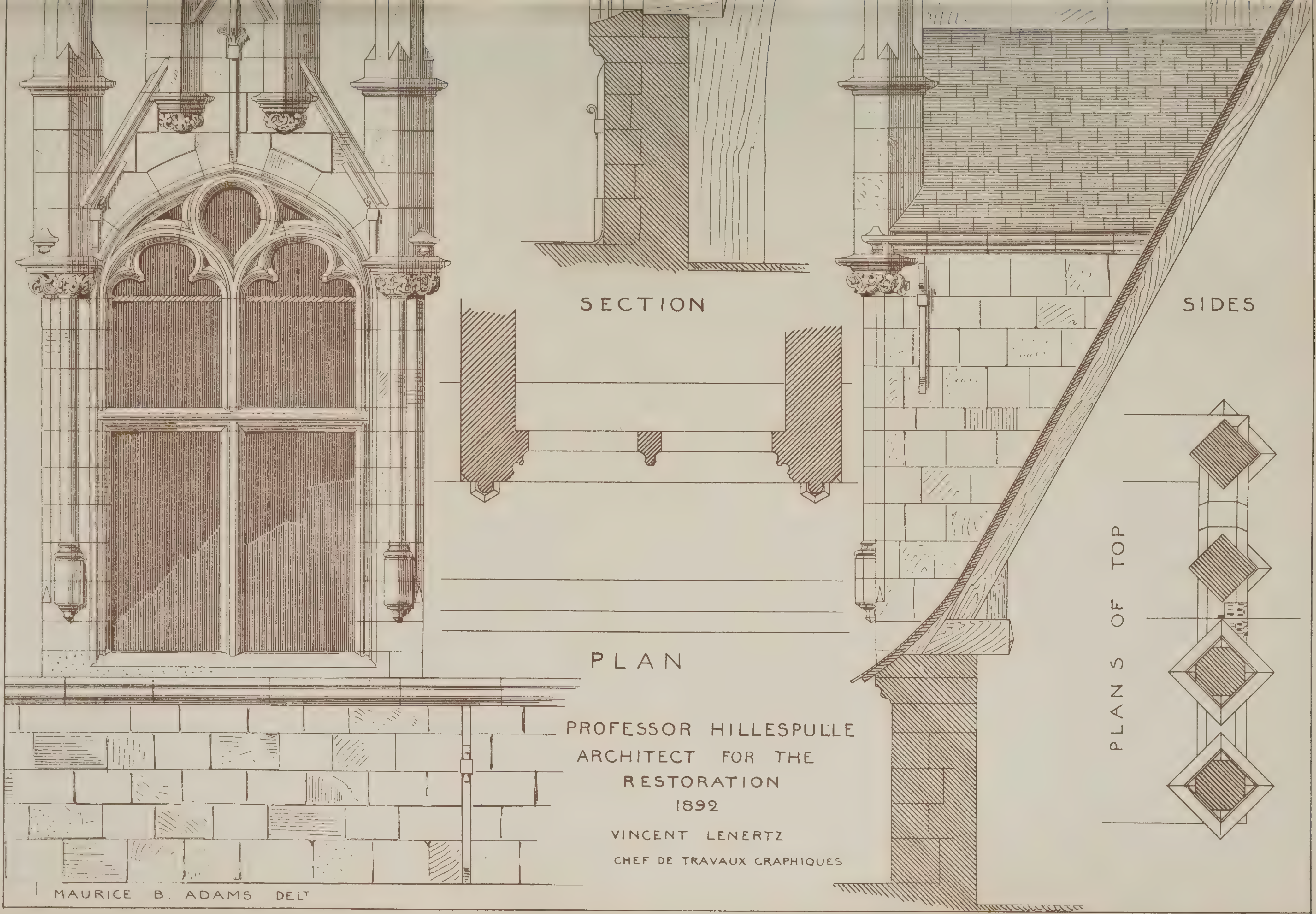
WALREDDON MANOR, TAVISTOCK. SKETCHES BY J. NICHOLSON JOHNSTON, A.R.I.B.A.

DETAILS OUDENARDE HOTEL DE VILLE

A·D· 1526





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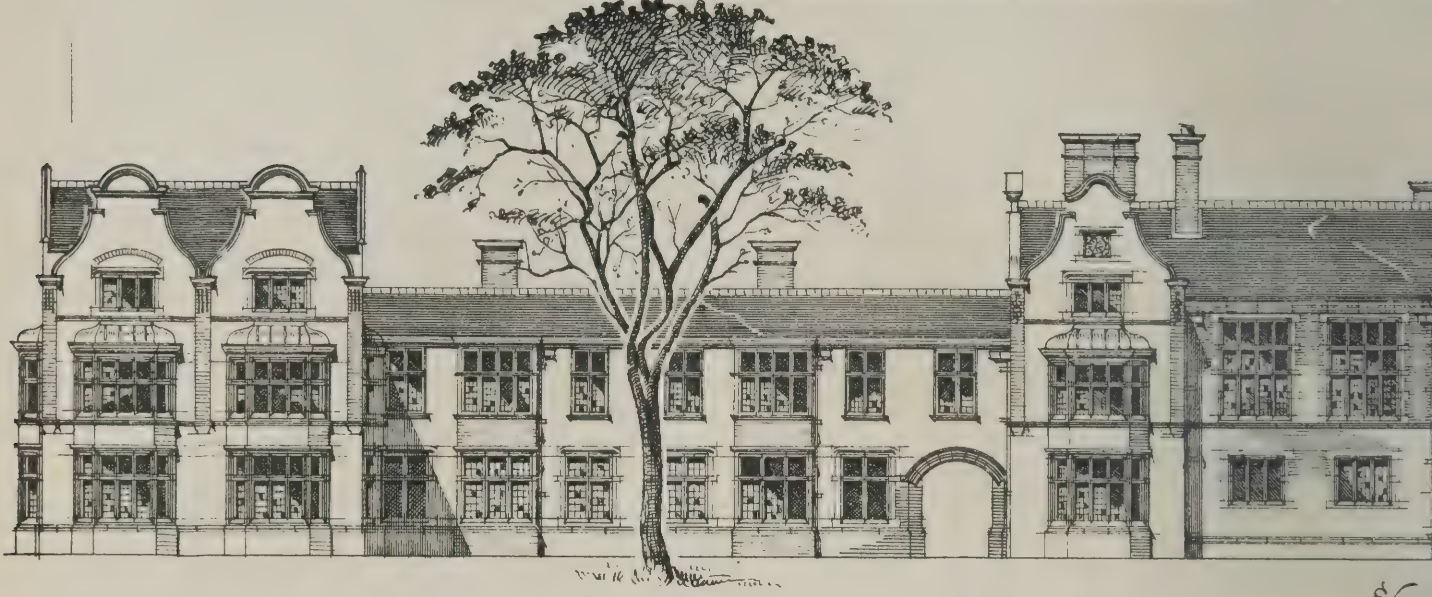

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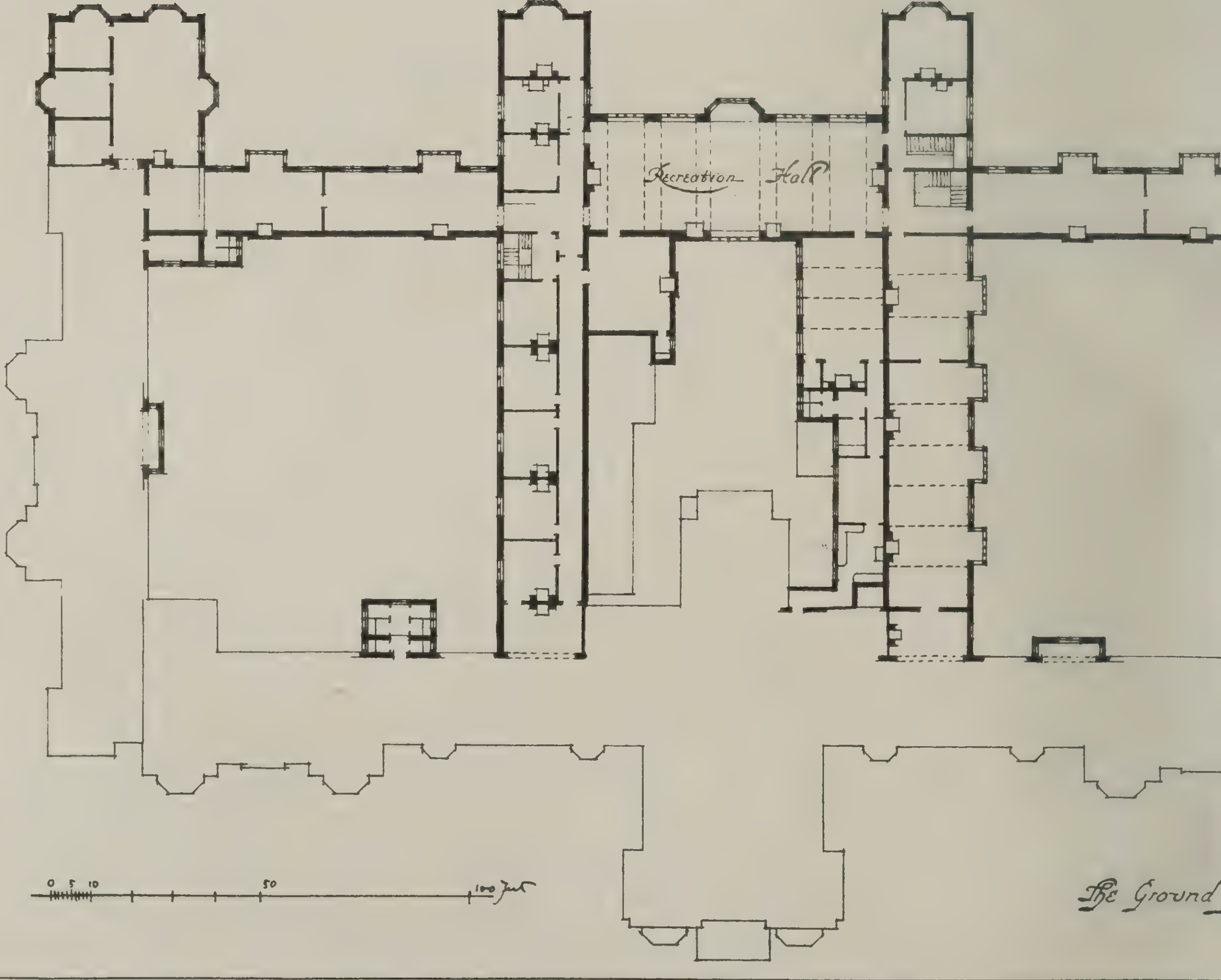
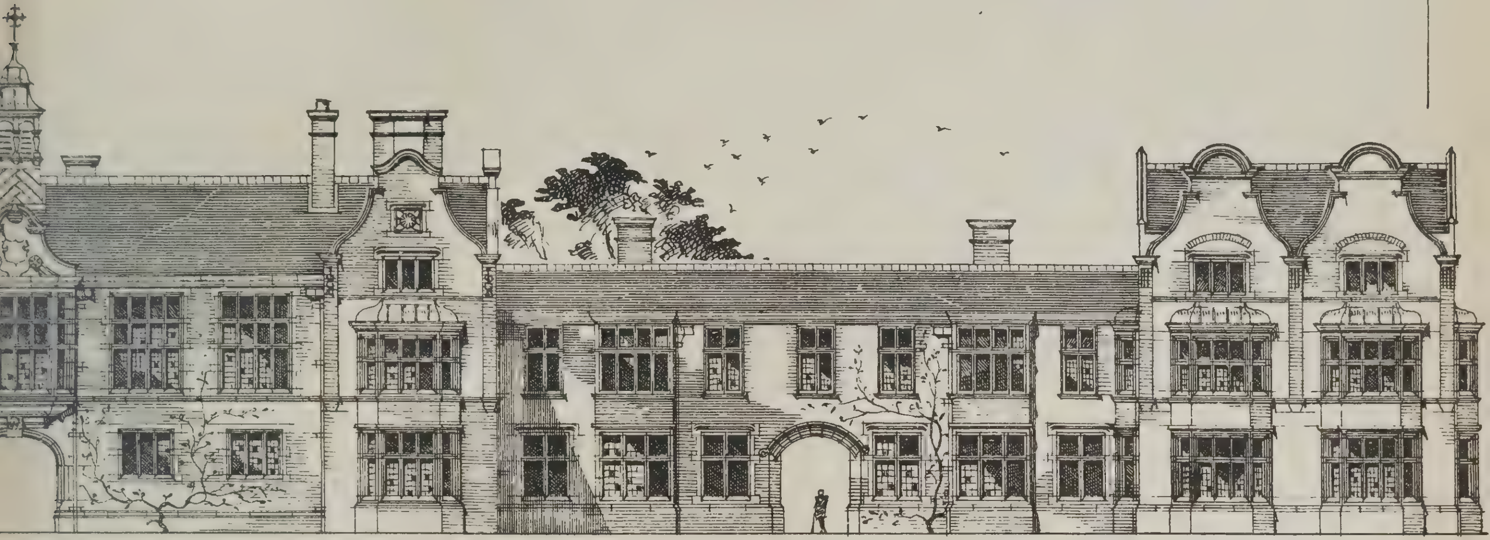


The Ground



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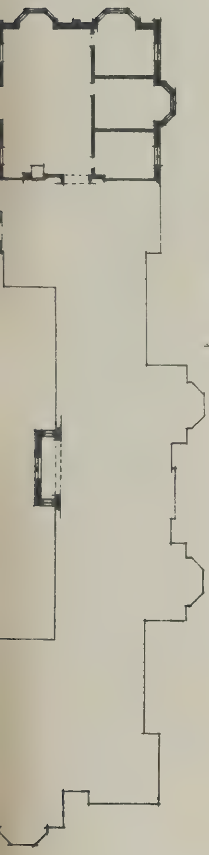
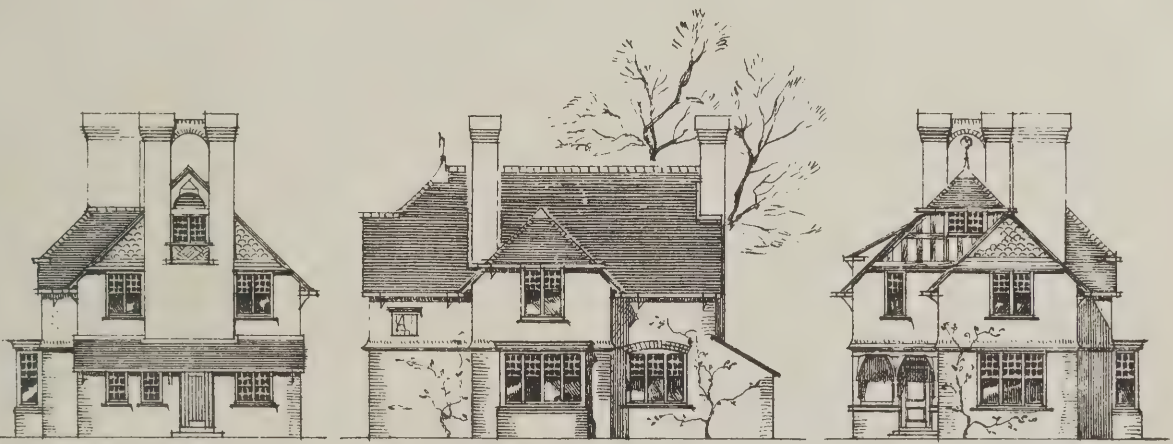
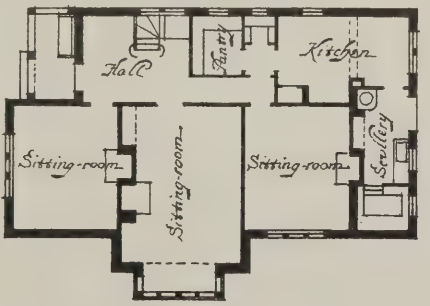


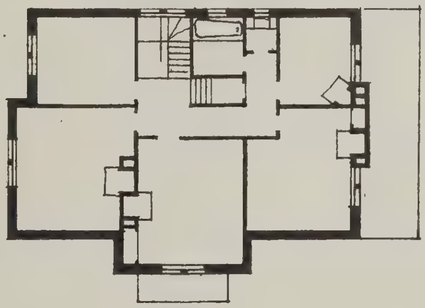


Elevations

Ground floor plan



first floor plan



One of the Cottages for seperate Patients.

r plan.

10 0 50 Feet

Bell and Roper Architects:

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THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXII.—No. 1942.

FRIDAY, MARCH 25, 1892.

ARCHITECTS AND THE MODERN WORLD.

THERE is some reason to suppose that the word "architect" originally meant a man who produced architecture. Such men, fortunately, there still are; and fortunately, too, they are not quite as rare as they were five-and-twenty years ago. Yet even now they are in a lamentably small minority; and although we were to add to their names those of all the aspirants who are earnestly trying to produce something architectural, they would still be hopelessly outnumbered. There would be no more complaints of overcrowding in the profession, were it possible to shut out from it all except the two classes just described. That, of course, is out of the question. There are hundreds of men, possessed of valuable knowledge and business ability, who, though they are known to the world as architects, never did and never will create anything artistic. Their proper work is useful, and sometimes indispensable, but they do it under a wrong name. It may be law, or valuation, or building surveying; it may be estate management, or sanitation, or the survey of dilapidations; they may be authorities on repairs, on ancient lights, on drains and sewers, on freeholds and leaseholds, on Building Acts and Health Acts, or on a multitude of other subjects; but they are not architects. And the misfortune is, that in consequence of their being erroneously called so, a great deal of architectural work, which they are by nature unfitted to deal with, finds its way into their hands.

Some day, perhaps, these gentlemen, who deserve nothing but respect as long as they only undertake what they are competent to do, will constitute a profession, or professions, of their own. In the mean time, and for the present purpose, we may leave them out of sight, and turn to men who have a greater or less capacity for producing architecture. How are our architects dealing with the problems of the day? In many different ways. First of all we have a group—and a group containing names of high and honourably-gained reputation — which does not want to deal with them at all. It would prefer—and it is easy enough to feel some sympathy with its preference—to get away from the modern world altogether. By choice it deals with purposes which are not modern. It will give us, for instance, a beautiful 13th-century or 15th-century cathedral, so beautiful, perhaps, that we accept its beauty as its sufficient justification, and do not ask why it is not useful also. Or, if it is forced to provide for wants which are still growing and changing, it keeps half of them entirely out of sight, and clothes the other half in ancient forms. If there are better ways of working than this, there are also worse ones. A London suburb of the superior sort may almost be defined just now as a collection of old houses newly sprung up. If the treatment is artistic—and it often is—people do not disquiet themselves by reflecting that these antiquities only date from the last year, and not from the last century or the century before. The danger comes in when the artistic element goes out. If the architect is tempted, as very clever architects have been before now, to rest satisfied with producing a look of age, and with that alone, he is getting perilously near the dividing line between art and forgery. An able man should use his ability in better things than the manufacture of sham antiques.

So long as an architect puts his own best thoughts into his work; so long as he shapes and moulds its details into an artistic whole, that whole is not to be condemned even if the details are out of date. The world is the richer for it, and the author has given us something, though not everything. But there is a tendency to be satisfied with less than this. Here and there we may note, especially of late, buildings which have no beauty of form, no interest of detail, but which are tolerated and even praised because they recall, perhaps, some fourth-rate work of Wren or his successors. This is simply worshipping antiquity for antiquity's sake. Wren was a great man, and a great modern man. So modern were his ideas on some matters, and especially on church-planning, that the world is far from having caught up with them even yet. Here was his strength, and strength is hard to imitate. His weakness was in the poverty of the style he adopted, especially in his plainer and cheaper buildings. These are not often beautiful or admirable, though, especially in points of arrangement, they are lighted up by flashes of genius here and there. But they have become venerable by age. We associate them with "Pepys's Diary," and Addison's *Spectator*, and all the other products of a time which seems calm and restful to us because it is so far away, and which would seem turbulent and wearisome if we could only get back to it, as happily we cannot. Then comes somebody who probably cannot appreciate, and certainly cannot imitate, the points in which Wren was strong. What he can and does do is to copy the points in which Wren was weak, or which, as we may infer from his writings, he occasionally left to be settled by inferior people. When his detail was poor, it was very poor indeed, but it is recognisable, however inferior, as 17th or Early 18th-century work. Anybody can repeat it, anybody can produce a momentary illusion of age by repeating it, and to do this is enough, for the time being, to build up for the imitator a transient reputation.

There are other architects, again, who, while they adopt Mediæval or post-Mediæval styles, do not strain after antiquity of appearance. They seek to do modern work, though they use ancient types of detail. Their problem is a difficult one, but their attempts at a solution are interesting. They see that the old builders, whether of the 12th and 13th, or of the now more fashionable 15th and 16th centuries, fairly faced the difficulties that met them. If a new want sprang up, it was provided for in new ways; if an old want ceased to exist, it was provided for no longer. It does not follow that they altered their style; but they altered their ways of using the style, and the architects of this second group try to follow them in that respect. Mr. Street, for instance, in the middle part of his career made a good many innovations in this spirit on established modes of church-planning; and the same may perhaps be said also of Mr. Sedding. So far they tried to do what a 13th or 15th century architect would have done had he been called upon to fulfil the requirements of the present day; and they managed to bind the new ideas and the old ones together by a certain unity of artistic feeling.

It is in this last point that men less artistic or less in earnest are likely to fail. As long as they can keep close to ancient models they do fairly well; but when they are called upon to make new forms architectural, their powers disappear. A notable instance of this has recently presented itself in the case of a large Nonconformist Church on the South Coast. The building is distinguished externally by a large and cleverly-designed tower and spire, the tower square below, and changing into an octagon above, with pinnacles and flying buttresses. This, though not above criticism in all its detail, is a really effective and beautiful feature. The church it is attached to is also, on the exterior, quite up to, or rather above, the average of similar structures. But on passing in, the shock is terrible. Not only is there an ill-proportioned nave and a dark and unpleasantly-shaped chancel, but there are wooden galleries of the poorest "Carpenters' Gothic" type of 40 years ago, with fretwork fronts suggestive of Curtain-road cabinet-making; heavily-stained wooden ceilings of paltry-looking sham groining, and much other joinery of a similar order. Mixed up with all this, and making it look worse by contrast, are stone piers and arches of fair character. What the whole thing suggests is this: that where the designer could follow old examples pretty closely, as, for instance, in the tower, he has followed them with ability and success; but where, as in the case of the wide nave and the galleries, he had to deal with new ideas, and to rely more on his own invention, he has altogether failed. So, either for want of power or for want of effort, it very often happens.

To put new wine into old bottles is proverbially risky, and the new wine of the future will sooner or later prove the need for new bottles to hold it. In fact, the need is already being felt, and something is already being done to supply it. Our latest public buildings, such as the Imperial Institute and the Birmingham Law Courts, contain much in style, as well as in design, that is fresh and new. Further progress is likely to be in the same direction. When a few architects have the courage and the opportunity to prove that they can invent, others are sure to do likewise. In the mean time, outsiders ask, "What style is this?" and think it strange that they do not get an answer; for it has not yet dawned on the British public that styles have no names till they are dead.

BUILDING REFORMS.

THE newly-elected London County Council will find plenty of useful work to do if they pursue the course of action commenced by their predecessors in making more effectual and operative the administrative machinery of which they have the control. Several very important Bills have been promoted. The General Powers Act, 1890, is one of the most momentous in its varied objects and consequences. The consolidation of the various Acts relating to public health in the Metropolis, which has received so much attention, has come at last into operation, and we have now to look forward to the Bill which is to consolidate the Metropolitan Building Acts. The Council are, to a large extent, responsible for the efficient administration of these Acts, and to see that vestries and district boards do their duty. A doubt has been expressed whether the provisions of the Public Health (London) Act will be faithfully carried into effect, seeing that local authorities have vested interests in the existing state of things. But the power vested in the County Council enables them to institute any proceeding, or do any act which the authority has failed to do, and to recover from such local authority all expenses, and those powers are expressly given in sections 100 and 101 of the Act. We have called attention to the very unsanitary condition of many houses, their want of proper conveniences for habitation, of proper water fittings and receptacles. We may imagine such a state of matters to exist in premises belonging to members of a sanitary authority, and the obvious unpleasantness there would be in enforcing the by-laws of the Act against such owners, or even in giving information in respect of nuisances liable to be dealt with summarily. With respect to factories and workshops, the Act gives power to see that they are provided with sufficient sanitary conveniences, that they are properly ventilated and not overcrowded—even those which are not subject to the provisions of the Factory and Workshop Act. The abatement of smoke is made one of the requirements, and "any fireplace or furnace which does not, as far as practicable, consume the smoke arising from the combustibles used therein," is liable to summary proceedings.

How many thousands of underground rooms are occupied as dwellings in London without proper regulations? The new provisions in force must in their due operation close a very large percentage of these, or entail their reconstruction. The requirements as to height, which is to be 7ft. at the least, with 3ft. of that height above the surface of the street in certain cases, the provisions as to damp-course, drainage and ventilation, and conveniences, are imperative in all rooms not let or occupied separately before the passing of the Act; and they are to extend to all such rooms let or occupied separately as dwellings at the expiration of six months after the commencement of the Act's operation. The law will thus, after the 1st July next, entail a very extensive reconstruction, also the closing of numerous underground dwellings for separate habitation. The inmates will have to be housed elsewhere, and it will be for the sanitary authorities in the Metropolis to make preparations for these changes.

Not only in these matters of sanitary construction have the London County Council to assume an authority and to set their seal upon their period of office. In architectural questions and in building progress, what London does will be followed by other towns. The greatest work which the Council have had to deal with is the revision and consolidation of the Building Acts. One useful clause is that by which plans and particulars of buildings approved are to be countersigned by the chairman of the Building Act Committee, or by any other person to be appointed for that purpose by the Council. Great facility of business is likely to be effected by this provision. Equally important is the section which gives the Council power, in certain cases, subject to certain safeguards against the danger from fire, to permit buildings or warehouses of greater capacity than 216,000 cubic feet, but not exceeding 450,000 cubic feet without division by party-walls; but such consent is not to be given in the case of buildings exceeding 60ft., and is to continue in force only while such building is used for the purpose intended. Again, while the old Board made regulations with regard to the mortar to be used in the construction of walls, there was no regulation as to the substances of which plastering was made. Hence sect. 31 gives the Council power to make bylaws as to this matter, and also to prevent excavations near buildings being filled up with insanitary refuse.

The question as to the limiting height of buildings, enacted by section 36 of the General Powers Bill, and the proposed method of regulating the open spaces at the rear of dwelling-houses by an oblique line at an angle of 45°, to which we have referred, are subjects of considerable importance to the future of London. We have no doubt efforts will be made by many property-owners to obtain a relaxation of these rules, and considerable firmness will be necessary in requiring compliance with them. From an architectural point of view, a limit of height is as absolutely necessary as it is in diminishing the risks of fire. Lofty architectural façades in streets less in width than the elevation of the buildings are wasted; nobody can see them or examine their features without straining their neck, and any attempt at detail or skyline is thrown away. In fact, it is impossible to obtain a perspective that is worth anything except a very rapid foreshortening coming up or down the street. The City streets and lanes present many instances of this. We cannot comprehend any opposition to sect. 36 coming from architects who have a personal interest in securing desirable views. The question of light and air as it affects reconstructed areas calls for much consideration. We have drawn attention to the number of street widenings, which, by cutting through old back areas, have rendered it extremely difficult to let the new frontages for buildings of any height.

A very comprehensive series of regulations has lately been issued by the Theatres and Music Hall Committee, which will have the effect of rendering alterations to places of public resort essential. The old powers of the Act of 1878 were only remedial and partial. Ill-constructed buildings were allowed to do service if certain things were done—such as provisions for exit. Many Bills have been prepared and failed. The Bill of last year was promoted to give power to enforce structural alterations, and to prevent unscrupulous owners giving public entertainments in buildings without a license. The objects are to codify the existing law, to bring theatres and music halls alike under the same law, and to give power to the Council to insist that buildings used for entertainments shall be structurally fit for the purpose. The proposed regulations will make it necessary for any person who wishes to open any premises for entertainments of a public kind to accompany his application by plans showing position of premises in relation to the public thoroughfares, and the number and width of doorways, staircases, and corridors, and the area to be assigned to each person. When we consider that no building can be so used which has not two of its fronts open to public thoroughfares of certain width, and that every new building must be distant at least 20ft. from any adjacent windows; that it must have a number of dressing-rooms in a separate block or divided by party-walls; that these rooms must be fire-resisting in their materials, and have an independent exit; that there are certain regulations as to the height of tiers and entrances to each, and even as to staircases, corridors, and lobbies, certain widths being specified for doorways, in addition to modes of hanging and fixtures, we shall see how hopeless it will be for promoters of entertainments in the future to turn old buildings into such places, and how exacting are the conditions imposed on every architect who has to design a theatre or music hall. It will need some courage and firmness to carry out these reforms, so that they shall not give advocates of the existing laws a plea for opposition. From what we see and hear many of the district surveyors are no parties to these changes. Probably there is a little natural selfishness in objecting to a new code, for it will mean not only unlearning a good deal, but a good deal of hard application to become a master of the new statute-book. Architects in the Metropolis will not at first kindly take to a new statute law; it must to some extent diminish building, or at all events reduce the amount of needless building in the Metropolis. Amendment and codification are both urgently required; but by-laws may become obstructive to architecture if too strictly and unintelligibly enforced, or, on the other hand, will be unfair or tyrannical in operation if administered with too much of the discretionary spirit.

BYZANTINE ARCHITECTURE.

An ordinary meeting of the Royal Institute of British Architects was held on Monday evening. The President, Mr. J. MacVicar Anderson, in opening the proceedings, referred with regret to the recent death of Professor E. A. Freeman, hon. associate. Professor Geo. Aitchison, A.R.A., then read a paper entitled "Byzantine Architecture," illustrated by numerous photographs and drawings. In this architecture was, he remarked, to be seen the gradual adaptation of the plans of antique buildings to the ritual of a new faith; the universal adoption of the dome; the successive devices by which the equilibrium of the dome was at last attained; and the new æsthetic problems solved. In studying Byzantine architecture, two difficulties were encountered: the date of its beginning and its chronological sequence. He had taken the dedication of Constantinople (330 A.D.) as the first, although the buildings erected then were of Roman architecture, and probably designed by Roman architects. As to the sequence in date of Byzantine buildings, little could be traced from Constantine's death to the days of Justinian, because the study of Byzantine architecture had been neglected. From a description, by Eusebius of Cæsarea, of an Early Christian church it would be seen that the churches originally faced east, and the priest faced the congregation; but in the 5th century the orientation was reversed. The pure basilica type, in the form of a circus, did not find favour except in Italy and the West. When domes on pendentives were first used was not known; M. Dieulafoy and others had discovered that the ancient Persians used egg-shaped domes over square chambers, carried by a pendentive pierced by a squinch; and M. Choisy was of opinion that those found at Serbistan Firouzabad and Ferachbad were of about 800 B.C. A pendentive, not quite regular in form, was found at Caracalla's Baths (A.D. 211). It was generally agreed, however, that the first great dome on four pendentives was that of the great Sta. Sophia; and next to Sta. Sophia, the most important building was the church of the Apostles at Constantinople, eventually destroyed by Mohammed II. for his mosque, but said to have served as the model for St. Mark's, at Venice, and St. Front at Périgueux. The earlier buildings of Central Syria seemed to have had considerable influence on Byzantine architecture. After the building of the great Sta. Sophia the constructive problem to be solved was making domes on pendentives safe. The original dome of Sta. Sophia had fallen twice, and though rebuilt with a higher rise, was not absolutely secure. The weakness of the abutments to the dome and pendentives was mainly on the north and south sides. No other big dome was to be found in Byzantine work; in minor and later examples barrel-vaults took the place of the arches. The church to the Virgin at Salonica, called by Texier and R. P. Pullan St. Bardias, has been looked on as an early specimen of a dome on a drum, but the date of its dedication was 1028 A.D., and its arrangement also pointed to a later date. A similar arrangement of five domes was found at St. Nicholas at Myra. In Greece the squinch was preferred to the pendentive. Most of the peculiarities in churches after the building of the great Sta. Sophia were structural ones to prevent the spread of domes on pendentives, and the use of drums added to the weight; they showed, however, that the Byzantines had learnt to build domes securely. The æsthetic devices of Early Byzantine work were not easy to describe, for most of the columns came from temples. Besides the cup, cushion-shaped, or cubical capitals, the turning the apophyges of the columns into bands was worthy of note. Æsthetically the outsides of the buildings appeared to have received little attention, although some fronts were ornamented with blind arches or open arcades, and in later work bricks in zigzags, or rude imitation of the Greek fret, were used. The profiles of Byzantine work were tame and commonplace, with no proper æsthetic sequence in the mouldings. The interiors were splendidly decorated after the Roman manner. The vastness of the interior of Sta. Sophia was most striking, and was greatly aided by one having to go down the narrow narthex, through the Imperial door into the main edifice. The lighting of the interior of Sta. Sophia's deserved some attention, as this was not sufficiently thought of in modern buildings. There were forty windows round the base of the dome; the aisles on both floors were flooded with light, and there were many windows in the north and south clerestories. The decoration also was splendid; the lower part of the walls panelled with precious marbles, the spandrels of the upper arcades and friezes inlaid with magnificent patterns on black and white marble, superb monolithic columns of porphyry and verde-antique and gold mosaic combined to produce a dignified and superb magnificence.

At the close a vote of thanks was passed to the lecturer on the motion of Mr. R. Phené Spiers, seconded by Mr. James Payne and supported by Professor Kerr.

SOME RECENT DEVELOPMENTS IN THEATRE PLANNING.*

[WITH PHOTO-LITHOGRAPHIC ILLUSTRATIONS.]

WHEN the committee of the Association honoured me with the request to read a paper on theatres to-night, I was asked if I consented, to send the title of the paper to the secretary by return of post, as the Brown Book was ready to go to the printer's. In my haste to obey and anxiety not to delay so important a publication as our Brown Book, I pitched upon the title of "The Planning of Theatres," thinking that wide enough to cover any ground; but when I seriously sat down to prepare for this evening, I found I had committed myself to a task quite impossible to fulfil within the limit of time allowed. In fact, if I had attempted to speak at all fully on theatre planning, it is probable that I should have been left here till midnight reading my paper to empty benches. The feelings I experience on finding out this may, perhaps, have been also felt by some of you who have had similar commands from our committee. On wondering how I was to overcome this dilemma, it occurred to me that I had better confine myself to recent developments and improvements in theatre planning, but I fear I can only touch upon the fringe of even this section of my subject. Through the kindness of several gentlemen, I am enabled to-night to bring before your notice several drawings of theatres that have been erected in London during the past few years. It will be my endeavour to trace from these drawings some of the recent developments in theatre planning. I think it will be of more practical use to us, as members of the Association, to spend the evening studying the plans of buildings built, or being built, than to deal with any ideas for theatre-constructing that exist only on paper, and have not undergone practical test.

The great difficulty the student in theatre planning has to surmount is to learn all that is wanted in and about a theatre; and unless he has had the advantages of seeing the nightly working of the front of the house, as well as of the stage, it is quite impossible for him to design a theatre that will meet the requirements of a London manager. Theatres have to be built to pay. It is a notorious fact that the same play may be a great success in one house and a perfect failure if produced in another. The theatre must be chiefly designed for the particular and special business that the manager intends carrying on therein, although, with changes of fashion and fortune, there *must* be some slight changes of the class of entertainment. I cannot quote a better example to illustrate my meaning than the special arrangements made by Mr. Phipps when he reconstructed the Haymarket to meet the demands of the class of performance given at this house and the class of people frequenting it. Large sums of money are required to mount a Haymarket piece; Mr. Bancroft therefore decided to abolish the pit and fill the whole of the ground-floor of the house with high-priced seats. On the first night the experiment looked like failing, as loud cries of disappointment came from the exalted pit circle; but experience has proved that architect and manager were right in arranging the auditorium as they did. The same arrangement of seats would, however, be fatal to such a house as the Grand Theatre, Islington, the Olympic, or the Adelphi, where the large pit is looked upon as the main-stay of the house. The President of the Royal Institute of British Architects, in his excellent address this year to students, said that "a perfect plan is, and can only be, the result of the thoughtful study of every principle and every detail." It is necessary to find out all that is wanted, and to provide for such wants. To again quote Mr. Macvicar Anderson, "It is impossible to produce a satisfactory result without practical knowledge of the requirements." . . . . "A plan to be good must be simple."

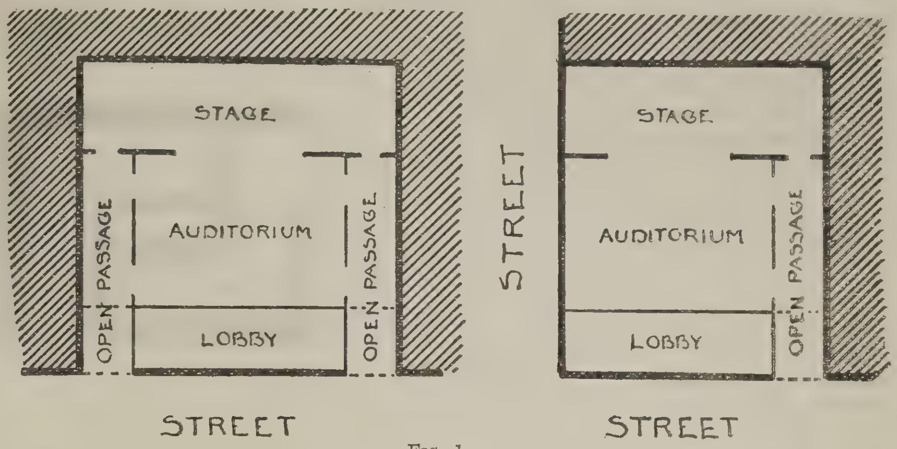

Fig. 1.

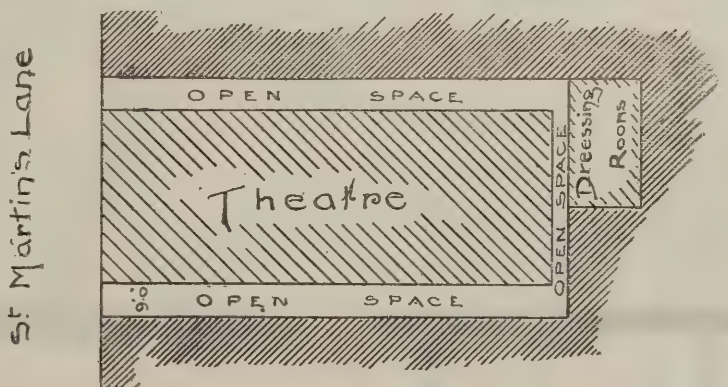

Fig. 2.

Site.—The first point which we should consider is, what is a desirable site for a theatre? and in endeavouring to answer the question we shall do well to ascertain what are the regulations enforced in other countries with regard to sites for places of public entertainment. In Austria, theatres holding more than 600 people must be perfectly isolated, those with a seating capacity for less than that number may have the back wall abutting on other houses. In St. Petersburg there must be an open space on every side, with doors and windows upon all four sides. In Brussels every theatre must be separated from adjoining premises by an open space or by brick walls. In Italy perfect isolation is insisted upon, and in Paris theatres that are detached must have a clear space of at least 9ft. 10in. to divide the theatre from neighbouring houses; where they are attached, there must be an independent wall within the theatre 9in. thick to protect the party-wall. From this it will be seen that on the Continent isolated sites are required. Such a site is undoubtedly the most desirable, but there is one serious drawback—the cost. It must be remembered that on the Continent there is "State aid" to assist theatrical enterprise, but that in England it has to be carried on entirely as a private speculation. The New York regulation is a good one: the front must be on the public way, and open spaces at least 8ft. wide must be left on both sides, from the line of the proscenium wall, the full length of the auditorium. (Fig. 1.) It is seldom in a city like London that the chance offers itself for an isolated site; indeed, it is only when there are important street improvements that theatres such as the Royal English Opera House can be built within the given radius in which the theatres can be made to pay. There are a few cases where houses have been successful outside the centre of the Strand and Haymarket; for instance, the old Prince of Wales in Tottenham-street, made famous under Mrs. Bancroft's management; but there are few managers who would to-day care to risk such an experiment and start a theatre beyond the fashion-bound limits of the West-end. By the aid of street improvements an isolated site was obtained for the Shaftesbury Theatre, but the Savoy site was formed by pulling down a whole block of buildings. The insurmountable difficulties in acquiring perfect isolation in London render it necessary to make the best of what can be got. How this difficulty has been overcome in some of the new theatres now in course of construction will be seen from the plans of the new theatre in Cranbourne-street, where two sides and part of a third are on public ways, and the new theatre in St. Martin's-lane, where Mr. Emden has so designed the theatre that above the ground level there is an open area or passage-way left all round the building.* (Fig. 2.) The drawback to perfect isolation is the prohibitive cost of the land; but a theatre must of necessity be a costly building; a cheap theatre is sure to be a dangerous one. The advantages of isolation are that the risks from fire and panic are greatly reduced. There is not the same danger from surrounding property; the exit passages, staircases, and corridors can be made shorter; and deliver into four different streets. The old-fashioned plan of buying a house in the main thoroughfare, and a plot of vacant land some distance in the rear on which to build a backyard theatre, reached by a tunnel, is no longer permissible. Theatres on cramped sites hemmed in on all sides, with a narrow frontage to the principal street, sufficient only to carry a flaming gas device, are things of the past. Nearly all the plans before us show that a site of oblong shape is best adapted to a theatre. The Lyric, however, is an example of what can be done on an irregularly-shaped plot of ground. A very clever arrangement of the auditorium is displayed in the planning of the Gaiety, on a site of most irregular formation, but with exits into four different streets. We have before us examples of one of the greatest modern improvements and economy of space if we look at the drawings of the Savoy, the Lyric, the Garrick, Cranbourne-street, and St. Martin's-lane theatres. In all these cases it will be observed that a limit to the height of the building is obtained by sinking the pit below the level of the pavement, thus placing the back of the dress circle on a level with the street. The many advantages of this arrangement do not, perhaps, assert themselves at first sight. The distances to be travelled by the various sections of the audience are equalised:

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* A paper read before the Architectural Association, March 18, by E. A. E. Woodrow, A.R.I.B.A.

* Plans and elevation of this theatre were given in the Building News for Nov. 27, 1891.

the gallery and upper circle have shorter staircases; the dress circle is on the street level; and the pit and stalls have but a few steps to the exits. In the case of the Savoy, the sloping site is taken advantage of. It has been argued that a pit below the ground level must be dangerous, but surely people are less likely to fall ascending than descending a staircase. There is another great advantage in reducing the height of the building above the ground. It tends to facilitate the extinction of fire by the brigade, and renders the fire-escapes of greater value in their work of rescue. The pit of a theatre, if not below, should be on the ground level. I do not think any room or hall where large numbers of people congregate should be built over and above other premises. as it only augments the dangers of fire, and needlessly adds to the height. It is certainly unwise to rob the space which is most valuable for exits by building shops or cafés as part of the scheme, on the ground floor of a theatre. A theatre should be a theatre pure and simple. Even with every precaution enforced that is known to man, there must and will be danger from fire and panic; and dangers arising from other sources should not be added thereto. The passage of smoke to the theatre from a fire in such a shop or restaurant, would be sufficient to cause a panic. There is undoubtedly a great temptation in making the greatest return for the outlay on the building, and the rents from shops in the vicinity of popular playhouses assist to swell the profits.

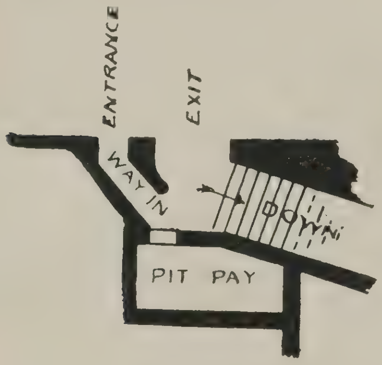

Fig. 3.

Exits.—It is clearly the duty of the architect to design his building so as to reduce the chances of panic to a minimum, and one of the chief provisions to this end is short and unobstructed exits. Everything in and about a theatre should tend to make the audience have confidence in their own security, and give them a feeling that, should anything happen, they would be able to help themselves without causing injury to others. Where people feel or think they are safe, the chances of danger are small. As better sites have been acquired, better designs have naturally followed. Simplicity in the plan, and uniformity in the two sides of the house tend towards the solution of the difficulty. Thus, where there is a pit entrance on the one side, a pit exit will now be found on the other; where there is a gallery staircase on the right, a gallery staircase is on the left, and so on for each tier or division of the audience, as seen in the Shaftesbury theatre. Every such division is provided with two separate exits leading directly into the street. Such is the London theatre of to-day. People, as a rule, naturally desire to leave a building by the door by which they enter, and it seems it is only by making the two sides of a theatre alike that the public will find the exits provided. The audience should be taught the way out of a theatre by habit; to speak of "alarm exit," "fire exit," "exit in case of need," is only to encourage nervousness. The suggestions of danger should never be breathed in a building where human beings are packed. I believe that printing a key-plan on the programmes would greatly assist many visitors to theatres in acquiring confidence and self-possession and learning the way out. The use of automatic panic bolts on exit doors is undoubtedly a great boon, as it renders them always available to the public.

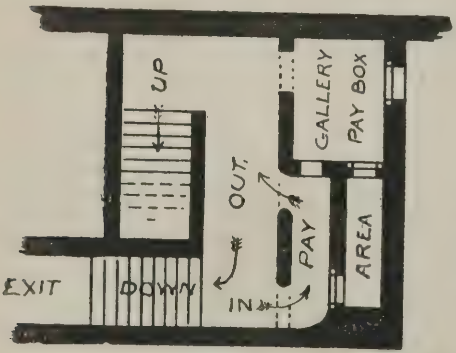

Fig. 4.

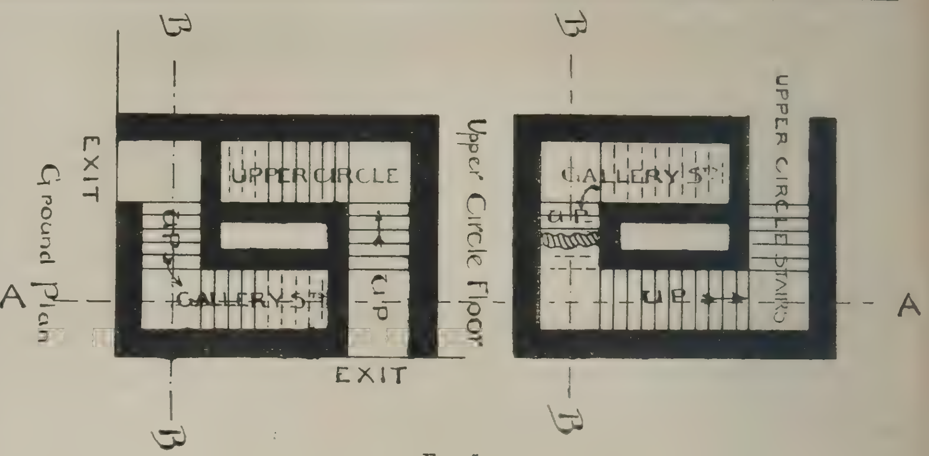

Fig. 5.

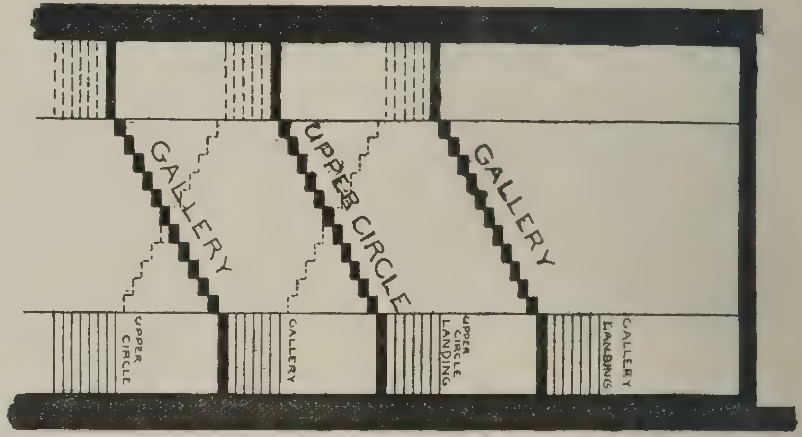

Fig. 6.

Entrances.—There is a great deal to be said with regard to the manner in which the pit and gallery of a theatre are entered, and there is much to learn from our Continental neighbours, both as to the arrangement of the entrances and the way in which to enter them. Mr. D'Oyley Carte was, I believe, the first to introduce the queue system to a London pit, an example which has been followed at the Lyric, Shaftesbury, and Royal English Opera House, and within the last month, I believe, at the Gaiety. At the Shaftesbury you enter by a narrow passage which discharges into the main corridor after you pass the pay-box. A similar arrangement is contemplated at the new Cranbourne-street Theatre.[*] (Figs. 3 and 4.) This allows the whole width of the main passage to remain free for exit at all times, as no obstructing barrier or pay-box is needed. The arrangement shown on the above-mentioned drawings obviates the necessity for barriers, and allows the public to stand in queue to await admission one by one, and prevents the scrimmages seen nightly at most pit and gallery doors—a state of affairs that prohibits a visit to the play to many a one who cannot afford more than 2s. 6d. for admission, and who has not the courage to face the fighting mob which assails the houses where popular plays are running. Were it possible to adopt the queue at all theatres, those who desire to follow the example of the lady who took up her stand, or rather her camp-stool, at the Lyceum pit-door at 10 in the morning for admission to the first night of "Henry VIII.," could spend the day with just a degree more comfort than that lady could have done with the pressure of a pit crowd behind her. The wonder is she survived to tell the tale. I think that much of the excitement created by the struggle to enter a theatre is retained during the whole evening, making the audience highly sensitive to alarm.

Staircases.—One feature of the old theatre seems to have completely disappeared in the theatre of to-day. I refer to the grand staircase, such staircases as are found at Drury-lane, Covent Garden, and Her Majesty's. The principal staircase at the Royal English Opera House is the only attempt in theatres of the last few years to create such a special feature in the interior. One has not far to seek to find the reasons for the change. With the pit sunk below the ground, and the dress-circle on the ground level, there is no demand for such a luxury. Much space is therefore saved, for a staircase of ordinary proportions, as a rule, leads to the upper circle and saloon on the first-floor level. From an architect's point of view one cannot help regretting the loss of this grand staircase, with the spacious vestibule and crush rooms; but the demands of to-day are for small theatres not requiring such adjuncts. As to the width generally allowed for the ordinary staircase, it has been found that 4ft. 6in. is sufficient for 400 persons, with an additional 6in. in width for every additional 100 persons to be accommodated. There should, however, be a limit to the width, as a staircase too wide is as bad as one too narrow. Beyond a certain width those occupying the centre obtain no support either directly from the handrails, or indirectly by holding on to those who grasp the handrails. 6ft. wide is sufficient to allow four persons abreast to go up or down, and should the numbers accommodated in the house require it, a

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[*] Plans and elevation of Mr. Daly's theatre were given in the Building News, Nov. 13, 1891.

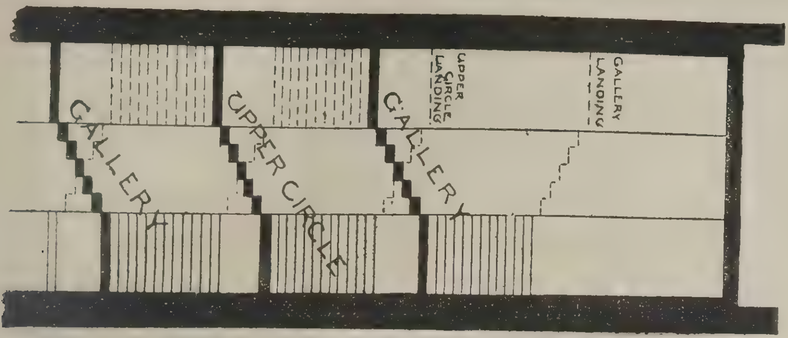

FIG. 7.

third staircase should be provided in lieu of a greater width. Every division of the audience should have at least two staircases leading to the street. For economy of space two staircases are frequently constructed within the same containing walls (Figs. 5, 6, and 7, giving two plans and two sections), as the new upper circle and gallery exit staircases at the Gaiety. Long, straight flights of steps are bad, as they do not afford the rest on landings required in ascending or descending. Too few steps in a flight are as bad as too many, there should not be more than twelve or less than three. Single steps, or steps at half landings are certain stumbling blocks. Of course there should be no winders, and the steps should be supported at both ends upon brick walls carried up to the roof. The rise and treads must be uniform throughout. No exit staircase should serve two tiers, or have pass doors leading from a tier below, through which any stream of people would be likely to enter and impede the progress of those at a higher level. With regard to landings, they should never be less in length than the width of the staircase. The more rest they afford the better.

The Auditorium.—Returning once more to the drawings of the several new theatres, which we have had lent us to-night, we find that by the recent development of planning and construction the audience have been relieved of the numerous columns which were ever a cause of annoyance and an obstruction to the view of the stage from several seats in each tier. It was the constant cry for the abolition of these obstacles that first gave birth to the cantilever construction now almost universally adopted in theatre building. I believe I am correct in saying that the Alhambra was the first house constructed in this manner, and I am able to bring to your notice the details of this construction as well as the general plans of the excellent auditorium of this house and its rival, the Empire. Those members of the Association who took advantage of the visit to the Royal English Opera House* during its construction will remember that these cantilevers were tied into the back walls of the theatre; projecting from these walls, they were connected by girders making a perfect cobweb of steel-work upon which to build up the fireproof construction of the tiers. The drawings of the ironwork of the Royal English Opera House, kindly lent me by the Horseley Company, and of the Garrick Theatre and the diagrams of fireproof construction, lent us by Mr. Emden, will convey more to your minds of the manner of construction than anything I can say in the short time I must of necessity give to this branch of our subject. Doing away with the supporting columns of the galleries has done far more than remove the annoyance from the audience of obstructing the view of the stage: it has also tended towards perfecting the fireproof qualities of the structure. Theatres that were built with supporting columns had the tiers and roof, as a rule, entirely constructed of wood. With the cantilevers the tiers are made of concrete or firebrick on steel girders imbedded in concrete, and the roofs are made fireproof. Where a theatre is constructed entirely of fireproof materials, and the audience know it, and there are good exits, the chances of panic are small. The knowledge that the building is fire-proof will do as much to reduce panic as good exits; in fact, even more, as it will destroy the nervousness which generates a stampede. There has been a recent improvement in the auditorium, first introduced, I believe, by Mr. Emden in Terry's Theatre, whereby every row of the tiers has direct access to the side corridors by a doorway. By this means much inconvenience is overcome in gaining the seats, and the exit from the circles is greatly facilitated. Theatres of the past were, as a rule, dark holes into which daylight never entered; the consequence was they became dirty, dusty, and unhealthy, besides being much more dangerous than a building which is flooded with daylight. The cleaners in a theatre are, like most human beings, liable to scamp their work and leave little heaps of dust and rubbish in out-of-the-way corners. The recent disaster at Gateshead to a certain extent teaches us that there is danger in the accumulation of dirt in a theatre, for we hear by some of the accounts that a lighted match fell on some paper and sawdust, which produced the smoke that filled the gallery and caused the stampede. In Austria there is a special regulation enforced, insisting upon the daily removal of all rubbish and trade refuse, and advocating cleanliness in all parts of the house as a special duty. Where an auditorium is provided with daylight, the use and cost of artificial light during the day time is saved, cleaners and careless attendants have not to go about their work with lamps or candles, and there is no excuse for striking matches in the building. Another and still more important demand for windows, quite apart from their use for ventilation, is the means of escape they provide in case of fire, especially where they lead to outside balconies. Hundreds of lives could have been saved if windows, external balconies, and escape ladders had been provided not only in theatres, such as in Mr. Jan Springer's new theatre in Amsterdam, but in all buildings where large numbers congregate. I, for one, shall be glad to see the day when external balconies and staircases are adopted in this class of buildings. Iron bars before windows should never be allowed, as they prevent the firemen entering a building by the windows, or the occupants from using the fire-escape. It was not my intention to enter into the smaller details of the arrangements of the auditorium, or to speak of sight lines, the curves of balcony fronts, or the seating of the house, but I must refer for one moment to the gangways. Much diversity of opinion appears to exist as to the number of the seats that should be placed between intersecting gangways. Managers complain that certain portions of the audience will stand in the centre gangways and create a disturbance. On the other hand, long rows of seats without intersecting gangways, make it difficult for the people to get out, especially where the seats have backs. I draw your attention to an automatic seat, a German patent, the back of which falls, and the seat rises when the occupant gets up, thus leaving gangways at right angles to the curtain line, as well as parallel to it. (Fig. 8.—A, row of seats, with one seat up; B, back view; C, side view, with seat down; D, side view, with seat up). In the rules enforced in Continental cities, the question of intermediate ganways is rigidly dealt with. For instance, in Austria gangways must divide every six seats, and be in a line with an exit door; in Brussels there must be at least two lateral gang-

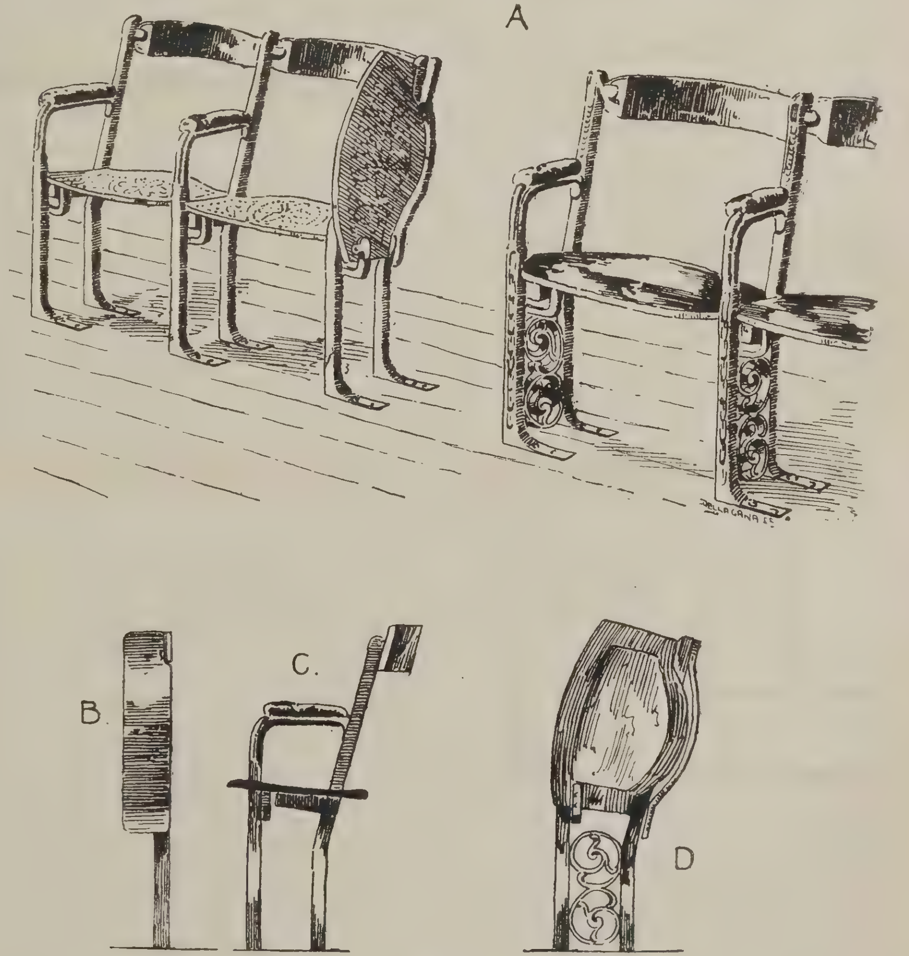

FIG. 8.

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* Views and plans of the Royal English Opera House will be found in the BUILDING NEWS for April 26th, 1889; Jan. 9th and Feb. 6th, 1891.

ways to the rows of seats, and a central gangway may be required. In St. Petersburg not more than twelve seats may be in a row between the gangways, and the middle passage must not be less than 4ft. 8in. wide; but in Paris the authorities appear to be satisfied with two side gangways each 3ft. 3½in. wide, or in lieu thereof with a single centre gangway 4ft. 3in. wide. I cannot now enter into the questions of accoustics, ventilation, heating, lighting, or fire protection of the auditorium. I therefore propose to pass rapidly over a few details with regard to the improvements behind the curtain.

Stage.—I think we all know that modern theatre construction demands the division of the stage from the auditorium by a brick proscenium wall passing up through the roof above the stage, and down below and across the underside of the stage to divide the orchestra from the mezzanine. This, of course, leaves the large or proscenium opening unprotected. Commonsense at once tell us that a proscenium wall without a proscenium fire- or smoke-resisting curtain is but a half-measure for retarding the spread of smoke or fire from stage to auditorium. I am fortunate to-night in being able to ask my friend, Mr. Max Clarke, to speak to us on this subject; as you know, he has made a special study of this very important detail of theatre construction, and it would be presumption on my part to dwell further on the point, when I hope we shall have his views laid before us at the conclusion of this paper. From the various sectional drawings, and the model of the new theatre in Cranbourn-street, it will be seen that there are two floors below the level of the stage; the mezzanine floor, on which is placed all the machinery for working the traps and sliders below the stage, and the cellar or well into which the scenes and sets are lowered. Above the stage are galleries on either side known as the "flies," from whence the ropes governing the cloths and scenes are manipulated, and over the whole of the stage in the roof, or at level of the wall-plate, is the gridiron, an open or skeleton flooring, so-called on account of its likeness to that domestic utensil. From the gridiron hang all the cloths, sky-borders, gas-borders, &c., &c. Over the gridiron, modern requirements demand a large exhaust ventilator to carry off the fumes of the many gaslights on the stage, and the smoke in case of fire. The next point we have to consider, after the division of the auditorium and stage, is the size of the stage. Everything is governed by the size of the proscenium opening; 30ft. is about the average width of the proscenium opening in the medium-sized theatres, so I will take that width as an illustration. Supposing the opening to be 30ft. square, the width of the stage from side wall to side wall should be at least 60ft., or twice the width of the proscenium opening, to allow the removal of the scenes to right and left; passage-way is necessary in addition to this. The height from stage-floor to gridiron should be 60ft., or twice the height of the opening, to allow the scenes to be lifted up to the gridiron without rolling or folding. Where this can be done the scenery lasts much longer, and money is therefore saved in wear and tear of material; there is also less danger of gas battens coming in contact with the canvas. I do not propose dwelling upon the much-debated question of turning the stage into a furnace or tall chimney by carrying up the walls to a great height above the auditorium, and placing huge ventilators in the roof, or making the stage-roof entirely of wood, that it may burn away and create a tall shaft. There are doubtless some present who will give us their views on this matter. All I have to say is that ample ventilation, both inlet and outlet, should be given to the stage, and unless there are inlets at a low level, the outlets in the roof will make a down-draught. With regard to the dressing-rooms, the plans of the Garrick and the new theatre in St. Martin's-lane show an excellent arrangement, whereby the dressing-rooms are erected in a separate block or building connected with the theatre by one opening only, and with a separate exit into the open air from such block. By this means the whole of the fire risk in the dressing-rooms is taken away from the theatre. As so much of the scene-painters' and carpenters' work which used to be done in the theatre is now done by the scene-painter in his own painting-room, and by the carpenter in his own workshops away from the theatre, it has been found unnecessary to provide rooms for these purposes in our modern play-houses on such a scale as was necessary in the past, and the risks arising from the various trades have been removed. Many of the larger theatres still have their workshops in use, but the day has gone by when the space over the auditorium ceiling, commonly called the "dome," was used for a carpenter's shop or a store for any old lumber and scenery. This space in old theatres was divided from the audience by only a canvas ceiling and wooden floor, with the sunlight flue passing through the midst of the shavings and inflammable material. Where workshops are needed they should be built like the dressing rooms at the Garrick in a separate block of buildings. Another improvement in theatrical matters is that nowadays a large stock of scenery is never kept on the premises. In the West-end theatres pieces are played which are intended for, even if they do not have, long runs. In the outlying theatres travelling companies fill the bill, and bring with them their own scenery. The consequence is that large scene docks and stores are not wanted. The valuable space can be used by the architect to better advantage, and the manager avail himself of an outside store. So the risk of large stores, like the risk of workshops, is taken away from the theatre. Scene docks on the stage level are, of course, needed to shift the scenery into, which is in nightly use. You will see many examples on the plans. The introduction of electric light into theatres has induced managers in many houses to provide the wherewithal to generate their own light. Engine-rooms, boiler-houses, and heating furnaces should be placed away from the theatre, or divided from it by brick walls and fireproof floors and ceilings. In no case should an opening from the engine-room be permitted into any part of the theatre: access should be either directly from the street or from an open area. There is one part of a playhouse which does not seem to have gone ahead like the rest of the building. I refer to the stage machinery. The model upon which the stage of to-day is built is the same as used years ago. This, I believe, is the case in America as well as here. No one has appeared to think it worth while to seriously study the requirements of stage machinery, and endeavour to improve the present state of things. It is looked upon purely as a carpenter's job, and when a theatre is built it is left for the stage carpenter to put in his stage to please himself. When the Royal English Opera House was first started, I remember hearing of the great improvements that were to be made in stage machinery, and that nearly everything but the boards of the stage was to be in iron. True, there are some minor improvements in the details, but the broad principles on which this stage is built is the same as used generations ago. There is certainly an opening for the architect to use his power of design towards the perfection of the stage. Mr. Emden, in a paper read before the Society of Arts in 1888, described at great length the stage of the Buda-Pesth Opera House, where the stage floor could be raised in sections, or as a whole by hydraulic pressure. I believe hydraulic power is used in some of our theatres to raise the larger traps called the "bridges," but the "sliders" are still taken off in the old-fashioned way. I cannot enter into the details of stage lighting, or the advantages gained by the use of electric light: this, like many other points I have not touched upon, I think comes beyond the scope of my paper; but, before concluding, I wish very briefly to draw the attention of the members of the Association to the great improvement in the materials now used in the construction. We have already noticed how the cantilever system brought about the use of the concrete tiers in lieu of the wooden balconies. In the new theatre in St. Martin's-lane these tiers are constructed of patent metallic stone, 2½in. to 3in. thick, composed of granite chips, iron slag, and Portland cement. Fawcett's fireproof floor was used in recent alterations at the Lyceum. The roofs, ceilings, and staircases are now constructed of concrete, in place of wood and stone, and where ironwork is used it is always protected. In providing fireproof construction, so necessary for the safety of the public, one may depend upon materials which, either by nature or the aid of man have passed through the ordeal of fire, being safe units of fireproof construction. To-day, in place of the theatre on a bad site, constructed of wood, with match-boarded partitions, no proscenium wall, exits and staircases out of proportion to the number who had to use them, ill-lit, ill-ventilated, with no regard to sanitation, and everything that was most unsatisfactory, we have rising in London playhouses on good sites, built entirely with fireproof materials, with good exits and staircases, and every precaution taken to prevent fire and panic. Nothing I can say to you will illustrate this more, or make a greater impression upon you, than these drawings, and I am deeply indebted to the gentlemen who have so willingly lent me the many plans and models I have been able to bring here. They tell their own tale, and I wish to take this opportunity of thanking Mr. Phipps, who has specially prepared these plans for our use, Mr. Jan Springer, of Amsterdam, Mr. Emden, Mr. Chadwick, Messrs. Perry and Reed, Mr. Verity, Messrs. Crewe and Sprague, Mr. Max Clarke, Mr. Holloway, and the manager of the Horseley Company, for the valuable aid they have rendered me in endeavouring to explain to you some recent developments in theatre planning. Many thanks are also due to Mr. Baker and Messrs. Kaye for the models of automatic panic bolts, and Mr. Nolting for the automatic theatre seat.

THE SOCIETY OF ARCHITECTS.

THE ninth ordinary meeting of the Society for the present session was held on Tuesday evening, at St. James's Hall, Piccadilly, the President, Mr. W. H. Seth-Smith, F.R.I.B.A., in the chair. Mr. Banister Fletcher, D.C.L., J.P., C.C., F.R.I.B.A., Professor of the Arts of Construction at King's College, and District Surveyor of West Newington, of 29, Bridge-street, E.C., was elected as a member, and Mr. Alexander Wallace Rimington, of 26, Kensington Park Gardens, W., who has been an Associate since 1889, was, on the recommendation of the Council, transferred to the list of honorary members. The President, in announcing the result of the ballot, congratulated the members on the important accession to their ranks received in the person of Professor Banister Fletcher, and expressed his satisfaction that both elections had been unanimous.

THE PRACTICE OF AN ARCHTECT AND SURVEYOR.

An address on this subject was delivered by Mr. Ernest Day, J.P., F.R.I.B.A., ex-Mayor of Worcester. The lecturer explained that he felt it necessary to define in outline only the details of professional practice of an architect and surveyor, and he proposed to exclude from view all financial questions affecting fees and commissions, as these were, strictly speaking, personal matters, and not subjects to be discussed by the Society. An architect required a very wide general knowledge, embracing many diverse subjects. First among these came an acquaintance with the general styles of architecture, although for the immediate purposes of actual practice they might be summed up under two heads, Classic and Gothic; for although other styles claimed some attention, including Persian, Byzantine, Moresque, Early French, Queen Anne, and even Japanese, most of them were of little practical use, and the two great styles mentioned, with their branches, would meet all immediate requirements. The general styles of architecture, and particularly the one most adopted by the architect, would necessitate a considerable amount of attention. Speaking generally, an architect ought, in his designs, to be guided by local associations and the requirements of the situation; but over and above that, he had to regard the special predilections of the taste of the client. If the employer should demand a Classic structure, the architect had no right to force a Gothic design upon him, and further, his ideas had to be regulated by the sum proposed to be expended. The general effect of a design was a matter demanding serious attention; it was essential to give individuality to the building, and the character of the surroundings and locality should not be overlooked when preparing the design. Thus for a timber-producing district, a 16th century half-timbered building would be more in keeping than a castellated or Tudor one. It was of immense advantage to prepare a design in perspective: the architect was then able to correct any error, as he would see the building as it appeared to the ordinary eye. It was desirable that the architectural student should prepare himself not only by the study of ancient work, but by making notes and sketches of new buildings. The subject of planning was another important one for the architect's consideration. Planning provided for the utility and general convenience of the various portions of a building, according to the requirements and situation. It called for the exercise of much judgment in the distribution of the areas of floor spaces, so that the rooms should not be meagre or excessive for the ultimate uses of the structure. A great, and too often neglected, point was to take advantage, as far as the possibilities of the given site permitted, of the access of sunlight, which added alike to the cheerfulness, healthiness, and warmth of the rooms, and so economised the fuel requirements. The rooms most in use should be selected for the southern aspect, while on the north side of the building could be placed the larder and kitchen and the dairy. Where a strong, steady light was required, as in an artist's studio or a glove factory the northern aspect was the best. For many public buildings, as in schools, asylums, and cemetery chapels, the aspect, disposition of plan, and the cubical capacity were practically settled by established rules; but even in domestic work the question of aspect was important, and that of cubical capacity should not be overlooked. Passing on to consider constructional matters pure and simple, the author sketched the outline requirements of the average building. The subsoil should be examined, and if the virgin soil had been removed and the site refilled, as was too often the case in the suburbs, with filth and *débris*, the only available remedy was to cover the whole of the surface with concrete. In his judgment, any natural soil was preferable to clay, which was cold and almost impervious to drainage. A damp-course should always be built with a house wall; but where the soil was clayey it was often well to insert two damp-courses at different levels. Hollow walls were a great protection against damp. The walls should be of ample thickness, and care should be taken to secure sound materials; the immense amount of rubbish that was worked up in walls was appalling. He always insisted upon mortar being made in a mill; it then set almost as hard as concrete, and could be used even in frosty weather. Floors should be made as far as was possible sound-proof and fireproof. Roofing materials might be classed under two heads—tiles and slates. The former were preferable, as they were better non-conductors, and could be easily replaced if broken; whereas a broken or lost slate was never made good except by stripping and relaying. The joinery should be framed as early as possible in the contract, and it was therefore highly desirable that the contract drawings should be placed in the contractor's hands at as early a stage of the work as practicable. It was also well to allow plenty of time for plastering; it was a great advantage to have plaster made at least a month before use, giving it time to slake and prevent blistering. Fire-resisting construction should be provided for in all staircases and corridors. For floors, a comparatively cheap material too much overlooked was poplar, which was almost incombustible, and made an exceedingly fine floor surface, if well seasoned. Where practical, it was well to complete the carcase one summer, and allow it to stand during the winter months, and finish it off during the following spring. The fittings would stand better if put in in the summer than if done at any other period. If the down-pipes were made to stand out at a short distance from the walls it would be found advantageous, as, if stopped up or broken, the water would then run down the pipes clear from the walls, obviating disfigurement and injury to internal surfaces. A knowledge of quantities and prices, and the value of materials and labour was of immense practical value to the architect and also to his clients. He must pass over the subjects of heating and ventilation very generally, as either of them would afford subjects for two or three very profitable evenings' discussion. Most clients had, he found, a distinct predilection in favour of open fireplaces for warming, and he confessed he shared in that prejudice. Of late years immense strides had been made in the construction of grates, although there was still room for improvement. To obtain the maximum of heat for the maximum of fuel, slow-combustion stoves should be employed, and the back and side heat should be utilised by building into the back and sides of the fireplace fire-brick air-flues, say 9in. in diameter. The air could pass through these, and when warmed return into the room above the breast, while in summer they could be arranged to act as ventilators, an exhaust apparatus being added. Firebrick rather than iron should be used for fireplaces as far as possible. In many cases as much as from 50 to 75 per cent. of the heat was wasted on the backs and sides of fireplaces. He need not perhaps say that whenever possible the fireplace should be built into an inner wall to check this loss of heat as far as possible. Of the other modes of heating, he preferred hot water to steam, although the latter was more economical. In gaslight the pipes should be laid so as not to allow of any accumulation of water at the lowest points, and the pipes should be of iron, and not of composition, which fused at a low temperature. If gas were employed it was essential to provide efficient ventilation for the rooms; inlets should be made for the admission of fresh air, and exhausts provided for removing the foul products. In large public buildings it was necessary to supplement the ventilation openings by mechanical contrivances. As to electric lighting, it was as yet in its infancy, but the rules laid down by the insurance companies as to the laying of wires to insure safety should be carefully studied. As to drainage, unless absolutely necessary from the situation, no drainage should be allowed to pass through the house; but if this could not be avoided, he preferred to lay the house-drain in a second larger channel, which should be ventilated and provided with means of access and inspection. The traps of to-day were divided into air and water traps, and of the two it was the more important to insure the efficiency of the air-trap. Automatic flushing should be adopted, and if the lowest level were below that of the sewer (not an unusual thing in parts of towns), Shone's ejectors, which, although rather costly, worked well, should be employed. The decorations should be in character with the style of building. For wall surfaces, where funds permitted, stone, marble, panels of wood, and Lincrusta Walton were preferable to paper, as they could be more readily cleaned. The manufacture of wall-paper had, however, been very much improved of late in the direction of providing washable surfaces, and paper certainly afforded facilities for rapidly and cheaply changing the appearance and effect of a room. It was desirable that the architect should have a general knowledge of the various building trades, so as to be able to give efficient personal or written instructions. The knowledge of all materials used in building operations further assisted the architect in the satisfactory completion of a house, and in its ultimate comfort and stability. Both science and art were of material help to the professional man. The former, because it furnished especial knowledge as to the most suitable materials to adopt; this he had recently seen in a clever device for utilising the expansion and contracting of copper tubes for regulating the opening of the valves to ventilators in a greenhouse, so as to automatically follow every change in temperature. Art came to the architect's aid by supplying the beauty of proportion and form, carving, sculpture, paintings, mosaics, or other elaboration, and by a judicious blending, so as to afford a charming and pleasing *tout ensemble*. The study of acoustics was of material advantage to architects, and was, he feared, generally very little understood, most men depending on their personal experience rather than on set proportions in designing. Certainly, as far as public buildings were concerned, good acoustic properties were of the greatest value. Turning next to the subject of trade specialities and patents, Mr. Day remarked that these subjects required close reading and observation from day to day; but they were well worth the special study of the architect. Speaking generally, most architects were provided with samples and illustrated catalogues of the newest and best specialities; some judgement was required to test them for weak points, and this could only be done by seeing the appliances in working order. Outlay was one of the great difficulties architects had to contend with. Clients generally required much more accommodation than their outlay permitted, and this often perplexed the architect who wished to meet his employer's views, and do credit to his profession. It therefore too frequently happened that architects' estimates were much too low, and it was a common complaint that one must allow in building considerably more than the architect's estimate. It was thus important that an architect should be able to give something like a reliable approximation to cost. He had found the usual basis of cubing very accurate, but much care, experience, and judgment were requisite to fix the price per foot cube. Other methods were to take off the floor and roof areas at so much per square foot, or to take off rough quantities of the builders' work and multiply by three. The R.I.B.A. general conditions were the usual basis, but needed, and were about to receive, some amendment. The best form for a specification was to classify the work under various trades. It was a distinct advantage to make the specification as short and general as possible, although in several classes of work—such as, for example, alterations and additions to premises—it had to be much more lengthy and detailed than in others. A study of the local by-laws of any district previous to preparing drawings would be found most valuable, saving time and useless labour. The general laws affecting buildings in towns was a subject requiring careful attention before preparing drawings. A careful inspection of the site after first instructions would often enable an architect to meet, at all events to a great extent, most of the legal difficulties, such as easements and light and air, likely to arise. The responsibility and labour of inspection of works were much reduced where an efficient clerk of works was employed. The number of the architect's visits must depend on the character of the contractor employed. An inspection of the site before commencing work for a general consultation with the contractor was most desirable. Mr. Day then proceeded to deal with the second portion of his subject—the general knowledge and duties of a surveyor. The mode of setting out and measurement of a plot of land intended for building purposes varied with the shape, position, and circumstances. He generally found it convenient to take the longest fence as a base line, and then divide the area into triangles, with perpendiculars, diagonals, and offsets. If any old building existed suitable for adaptation and not rectangular, plenty of ties were desirable, and careful detail drawings should be taken of plans, elevations, and sections, noting all structural or other defects for reparation. A general knowledge of levelling was of material advantage to the architect, as by this means the sites could be utilised to much greater advantage, and frequently a more economical arrangement in construction could be arrived at. It was astonishing, when viewing sites, how unreliable were experts' approximate ideas of levels, a fact which showed the importance of obtaining accurate levels. The preparation of quantities necessitated a knowledge in detail of the various trades both as regarded materials and labour, and if based on small-scale drawings, it also demanded careful measurements and calculations. Every surveyor had his own specialities; some made their quantities net, and others made an allowance for waste. The mode of procedure for measuring up and valuing dilapidations, varied according to the merits of each case, these being usually covered by repairing covenants in leases. In formulating particulars he usually took all the work to main walls and roofs together, then miscellaneous or outside matters, such as fences, gates, walls, drains, and the interior of buildings, room by room; if there were a list of pictures, of course keeping these separate. Care should be taken to determine with each feature whether repair or renewal would be requisite. The prices would vary with labour and locality. A general knowledge of the law of ancient lights and air easements should be possessed, with the latest recent decisions. The tendency now was to allow greater latitude, and a slight diminution of light where space was valuable appeared permissible. Knowledge of the law of party-walls and easements was best gained from careful observation of property and deeds, and study of the most recent decisions. In the valuation of property a record of sales by auction and private treaty was of great assistance in conjunction with local conditions and surroundings. In fixing the value of a building estate, the aspect, sub-soil, levels, and means of drainage were facts of moment. In conclusion, Mr. Day dealt with the question of the advisability or otherwise of carrying on the profession of an architect and surveyor conjointly as regarded from a provincial point of view. From the standpoint of provincial practice, it did appear desirable to carry on a conjoint practice.

The first consideration with the client were cost and accommodation. Now, if the architect were a practical man well acquainted with the various trades and materials, and accustomed to take off quantities and prices, he was obviously in a far better position to form a reliable judgment than the designer pure and simple. It gave him a knowlege of the best and cheapest materials, and was a great help in working out a design. When taking off the quantities opportunities occurred for correction of the specifications and working drawings. This was helpful in the subsequent work of supervision. It was useful to keep on the building during progress a copy of the dimensions for reference; it served as a schedule of scantlings and bill of materials and goods required, especially those related to timber work. The combination of the two professions was an agreeable change of work, and kept the architect in touch with his client and the contractor. In closing his address, Mr. Day remarked that he was aware that the study of architecture was a life study, for general experience pointed to the conclusion that the more men knew, the more they felt their ignorance. If, however, they reflected that the result of the great bulk of an architect's work had for its object the comfort, health, and material happiness of mankind, it should act as an additional incentive to all to provide conveniently-arranged buildings, sound in construction and fitted with the latest appliances. He held that the combination of the duties of architect and surveyor was of mutual advantage to the community at large and to the profession.

Mr. Wakefield proposed, and Mr. A. J. Lacey, of Norwich, seconded, a vote of thanks to the lecturer, which, having been supported by Mr. W. Allport, Mr. H. Branch, Mr. Merritt, and the President, was heartily accorded, and acknowledged by Mr. Day.

THE ARCHITECTURAL ASSOCIATION.

An ordinary meeting of the Association was held on Friday evening, the President, Mr. F. T. Baggallay, in the chair. Mr. F. T. W. Goldsmith, hon. secretary, announced that the date of the *soirée* had been unavoidably changed to Friday, May 6th, and that it had been decided that members might obtain tickets for friends on payment of 2s. 6d. each, to be sent to Mr. E. J. Gale. Mr. Goldsmith also stated that the members would visit the new Ophthalmic Hospital in St. George's Circus, S.E., on Saturday afternoon, the 26th inst. (to-morrow), by permission of Mr. Keith D. Young, the architect.

SOME RECENT DEVELOPMENTS IN THEATRE PLANNING.

A paper on this subject, illustrated by numerous plans and models, was read by Mr. Ernest A. E. Woodrow, A.R.I.B.A., and will be found fully reported on p. 427 *ante*.

In proposing a vote of thanks to the lecturer, Mr. E. Woodthorpe said he did not agree with Mr. Woodrow as to the advantages gained by managers in abolishing the pit; he believed it was a mistake. In comparing London with Continental theatres, it should be remembered that the latter were subsidised by the State, whereas ours were not, and metropolitan managers could not, therefore, be expected to give up paying portions of the house to make way for grand staircases and widened stalls. The first iron curtain was introduced by Mr. C. J. Phipps into the Prince of Wales's Theatre; happily we had not had an opportunity of testing the arrangements in very modern theatres during an outbreak of fire. The outside corridor and staircase would be a great safeguard in case of fire, for an open window acted as a flue, and the person clinging outside was often cut off by flames rushing out, whereas it would be easy to walk along such a corridor to a place of comparative safety.

Mr. Bernard Dicksee, who seconded the motion, urged that exits should not be increased in width, but multiplied in number. A staircase so wide that every person could not grasp one handrail was a source of danger in case of alarm. The plan of the theatre showing the exits should be printed on the back of every programme. As to stage machinery, at the Lyric hydraulic power was provided for moving the flies, but had never once been used.

Mr. Max. Clarke remarked that while the first thing an architect would do before commencing to design a theatre to be built in the Metropolis would be to study the regulations of the London County Council, it should be borne in mind that the modern theatre was at least twenty or thirty years in advance of those conditions. Thus with regard to the exit space the Shaftesbury Theatre arrangements were far more liberal than the regulations stipulated; while it was not at present compulsory to build with fire-resisting materials, except for dressing-rooms. A very wide staircase could be made perfectly safe by dividing it from end to end into passages for two persons by iron bars. In Mr. Collcutt's Royal English Opera House, although the site was perfectly free, the entrances were not symmetrical in plan, and by the adoption of a wide central gangway the very best seats in the house were sacrificed. He did not wish to accept Mr. Woodrow's invitation to advertise his iron curtain, but he might remark that many years ago a wire curtain was put up in a Glasgow theatre which proved a terrible failure. So far there had not been a fire in a theatre containing the iron curtain he had invented, so that it had not yet been fully tested, but it was specified in the new L.C.C. regulations. One point omitted from the code was that the ceilings of all staircases should be separately constructed from the main roof, and covered with concrete, as otherwise, if the main roof fell in during a fire, there would be great loss of life. Granite chippings were not a good aggregate for cement. The L.C.C. regulations were unintelligible in parts, and certainly the prohibition of a pit more than 15ft. below the ground level was injudicious, as the risk of fire was greatly reduced in an underground building, the only difficulty being as to drainage. The fatal crushes during alarms of fire were frequently caused, as at Exeter, by the gallery audience stumbling over the check-box. This could be easily abolished, as had been done at the Lyric, by building the check-taker's box into a slit in the wall.

The vote of thanks was carried by acclamation, and was suitably acknowledged by Mr. Woodrow.

BUILDING TRADES' EVIDENCE BEFORE THE LABOUR COMMISSION.

The Miscellaneous Trades Section of the Commission resumed its sittings at the Commission Hall, Westminster, on Friday, Mr. Mundella presiding.

Mr. H. Hamm, secretary of the London branch of the Alliance Cabinetmakers' Association, said his association contained 6,500 members. In the United Kingdom there were about 70,000 to 80,000 cabinetmakers, only 15 per cent. of whom were in the union. In London there were between 20,000 and 25,000 engaged in the trade, and there were under 3,000 in the union. As a rule the members of the association were employed in large shops where cabinetmaking was done on a large scale. A master cabinetmaker did not keep a shop as a rule. The West-end firms who represented themselves as cabinetmakers never had a factory. He did not think cabinet work in England was as good now as formerly; the men did not have sufficient time given them. The furniture was manufactured in imitation of the old work without a doubt, but it did not form a large proportion of the cabinetmaking trade. That work was made in London as a rule and not imported from the Continent. Witness said three systems of work existed in the trade—day-work, piece-work, and lump work. At day-work a man got so much per hour, the general pay being in the provinces from 7d. to 8½d.; in London 9d. an hour was the recognised price, though there were thousands of men in London working for 7d. and 7½d. In piece-work as a general rule, a man was allowed to settle a price on each section of the article he was making. In lump work a man was told by his employer that he would have to make an article at a certain price. By day-work at 9d. an hour the best furniture was undoubtedly turned out. The best workmen in London to-day came from the provinces, there being not sufficient work in the provinces to sub-divide the trade on such a scale as was done in London, and so the men became better workmen.

Mr. C. Whitley gave particulars as to the cabinetmaking trade in Leeds.

LEEDS GENERAL INFIRMARY.

On Saturday afternoon, on the invitation of Mr. George Corson, the architect, the members of the Leeds and Yorkshire Architectural Society, including their president, Mr. W. H. Thorp, were shown over the new buildings which have been erected in connection with the General Infirmary. Mr. Corson explained all points of interest. The new buildings consist of four blocks—namely, the ward pavilion, the out-patients' department, the pathological department, and the isolation wards. The new ward pavilion is connected with the original building by a screen of four open arches, of brick and stone, supported on granite pillars. There are on each floor two wards, one 65ft. by 27ft. 6in., arranged for sixteen beds; and another, 37ft. by 27ft. 6in., for ten beds. These wards are in height 18ft. on the ground floor, 17ft. on the first floor, and on the top floor, which has an arched ceiling, there is an average height of 22ft. There are also on each floor a single-bed ward and a nurse's room. The water-closets were supplied by Doulton, of Lambeth, and are of the kind called "Simplicitas," standing free without casings. Over the nurse's room and small wards an entresol is arranged in each story. Altogether there is provision for 84 beds. An hydraulic lift, provided by Mr. Robert Middleton, of Sheepscar Foundry, gives access to all the floors. The floors throughout are constructed with iron joists and concrete, upon which, in the wards, a solid oak block floor has been laid in pattern and polished, by Mr. J. F. Ebner, of London; and in the corridors, stairs, baths, and water-closets there is a marble terazzo floor, laid by Messrs. J. and H. Patteson, of Manchester. The wards are heated by steam-pipes, and also by stoves, by Shorland, of Manchester, placed in the middle of the wards, with down-draught flues. The out-patients' department consists of a waiting-hall, surrounded by the consulting, examination, and operating rooms, &c., of the various departments. The hall is 126ft. by 45ft., with two aisles, each 74ft. by 12ft., divided from the main area by arches and granite pillars. The roof is semi-circular, and the height is 42ft. The hall is lighted by clerestory windows on all sides, and at night by gas pendants and brackets. The dispensary is 58ft. by 15ft., and on three sides are consulting-rooms. Baths are arranged below the surgical department, and on the south side, owing to the fall of the ground, two stories of rooms are obtained. The pathological department is placed on the north side. The isolation wards are reached from the infirmary by a tunnel under the street from the basement floor level. These wards will consist of one story only. There will be two wards, with kitchen, pantry, and store-room. The out-patients' department is to be heated by steam radiators, and Messrs. Ashwell and Co., of Leicester and London, have the contract for this work. The principal contractors and sub-contractors are: Messrs. Gould and Stevenson, for brick, stone, and wood; Macdonald (Aberdeen), granite pillars; Verity Bros., gearing for windows; C. Smith and Son (Birmingham), locks and boundary railing; J. and H. Patteson (Manchester), terazzo floor; and J. F. Ebner (London), oak floors in wards. Mr. J. T. Brown is the clerk of works.

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The Walsall Town Council have agreed that architects be invited to send in designs for the proposed public baths, to be erected in Lichfield-street, and that three prizes be offered—namely, £50 for the first, £30 for the second, and £20 for the third, subject to the condition that, if the author of one of the three selected shall be employed to superintend the carrying out of the work, the premium awarded to him shall be merged into the usual commission of 5 per cent.

Messrs. Young and Marten, of Caledonian Works, Stratford, London, E., have recently made extensive alterations and additions to their establishment in the Broadway, Stratford. Their head establishment was completed at the close of last year. Within a few hundred yards thereof are situated the firm's sanitary and plumbers' goods, plate and sheet glass, brushes and colour, and leaded lights departments, similarly arranged to the head establishment.

An organ chamber has just been added to Warmington Church, near Stamford. Mr. B. Edmund Ferrey, F.S.A., is the architect, and Messrs. Roberts, of Stamford, are the builders. The organ is being built by Messrs. Nicholson and Co., of Worcester, and the case is being carved by Mr. Godbold, of Harleston, Norfolk.

CONTENTS.

Architects and the Modern World 425
Building Reforms 425
Byzantine Architecture 426
Some Recent Developments in Theatre Planning ... 427
The Society of Architects 430
The Architectural Association 432
Building Trades Evidence before the Labour Commission 432
Leeds General Infirmary 432
The Building News Directory xiii
Building Intelligence xiv
Engineering Notes... xiv
Our Illustrations 433
Archæological... 433
Wayside Notes 452
Competitions 452
Schools of Art... 452
Building News Designing Club 453
Dry Oak and Ash 453
Correspondence 454
Intercommunication 454
Legal 454
Legal Intelligence 455
Water Supply and Sanitary Matters 456
Parliamentary Notes 456
Our Office Table 456
Meetings for the Ensuing Week 457
Trade News 457
Tenders 458

ILLUSTRATIONS.

HARRIGAN'S THEATRE, NEW YORK. — INDUSTRIAL CO-OPERATIVE STORES, LEEDS.—MISSION HALL, CAPE TOWN, SOUTH AFRICA.—DESIGNS FOR A PAIR OF LABOURERS' COTTAGES.—NEW POST-OFFICE, LEEDS.—DESIGN FOR A VILLAGE HALL.

Our Illustrations.

HARRIGAN'S THEATRE.

Harrigan's Theatre is an example of one of the most recent theatres erected in New York city. It was completed in the latter part of 1890. The size of the lot on which it stands is 75ft. by 100ft., with the narrowest side towards the street. The edifice contains all the latest requirements of the Building Law pertaining to theatres, which law is most rigid with reference to exits for the audience and stage people. This law prohibits sinking the parquet or "pit" as it is called in English theatres, below the level of the street, and limits the level above the street to a 6in. step at the doors. Courts have to be provided at the sides one-eighth of the width of the auditorium, in which are fire-proof staircases leading from each tier of galleries to the ground. From these courts fire-proof corridors lead to the street independent of any other exit, and must be kept clear at all times, and not used for storage or any purpose other than that intended by the law. That portion of the building through which these corridors pass may be built up for the full extent of the street front, the depth to end where the auditorium begins. This applies to a location hemmed in on each side, but where located on a corner lot there are special provisions determining the mode of exits and the character of fire escapes. It would seem at first glance that a different treatment of the first story of the façade might have been designed, whereby piers of masonry of some breadth could take the place of thin iron columns, but the law is so rigid in regard to the width of exits that it was found impossible. Above the iron columns there was a better opportunity, therefore, architecturally, the front begins where the iron structure ends. The material used in the wall surfaces is a light buff brick, cornices and ornamental details of white terracotta—the first instance of its use in this city. All of this terracotta was prepared from drawings furnished by the architect, and the execution of the same was done under the direction of Mr. James Taylor, an Englishman, who came to this country a number of years ago, and engaged in the manufacture of terracotta. He is the originator or promoter of several of the largest terracotta works in the country. His training in England has proved to be of great value and advantage to architects here, who had no practical knowledge of the use of terracotta at the time he began its manufacture. Since that time this industry has grown to large proportions, and terracotta is used to a great extent throughout the United States. The interior of the theatre is in keeping with the general style of the exterior. Many of the ornamental features are in plaster relief, such as the boxes, fronts of galleries, proscenium arch, and the entire ceiling. The colour treatment is simple, the ornamental details are treated in ivory tones picked out with gold, and wall surfaces light red, the ceiling a light blue and silver. Four staircases, two to each tier, independent of the fire-escapes in the courts, are provided, and are made of slate and iron. The theatre is lighted with incandescent lights, and the building is thoroughly well heated and ventilated. Although the theatre cannot be strictly classed as a fireproof theatre—that is to say, without the use of wood in any part of the construction, the present law not requiring theatres to be thoroughly fireproof, yet iron has been largely used, and certain portions are made absolutely fireproof to the extent demanded by the law. Such wood construction is treated with a fireproof preparation, tending rather to prevent the spread of fire when it comes in contact with the wood, and causing it to smoulder away, giving ample time to employés or firemen on duty to extinguish it. In addition, there is an automatic working fire-pump, supplying a complete system of automatic sprinklers, so placed in and around all portions of the stage, dressing-rooms, and scene dock as to control every square foot of the surface, and in the auditorium supplying several lines of service pipes, from which, on each tier or gallery, are valves and 50ft. of hose to each within easy reach. By the turning on of water at any point of this fire-service the pump is started automatically, and is set at a pressure to fully supply every outlet were all to be in use at the one time.

F. H. Kimball, Architect, New York.

INDUSTRIAL CO-OPERATIVE SOCIETY'S PREMISES, LEEDS.

The building which we illustrate is intended to be built on the west side of Albion-street. The business transacted at the existing headquarters of the society has long since outgrown all reasonable demands, and this new structure is one of the many buildings and new stores the society are erecting in various parts of the borough. The building is to be devoted principally to furniture and drapers' stores, and the edifice, including the price of land, is likely to cost about £30,000. The ground area to be covered with buildings is about 1,000 yards. The basement, having an area of 560 yards, will be utilised for the storage of furniture. In addition, provision will be made for electric light, special heating and ventilation apparatus, and other purposes. The ground floor will be divided, with a two-thirds frontage to Albion-street for drapery and one-third for furniture. Each department will be approached through the large central entrance. The area for drapery on the ground floor will be 450 yards, and for furniture 200 yards. In addition, special provision will be made for the loading and unloading of goods. Parcel-rooms, store-rooms, and lavatories will also be provided. The first floor will be divided similarly to the ground floor, giving an area of 750 yards. The second floor will contain rooms for fur goods, for reserve stock, for the mantle and millinery department, and also dining-rooms, kitchen, lavatories, &c. A part of this floor will be occupied by the educational department of the society. The third floor will be devoted to work-rooms and stock-rooms. The total floor area of the building will be 4,100 yards. The elevation to Albion-street will be of local stone. The rooms will be lofty, and will be carried on iron girders and iron columns, and all made fireproof. The plans and designs have been prepared by Mr. W. S. Braithwaite, architect, South Parade, Leeds, who will superintend and carry out the works.

THE MISSION HALL, CAPE TOWN, SOUTH AFRICA.

This new building is being erected in Buitenkant, Cape Town, replacing a number of ancient and interesting buildings, much enhancing the neighbourhood, and supplying the district with an institution greatly required—the gift of a lady to the New Dutch Reformed Church. The designs are by Mr. G. M. Alexander, F.R.I.B.A., architect, of Cape Town, under whose supervision the works are being carried out by Mr. John Jenkinson, builder, also of Cape Town.

"BUILDING NEWS" DESIGNING CLUB: A PAIR OF LABOURERS' COTTAGES.

(See description on page 453.)

NEW POST-OFFICE, LEEDS.

The full sheet of details of the new post-office, Leeds, which has been commenced from the designs of Mr. Henry Tanner, F.R.I.B.A., of Her Majesty's Office of Works, complete our information respecting the building, an exterior view and plans of which we gave in our issue of March 4, and a full description of the building on p. 335.

DESIGN FOR A PARISH HALL.

An attempt has been made, in the design for a parish hall, to plan and arrange a building suitable for a small country town. Provision is made for a public hall, market place, and fire brigade station. The materials proposed to be used are brick, with stone dressings and tiled roofs.

A. E. Dixon.

ARCHÆOLOGICAL.

Egypt Exploration Fund.—A meeting of the subscribers to this fund was held last week. Sir John Fowler, the president, mentioned that Mr. Naville had excavated the Temple of the Egyptian Hercules at Ahnas, which he surveyed the previous year. He had found six granite columns 17ft. in length, with palm tree capitals. One of these, quite perfect, was now in the British Museum, and it bore the names of Rameses II. and his son Menaphtheh, the Pharaoh of the Exodus. The other five columns had been distributed amongst various museums. Mr. Naville had also found a granite colossal statue of Rameses II., and this had been sent to the United States. Further, he had found a large lion couchant, which had been sent to the Watt Institution, Greenock, and a red granite bust of Rameses, which had been sent to the Charterhouse. The Rock Temples of Beni-Hassan and Elbesleh had been surveyed the inscriptions copied, and the best of the wall paintings reproduced. This important work had been performed by Mr. Newberry, Mr. Fraser, and Mr. Blackton. Mr. P. E. Newberry subsequently read a paper on the work which he had carried out during the year in surveying and excavating.

CHIPS.

A stained-glass window, having as its subject "Christ Blessing Little Children," has been placed in the Congregational Church at Freemantle, Southampton. Mr. W. N. Froy, of Hammersmith, was the artist.

The organ in Christ Church, St. Alban's, was reopened on Wednesday week, after having been reconstructed and enlarged by Messrs. C. Lloyd and Co., of Nottingham.

Lady Salisbury laid, on Saturday afternoon, the foundation stone of the new church of St. Margaret, Leytonstone.

A drinking fountain has been erected at the south-east corner of Frederick-street, Edinburgh, by the city authorities, under the supervision of the burgh engineer, in whose department it was designed. It is of mottled red granite, and stands about 4ft. 6in. high. It consists of a turned pedestal supporting a circular basin. From the centre of the basin there springs a short turned pillar, to one side of which is attached a lion's head of bronze, from the mouth of which the water flows.

A new technical school was inaugurated on Saturday at Bolton. It has been adapted from the old Mechanics' Institute, and has cost about £9,000. The school will accommodate a thousand pupils. Machinery to the value of £3,000 has been given by local firms, including benches in the woodworking department, given by Messrs. J. H. and G. Marsden.

The Ipswich Corporation have received a letter from the solicitors to the Fonnereau family stating that it is proposed to dispose of Christchurch Park and its Elizabethan mansion; but before offering the estate for conversion into building plots, they wish to give the Corporation the option of purchasing the whole, containing an area of seventy-five acres, for £50,000, being equal to £4 per rod. Christchurch Park, an undulating, well-wooded grassland, adjoins the two Arboreta, already leased from the Fonnereau family for a long period. The letter has been referred to a committee.

A meeting of the Southampton Free Library Committee was held on Monday, to receive tenders for building a library on the New Place House site. The average of the twelve tenders was £6,300, and as the sum at the disposal of the committee is only £3,500, it was decided to ask the contractors to send in fresh tenders.

HARRIGAN'S · THEATRE · NEW · YORK

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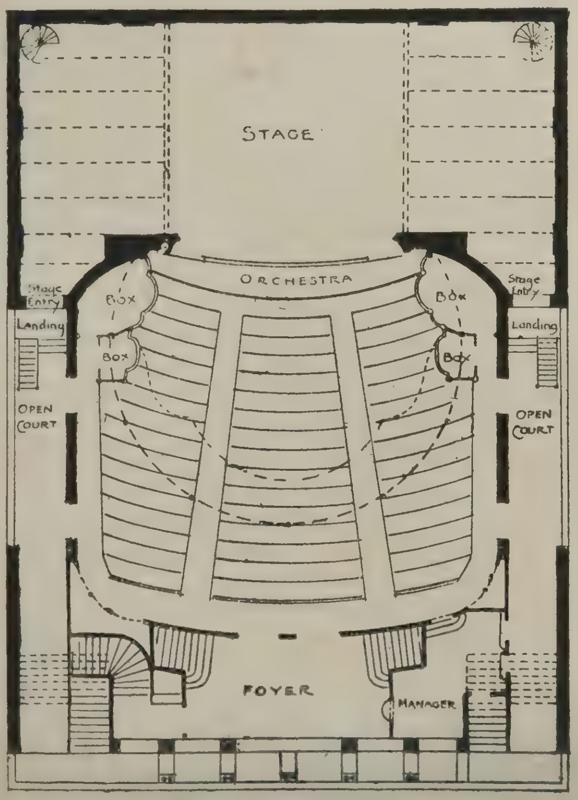
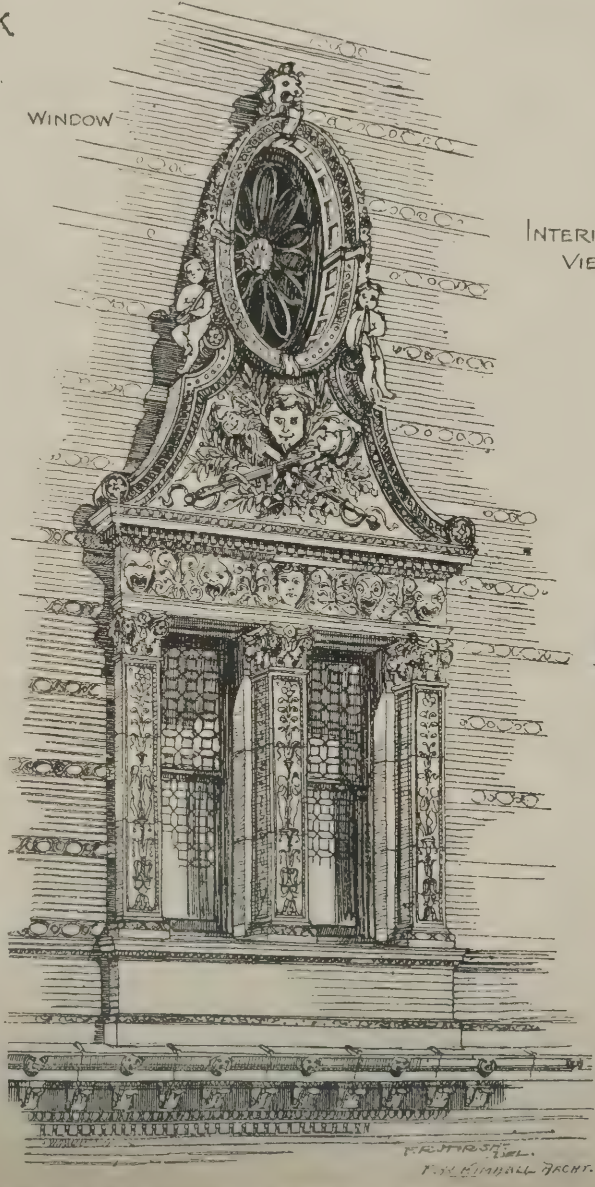
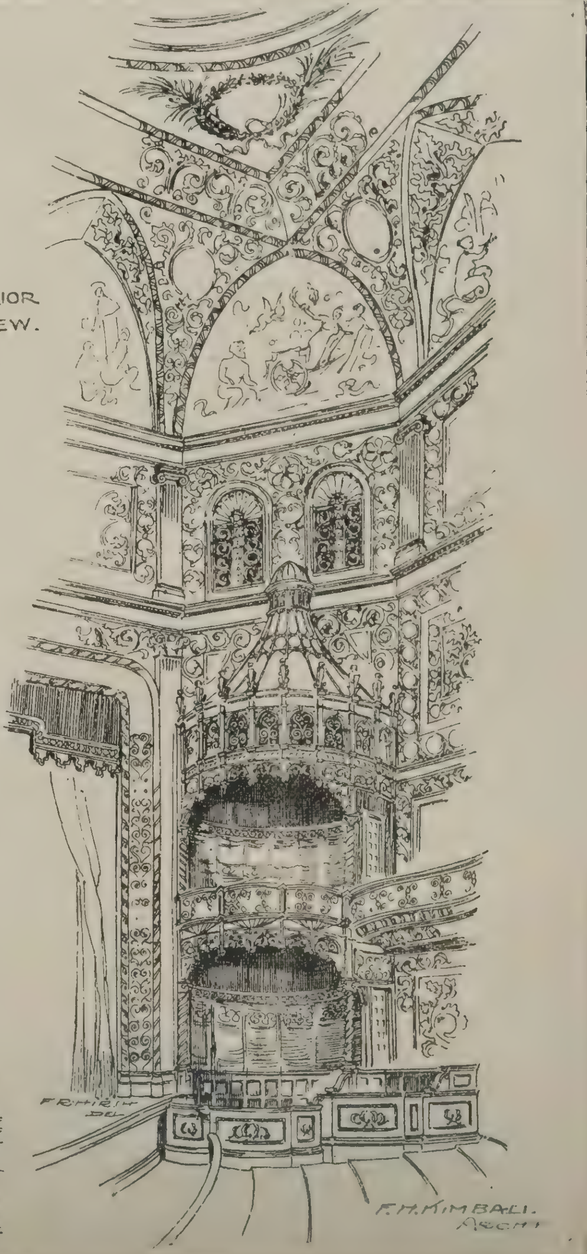
GROUND PLAN

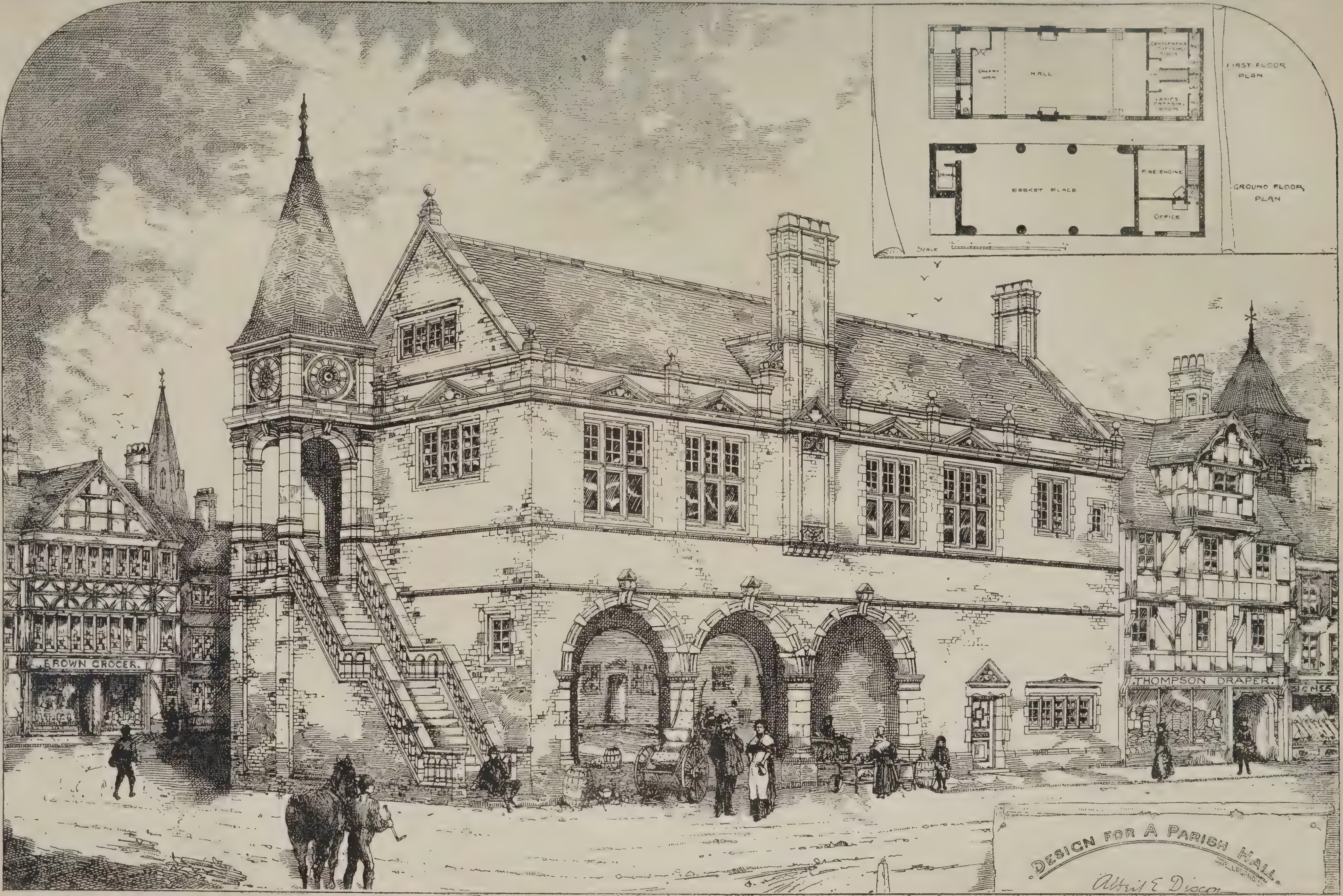


WINDOW


F.R.HIRSH DEL.
F.H.KIMBALL ARCHT.

INTERIOR VIEW.




FIRST FLOOR PLAN
GALLERY OVER
HALL
GENTLEMENS DRESSING ROOM
LADIES DRESSING ROOM
W.C.
LAV.
GROUND FLOOR PLAN
URINAL
MARKET PLACE
FIRE ENGINE
OFFICE
SCALE
BROWN GROCER.
THOMPSON DRAPER.
DESIGN FOR A PARISH HALL.
Albert E Dixon

WAYSIDE NOTES.

THE proposal of the Dean and Chapter of Lincoln to pull down Sir Christopher Wren's building adjoining the cathedral, and to restore the missing wall of the cloister north of the choir, has been criticised unfavourably all round. We are not greatly surprised. Advanced thought on the restoration question does not countenance such a procedure as Mr. Pearson, the architect to the Dean and Chapter, has in contemplation. The proposal is offensive for two very sufficient reasons: (1) An interesting old building, by the most renowned of English Renaissance architects, is to be practically destroyed; and (2) "Modern Antique" work is to be tacked on to a grand old cathedral—in many respects the grandest in the country. It is not surprising to learn that Mr. Pearson's scheme dates back to 1875, but it is pardonable to express astonishment that it still recommends itself to its author. In the course of the last seventeen years or so the ideas of most persons on the restoration question have developed considerably. Most architects, if asked to state their opinions as to the most advanced views on the restoration of our ancient ecclesiastical buildings, would say, "Anything but the restoration-back-to-a-certain-date principle." There is now a widespread appreciation of the folly of this once-fashionable method of procedure. Where, not many years ago, the craze was to transform a picturesque old pile, rebuilt in part, added to, and repaired times without number, into a sleek building of such-and-such a century's style of architecture, we now endeavour to preserve the work of all ages, howsoever mixed and jumbled together. This is a great gain. And where old work has disappeared in the past we are content to suffer the loss, and would not falsify history and attempt to deceive ourselves and others by building in imitation of that which may, or may not have been—most probably the latter. But I suppose we must accept the fact that cathedral cities are "sleepy," and behind the times, though where others take only forty winks, or doze with one eye open, Lincoln would appear to have been having a good old "snooze." Consequently, even in things vitally concerning its own interest, it has dropped in arrear of the age. The unfortunate part of the business is that other people are interested in the matter in question. We are not all impressed with the idea of the wonderful "new prospect" of the cathedral that is to be opened out by the proposed operations of so-called restoration, and we therefore decline to see the wisdom of destroying the old library of Sir Christopher Wren, and falsifying history with new work.

The "new railway to London"—as though, according to newspaper headings, an accomplished fact—is just now a seasonable topic. A Committee of the House of Commons is considering this proposed extension of the Manchester, Sheffield, and Lincolnshire Railway, Sir Richard Paget being chairman of the committee. I read that the number of petitions in favour of the Bill are very numerous, and far outnumber those against it. As now proposed, the new line is to be an extension in a southerly direction of the Sheffield Company's line from Beighton Junction, near Sheffield, to Annesley, authorised in 1889, and now nearly completed. Thence the line will run through Nottingham, Loughborough, Leicester, Ashby, and Rugby, where there would be a junction with the North-Western to allow of access to Peterborough. Through what counsel for the promoters called "an important farming and fruit and vegetable-growing country," it will continue viâ Woodford and Brackley to Quainton-road, where the northern extremity of the Metropolitan Extension will welcome it with open arms—or "chairs," perhaps, to speak more correctly. Over this already-laid railway the trains of the proposed new trunk line would travel until Finchley was reached, where they would run off on to a new line, and thence, by means of a tunnel, enter the terminus to be constructed in the Marylebone-road. For the purposes of this station it is proposed to acquire 58 acres of land, and 300 acres are required for a goods depôt at Neasden and other places. Counsel said this would be "ample," as one may imagine. A small branch line between Edgware-road and Baker-street is contemplated for the purpose of interchanging traffic with the southern lines, *viâ* I suppose, the underground system. The scheme involves the construction of 112 miles of new railway, and the estimated total cost is £6,573,729, of which sum £6,484,998 will be required for new lines and stations, and the purchase of land, while "widenings" will take £62,788, and new roads £25,942. The average cost of the extension is therefore seen to be about £58,695 per mile. The total area of land required is about 1,475 acres, of which 73½ acres are in London, and to be acquired for an outlay of £1,423,720. The down-in-the-mouth St. John's-woodites may be comforted to learn that their coal henceforth would be computed to cost them 6d. less per ton than heretofore, and facilities for its delivery would be greater. In London the railway would run through Broadhurst-gardens, Fairfax-road, Loudoun-road (where it would cross the main line of the London and North-Western), Wellington-road, in a tunnel by the side of Lord's Cricket ground, under St. John's Wood-road, and then it would pass in the open again to Edgware-road, where, said Mr. Ralph Littler, Q.C., "a station would be constructed with a ridge and furrow roof like Euston, and not a hideous domed roof like Charing Cross."

The river front of Charing Cross Station is certainly about as unlovely an object of its kind as may be imagined. Even an R.A. student, after the chance for practice recently offered in a competition at Burlington House, should be able to do better. I have heard that someone complained to the engineer of the station at Cannon-street of the ugliness of his structure. "Wait till Charing Cross is finished!" was the reply.

The Chairman of the first London County Council has issued a report on Metropolitan improvements, and some very interesting facts are set down in black and white. It is of some interest, if no practical use, to know that London streets, placed end to end, would reach about to St. Petersburg. I am afraid that the thoroughfares improved by the late Council would not reach very far. The persistence with which improvement schemes were "blocked" during the life of the Council, and the absolute hostility plainly evidenced during the last few months of its existence, were quite remarkable. Whether this sort of thing is to be repeated for another three years remains to be seen. I fear that the majority of members have other fish to fry. As stated in the report alluded to, the "betterment" principle, or want of principle, has stood in the way of all the projected Metropolitan improvements. It certainly has not been the fault of the Improvements Committee that schemes have been shelved. The chairman and members of that industrious committee of the late Council did their best, but their recommendations were time and again treated with indifference.

One would imagine that during the last year or two there would have been a good many competitions for County Council buildings like that now hailing from Stafford. This advertisement gives the idea of a thoroughly good, straightforward competition, where architects will receive just dealings. The premiums offered are liberal—unusually so, I should say—and the whole thing is a welcome change from the pig-in-a-poke competition of everyday life. I can only hope that it will go through without a hitch, and that all the competitors will be successful.

While our County Council neglects Metropolitan improvements, such undertakings are being promoted by private enterprise. The Westminster Improvements Bill, which has been before a committee of the House of Commons, is the work of a company, formed for the purposes of making a profit out of certain alterations to, and purchases of land in, Whitehall and Westminster. Here we have the extraordinary anomaly of a private company attempting municipal work, while a municipal body aims, in the purchase and management of tramways, &c., at doing the work of corporate bodies of a semi-private nature. And the only explanation I can see is that people like minding everyone else's business better than their own.

On Sunday I discovered Little Hangleton Church, at the back of Portslade, near Brighton. It must certainly be classed with the smallest of old churches in England, being a place where one might fear standing up too quickly in case of knocking a hole in the roof with one's head. It stands in a very breezy position on a slope of the downs, looking out towards the sea. Presumably, service is sometimes conducted in the building in the summer; at present it only has an outside congregation of Southdown lambs. In the tiny churchyard is a recently-erected monument to a local LL.D.—a block of granite, polished and inlaid with brilliant glass mosaic. As may be imagined, the memorial looks out of place on the bare downs, beside the grey old church, which, small as it is, has its own beauty of effect. Some repairs have been done to the east end; but the body of the building, its ivy-covered tower, and stone-slabbed and tiled roof, are still as of old.

GOTH.

COMPETITIONS.

BEAUMARIS.—At a special meeting of the town council, held on Friday, a report was submitted by the committee appointed to examine the designs sent in for a promenade pier, which stated that the committee had examined 15 plans sent in, and they recommended the following four for the consideration of the council:—Mr. C. F. Bamford, C.E., Liverpool; George Ramage, Glasgow; Messrs. Mayoh Bros., Manchester; and Mr. A. A. Sutter, C.E., Edinburgh. It was unanimously resolved—"That the plan of the proposed new pier sent in by Messrs. Mayoh Bros., of Manchester, be accorded the prize of £10 offered by the town council." The committee were appointed to carry out the project; and it was decided to ask Messrs. Mayoh to attend before the committee to discuss their design.

LEICESTER.—For the fever hospital proposed to be erected by the corporation thirteen sets of designs were submitted by architects in practice in the town. The first premium has been awarded to Mr. Edward Burgess, the second to Messrs. Everard and Pick, and the third to Messrs. Goddard and Paget. All the designs are on view till to-morrow (Saturday) at the Museum Buildings, New Wall, Leicester.

WIGAN.—At a meeting of the Wigan Liberal Club, on Friday, the design of Mr. Simon, architect, of Edinburgh, for the new Liberal club to be erected in King-street West, Wigan, was accepted.

SCHOOLS OF ART.

METROPOLITAN DRAWING CLASSES.—At Carpenters' Hall, on the 17th inst., Viscount Cranbrook distributed the prizes gained by the students of these classes during the past year. The report stated that work had been carried on at 21 centres, and that 772 students had attended. The Attorney-General moved:—"That this meeting heartily approves the action of the Government in supporting technical education for the artisans of this country by means of evening classes." The motion was seconded by Mr. Bartley, M.P., supported by the Rev. S. G. Scott, and unanimously agreed to.

At the Epsom Petty Sessions on Monday week, Charles Suttle, plumber, of 27, Kensington Park-road, Notting Hill, was committed for trial on a charge of stealing from the partnership premises at Ashtead, on or about the 27th December, 1891, a van, a cart, a quantity of locks, pails, saucepans, two coal-scuttles, various tools, stocks and dies, a vice, various paints and other articles, value over £40, the property of George Sheldrick, his co-partner.

The Mayor of Folkestone and other local residents are formulating a scheme for throwing a suspension bridge across the deep ravine of the sea front from the Bayle just beyond the Lees to the Darlocks on the East Cliff. The length of the viaduct will be 600ft., and from 74ft. to 76ft. high over Harbour-street and Beech-street. The bridge would open up more sea frontage on the eastern side of the town, and convert the land into valuable building sites. The width of the bridge is to be from 23ft. to 25ft., and the next step will be to invite engineers to send in plans in competition for premiums.

"BUILDING NEWS" DESIGNING CLUB.

A PAIR OF LABOURERS' COTTAGES.

THIS is a taking subject enough, and for ingenuity of planning few others furnish the designer with a problem more worthy of his skill and taste for the elements of the picturesque The restrictions, too, insisted on by the limits of expenditure supply a wholesome restraint upon a fancy for unnecessary features so often indulged in by inartistic builders of villas and middle-class dwellings, with a view to obtaining quaintness or originality. The practical everyday needs of a labourer are so simple and in fact so common-place, that anything in his home of the nature of a cottage orné is at once acknowledged on all hands to be manifestly out of place and entirely beside the question. Swiss chalets and Doric temples of the Loudon type for cottages have, it is to be hoped, had their day, and with the marked improvement which we have seen in ordinary house architecture, the dwellings of the agricultural worker have no doubt more or less, according to the good taste of the landowner, correspondingly advanced in suitability. Whether or not the designs which have been sent in by members of our club are likely to help on this progress must be determined by the merits of the plans which are herewith chosen for illustration. The conditions which we issued to competitors are as follows:—"A pair of labourers' cottages, suitable for an exposed mountain district in a stone country. Each house to contain a porch, living room 14ft. by 12ft., scullery about 10ft. by 12ft., pantry, woodhouse, or washhouse, with copper in it, a coal-place, ash-place, and w.c. Upstairs, one large and two small bedrooms. Site is situated on the side of a hill, with a fall of 1 in 10. Walls stone, roof covered with stone slab slates. Convenience, economy, and picturesqueness to be considered. Scale, 6ft. to the inch. Two plans, three elevations, section, and sketch." On the whole, the designs sent in are good; but none realise what was intended more suitably than those which we have chosen for award. "Vulcan" ranks first, then "Van Demon," and for the third place comes "Symbol." Economy is essential, and, with the landlord, necessarily ranks of prime importance, next convenience, and then picturesqueness. Compactness of plan, then, is a *sine quâ non*, and "Vulcan" has well observed the condition. His plan speaks for itself; and if the pantry is small and the washhouse a little too much in the house to keep out the steam from the copper, his arrangements have many good points worth noting. The pitch of the rooms might have been higher upstairs, but the bedrooms are fairly good, and every part is well lighted. The chimneys being brought together in one stack is an advantage, and the exterior treatment is pretty, suitable, and cheap. "Van Demon" is more ambitious, and his plan is not remarkable for economy. The break in the main wall cuts the design up needlessly, and the roof is broken aimlessly with eaves, gables, and hips on one side or the other. "Symbol" cannot speak for himself, as his plan is not illustrated; but although we like his elevation better than "Van Demon's," his work on a whole is not so good. His living-room is so cut up with doors (no less than four), that its comfort would be greatly impaired, and, while it is a good thing to keep the cottagers apart at the rear of their dwellings by placing the offices facing away from each other, it is a mistake to contrive the w.c., &c., in so conspicuous a position as here obtains when viewing the buildings from the road. "Vulcan" obviates in this respect both objections, and reserves the space immediately behind the houses for the pails and pans of each individual occupier, irrespective of the neighbours. In the second placed design privacy is lost and gossip is encouraged. "Smilash the Goth" has made his design too much like a pair of villas for a sea-side site. His plan is original and clever, but too costly for ordinary labourers' cottages. The scullery is too near the entry, and the living-room, though "fair and square," would not be really comfortable. The ingle nook as shown in the section would do better for the squire's hall. The old idea of a chimney corner is very nice and cottage-like of course; but it should be treated in much more simple style for a home of this sort. "McGinty" sends a capital pair of cottages, though less original in plan. The simple way in which the two front gables group together with the main roof as a setting, so to speak, is alway an effective arrangement. The plan gives us good bedrooms, but the front and back room method below is not the best we have seen. "Red Lion," with Broomhall tiled roof, makes a feature of low eaves as "Vulcan" does, and, excepting the staircase window, his elevation is fairly good; but to render it impossible to get out of the scullery except by coming through the living-room is a fatal fault in any plan. "Pastime" gives us an uncommonly pretty group, one cottage half-timber and the other all stone; but as we told him the site was in an exposed position, it was foolish to design for half-timber work. The plan is too cut up, and the entrances are too close to each other. The bedrooms are spacious, and partly 8ft. high. The mullioned windows of the design by "Peastree" give his elevation some character which looks suitable; but the cramped yard and shut-in contrivances behind the house are very unsatisfactory. The window to the stairs is needlessly large, and the larder doorway is awkward to a degree. These are items of a like kind to other faults in the plan. "North Pole" errs on the side of so-called "quaintness." The front is pretty, and the plan has good features, such as the grouping of pantry and offices at the back. "G." in a circle is good at alcoves and ingles; but the "coves" who act as labourers would not appreciate such niceties. The elevation is very pretty, though from an artistic point of view the ingle-nook projection in front seems outside to be meaningless and ineffective. It looks, in fact, like a lean-to way from one house to the other. The back elevation is much more happy. "Flute," at any rate, provides a big larder. Fifteen shillings a week, and perhaps only twelve, would never really fill it. The houses look too nearly like villas, and the perspective shows them extensively. "Firefly" fits his plan to the fall of the site more carefully than some others, and he works out his scheme skilfully with a washhouse reached from outside, which is in many ways an advantage. The plan is not a cheap one, and is ineffectively drawn; but its author has many points worthy of commendation. "Phœnix" enters his cottage at once into the living-room. Externally the building is suitable, and we fancy we have seen something like it before. "Cyclist" is improving; but he has been unable to get away from the suburban "semi-detached" idea enough to give us characteristic cottages. "Jap," with stepped gables, circular windows like eyes, and numberless breaks, gives us a "please to remember the grotto"; but we cannot reward his effort with praise for good planning, however much we may recognise his fancy. "Tyro," with one wide gable, covers his houses with a span, and contrives an unquestionably good pair of cottages. They are by no means free from faults, such as the door between the scullery and living-room opening on to the fireplaces; but "Tyro" need not long remain so. "Unitate Fortior" draws with taste; but the loggia-like portals are not adapted to everyday mortals, such as farm-labourers. The steps between the rooms would make them use strong language with some reason, and the third bedroom is very small. "B." in a circle, gives us an elevation which we like, and for villas it would do. The plan is well arranged, and all are nicely delineated. The "sitting-room" idea is not wanted for such people, and best parlours are for other folk. "Sanitas" comes next, and the "Jocelin," who, if commonplace, is good. "Ray" gives us a half-timber group, and "Compass-box" follows with a stone pair. The other plans we group in this order: "Ich Dien," "Ilex," "Rough Work," "Point Dexter," "Graham," "Baluster," "Norman," "Sphinx," "Sector," "Gargoyle," "Don Quixote," "Hardwick," "Nobut a Young 'Un," "Yorkshire Tradition," "Westward Ho," "Toiler of the Sea," "Influenza Fiend," "Erimus," "Amor Patræ," "Jam," "Mars," "La Cigale," "Wyandotte," "The Idler," "Peterborough," "Old Postage Stamp," "Jamrach," "Excelsior," "Athenian," "Glencoe," "Isabel," and "Alpal."

DRY OAK AND ASH.

WE have received a catalogue of J. M. Bennett and Sons, timber and slate merchants, Ardwick Station, Hyde-road, Manchester, compiled for the use of their patrons, which gives full particulars of the stock of dry oak and ash held by that firm. This little handbook of prices will be of invaluable use to cabinet makers and builders who are in want of those materials, as by reference to it they will immediately find the length and sale contents, also the number of boards into which each log is sawn, the date of sawing and contents, and the net cost of log timber and sawing included. These particulars are of essential value to those who have to tender for timber or woodwork. The cost quoted is in Manchester; but the railway rates are given, so that any purchaser can find the exact outlay for the wood delivered to any particular station from Ardwick. This table of railway rates supplies a desideratum not always found in price books. On each page is headed the thickness from ½in. to 3in. Austrian Crown wainscot oak, and the same with regard to Quebec white ash, so that any boards may be easily found. We recommend the catalogue to our readers.

CHIPS.

The death is announced of Mr. James Hawker, builder, of Chard, an alderman of the town council, of which he had been a member since 1869. For sixty years he was superintendent of the Baptist Sunday-school, and fifty-four years deacon of the Baptist Church. He died on Friday, aged 81 years.

New ironmonger's premises have been erected in Victoria-street, Bristol, on the site of smaller shops. Mr. J. H. La Trobe, of Clare-street, Bristol, was the architect, and Messrs. W. Cowlin and Sons, of the same city, were the builders.

The freehold site of Farringdon Market, belonging to the Corporation of the City of London, was sold by auction on Friday. The property was knocked down for £98,100 to a firm of auctioneers, who bought for a client.

Mr. Herbert Neve, F.S.I., of Holl Park, Rolvenden, has been elected a member of the Kent County Council for Cranbrook division. Another new member of that body is Mr. Henry Peters, of the Wouldham Cement Works, who has been elected for Malling division.

It is proposed to deepen and extend the harbour of Anstruther, in accordance with plans prepared by Messrs. Stevenson, of Edinburgh, whose estimates of cost are £8,000 for deepening and £55,000 for the enlargement.

At a general meeting of the Royal Society of British Artists on Monday night, Mr. G. C. Haité was elected a member of the society.

On Saturday the memorial-stone of a new infants' school in connection with the Roman Catholic Church of St. Michael, Westgate, Bradford, was laid. The school, which is being erected in Rebecca-street, will cost £5,000, and is being built from designs prepared by Mr. Simpson, architect.

A new church, built at a cost of £10,000, for the Free South congregation, Aberdeen, was opened on Monday.

The dissolution of partnership is announced as between A. S. Thompson, M. J. C. Buckley, and S. H. Gifford, under the style of Cox, Sons, Buckley, and Co., Southampton-street, Covent-garden, Maiden-lane, Covent-garden, and College Works, Esher-street, Westminster, and Youghal, Ireland, and East 15th-street, New York, artists and manufacturers of and dealers in art manufactures and the branches thereof, including the manufacture of church furniture, stained-glass monuments, and metal work, as far as regards S. H. Gifford.

A stained-glass window, designed by Mr. Harrington Mann, and executed by Messrs. M'Culloch and Co., has been placed in Union Free Church, Kingston, Glasgow. The incident is taken from Mark xiv. 8, "She hath done what she could."

At a meeting held at Avonmouth on the 17th inst., plans prepared by Mr. W. Wood Bethell, of London, for a church to be built at that port were adopted. Of the estimated cost, £6,000, two-thirds were subscribed in the room, and the work will be proceeded with at once.

A marble bust of the late Alderman Sir Robert Fowler, Bart., M.P., has been completed by order of the City Corporation, and placed in the Guildhall Art Gallery. Mr. Merritt is the sculptor.

The Royal Exchange at Manchester, the third erected on the site, is about to be enlarged from designs by Mr. Murgatroyd, of that city, who, in conjunction with Mr. Mills, was its architect. The fine Romo-Corinthian portico in Cross-street will be demolished.

A general assembly of the Royal Scottish Academy (including both Academicians and Associates) was held on Friday for the purpose of receiving nominations for the twelve Associateships which are to be filled up on Wednesday next. It was resolved that at the present stage the names should not be made public.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

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ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front Page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No front page or paragraph Advertisement inserted for less than 5s.

SITUATIONS.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is ONE SHILLING for TWENTY-FOUR WORDS, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., L., LI., LIII., LIV., LVIII., LIX., and LX. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

RECEIVED.—A. G. and Co.—Simplex.—J. N. S.—Zampa. —P. R. T. (Manchester).—R. and B. S. Co.

"GIVE AND TAKE."—There are two slight errata in the above article in our issue of March 18th. Line 18, column 2, should read, "at C as hitherto. We must find a new point on." "Marking" (last line but one) should read "taking."

"BUILDING NEWS" DESIGNING CLUB.

DRAWINGS RECEIVED.—"Nil Nisi Bonum," "Sphinx," "Sector," "Jam," "Pastime," "Sweet Auburn," "Alphal," "Jamrach," "Smilash the Goth," "Black Prince," "Old Postage Stamp," "Unitate Fortior," "Jean" (your design for the cottages ranks about fifth in merit, and your plan is a good one though faulty in details, such as the overlapping of the front door on to the living-room doorway. The wash-house should have an external door, and the steps to the pantry are a mistake.)

Correspondence.

ALLOA BURGH SCHOOL BOARD COMPETITION.

To the Editor of the BUILDING NEWS.

SIR,—Owing to absence from home I have only now seen the paragraph in your issue of 11th in reference to above competition. The information there, if correct, would certainly not be creditable to either the Board or myself, and I desire to give it emphatic contradiction.

The statement as to a "curious subsequent arrangement" is entirely untrue. From the date the plans were sent in until I received official intimation accepting my design and appointing me architect, under the terms of the competition, I had *no communication of any kind* with the Board, nor did I ever know the name of a single member. The "curious" arrangement, however, exists in clauses 9 and 10 of conditions of competition, which provide :—

"9. This condition must be fulfilled, that the whole actual estimates shall not exceed £8 10s. per unit, and in the event of the actual estimates exceeding this, then the Board reserve absolute right to reject the plans and cancel the selection, and hereby declare that they do not hold themselves under any obligation whatever to the architect whose plans are thus finally rejected, and will not in any case whatever hold themselves liable to pay, and will not pay any costs or bonus whatever.

"10. In the event of the plan selected exceeding in the actual estimates the sum of £8 10s. per unit, the Board hold themselves absolutely free to cancel all the past proceedings, and to begin of new."

These conditions I, of course, accept, as do all the other competitors.

So far from my design, "L'Ecole," being of excessive cost over the maximum of £7,000, the report of Mr. Dinsmore, the measurer appointed in the competition, states :—"The design bearing the motto 'L'Ecole' (801 places) can be carried out for £8 10s. per scholar (£6,809), exclusive of the mechanical ventilation and heating. If this latter system is adopted it will add about £250 to the cost, bringing the rate up to £8 16s. 3d. per scholar (£7,059)."

The local papers (so far as I have seen, and I think I have seen all) have not "commented adversely" on the competition, and I was assured by the board that the decision had given general satisfaction; but a very contemptible communication appeared in one of the Stirling papers, evidently by a chagrined competitor, whom I hope to bring to book for his statements. Probably the same gentleman is your informant. As a contrary example, the winners of the 2nd and 3rd premiums, Mr. R. M. Cameron (not "McFarlane"), Edinburgh, and Messrs. McLuckie and Walker, both freely expressed to the Board their concurrence in the award.—I am, &c.,

JOHN B. WILSON, A.R.I.B.A.
112, Bath-street, Glasgow.

TERRACOTTA.

SIR,—As manager of what some consider to be the largest brick and tile works on the Continent, perhaps I may be allowed to make a few remarks regarding the scum on terracotta.

The writer of the article on that subject, in your issue of the 4th inst., is, in my opinion, correct in stating that blocks imperfectly dried before being placed in the kiln whiten on their faces.

I also agree with Mr. Edwards, regarding he scum being perceptible on the goods before they are placed in the kiln; but what he says about blocks which have been put in the kiln in anything but a dry state turning out a beautiful red colour, I can only account for by presuming that only a few such block were in the kiln at one time, the bulk of the kiln being made up of well-dried goods. A test would be to try a whole kilnful of damp goods, and I think Mr. Edwards would change his opinion.

I hold that the scum occurs in the drying, whether that takes place in the sheds or in the kilns.

We all know what causes the scum, and Mr. Edwards's remarks with reference to the difficulties which the Ruabon manufacturers are labouring under regarding it surprise me much, as a series of experiments which I made with the Ruabon clay a number of years ago led me to believe that it was one of the finest, if not the very finest, that I had ever seen, and the results that I got from it were of the very highest class.

I am sending you by post two pieces of brick made from the same clay—one shows so much scum that possibly the Ruabon makers would be horrified if they had a like clay to deal with. You will notice that it is perfectly white.

The other piece of brick represents our clay as we now manufacture it—the colour a beautiful, rich red.

I have succeeded in inventing a plan by which I can defy the scum, but which I cannot divulge.

I merely mention this to show that what I have said regarding the staining is the statement of one who has had large experience with clays which stain very badly, but who has succeeded in overcoming all difficulties regarding it.—I am, &c.,

R. A. R.

* * *

Dr. Waldstein, the Director of the American Archæological School in Athens, reports that a tentative excavation at Sparta has begun, and that the researches on the site of the Temple of Hera, at Argos, continue.

Intercommunication.

QUESTIONS.

[10747.]—**Road.**—I have to make up a road with 3in. of gravel, and to state the quantity required in tons. Will some reader inform me how to do this? The roadway is 24ft. wide and 510 yards long. Please show working.—SURVEYOR'S PUPIL.

Legal.

PAVING DISPUTES.

SECTION 150 of the Public Health Act 1875, is pretty generally known, and it has been very frequently before the Courts. Still, in the recent case of "Sandgate Local Board v. Keene" (*Times*, 14th March) a practical point was again raised which is well worth noting. The section, as will be remembered, gives the local authority power to recover in a summary way the expenses of doing paving work as to which the owners have made default "according to the frontage of their respective premises, and in such proportion as is settled by the surveyor of the urban authority or (in case of dispute) by arbitration." Section 257 provides that when the expenses have been settled and apportioned by the surveyor such apportionment shall be binding and conclusive on such owner unless within three months after service of notice he shall in writing dispute the same. From this fact it appeared that, after having notice claiming £25 odd as his proportion of a total expense of £61, the defendant wrote the Local Board stating that the claim was wrong, and should be amended. The Board did nothing more for some time, or until they brought an action in the County Court for the sum demanded and obtained judgment. The defendant then went to a Divisional Court to set this aside on the ground that there had been a dispute which should have been settled by arbitration before action was taken in the County Court, and as the Divisional Court was divided in opinion he now came to the Court of Appeal.

The defendant argued that he had given written notice of a dispute which the Local Board were bound to deal with by arbitration, so that the amount payable should be settled before they resorted to the summary remedy of suing in the County Court. On the other side it was argued that there was not, and could not be, any dispute to decide, because the only apportionment that could be made was by frontage, and that could be settled by the proposed plans with the Board. The Court of Appeal, however, declined to take this very short and official view of the question. They began by pointing out that all these new obligations about making streets are imposed upon people by certain statutes, and not in any way by the common law, so that by these statutes must they be decided. They then said that the defendant had been wrong to begin with, for he ought to have raised his point of liability when the Local Board made their plans, by alleging that their scheme was an unfair one. He did not do this, and so must be taken to have admitted the plans, and thus the total of £61 as the expense of it all was impliedly agreed. But he had still the right to raise the question of the proportion payable by him, and this he had done, so that there was a dispute which should have been submitted to arbitration before summary action was taken in the County Court, and thus the appeal was allowed, and the defendant's objection succeeded.

FRED WETHERFIELD, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

NOTE.—All questions for reply in this column must be headed "BUILDING NEWS," and must reach my offices, as above, by *Tuesday* morning to insure answer for same week.

JOHN.—ROAD.—USER.—Under the Prescription Act, a right of way can be acquired by a user of at least 20 years without interruption; but a public right of way is really not an easement at all.

W. M.—ARCHITECT.—DRAWINGS.—PAYMENT.—The payment on account is clearly an admission of your employment and of his liability. You should charge the commissions suggested upon the approximate estimate you gave, and upon the quantities you supplied.

LEGAL INTELLIGENCE.

Case under the Metropolitan Building Act.—Fee for Irregular Building Removal.—Fletcher v. Lewis.—This summons was heard at Lambeth Police-court on the 15th inst. by Mr. Hopkins, the presiding magistrate, which had been taken out by Mr. Banister Fletcher, the district surveyor for West Newington and part of Lambeth, against Mr. Lewis, of No. 56, Penton-place, Walworth, for refusing to pay the fee for surveying a shed used as a store for paraffin, &c., in the rear of 56, Penton-place, Walworth. It appears that the district surveyor discovered the shed had been erected, and after surveying it gave notice to the defendant, who was his own builder, to amend the irregular work as required by the Act, by inclosing the shed with brickwork, &c.; but instead of doing this, the building was taken down, after which the district surveyor demanded his fee in respect of the building, which being refused the present summons was taken out. The defendant argued to the effect that no fee could be claimed unless there was a permanent building built in conformity with the Act, and that if the building were taken down the district surveyor had no claim. Mr. Banister Fletcher claimed that under clause 49 and 51, taken with schedule 2, a fee is assigned for every new building surveyed by the district surveyor, and that such fee accrues immediately on the covering-in of the roof, and is payable one month thereafter; and argued that the removal could not affect the question. The magistrate decided the district surveyor was entitled to his fee of 15s., and made an order for payment of the same with the amount of costs asked for. (12s. 6d.)

In re H. Rees.—A first sitting was held, before Mr. Chapman, on Monday, under the failure of H. Rees, financial agent, of 32, Craven-street, Strand. No accounts have been submitted, but previously to May, 1888, the debtor was manager of the Ornamental Tin Plate Company, and he has since acted as secretary of various other companies. He is also a party to different contracts for the promotion of companies. He states that his deficiency is partly attributable to losses which he has incurred in the attempted promotion of the *British Building Journal*. No offer to the creditors was submitted, and the matter will be wound up with the aid of the Official Receiver, acting as trustee.

Action for Libel by a Builders' Furnisher.—Jacques v. Gibbons, Hinton, and Co.—This case was heard at Manchester Assizes on the 16th inst. Plaintiff is a marble mason and general builders' furnisher, carrying on business at 79, Deansgate, as Elliott and Co., and the defendants are tile manufacturers in Staffordshire. The cause of action was an alleged libel appearing in a letter written by the defendants in August last, containing certain statements regarding the plaintiff's financial position. The letter was forwarded to Mr. J. H. Andrews, architect, of Manchester. The plaintiff was at the time doing work in a board school in Manchester, of which Mr. Andrews was the architect, and the defendants were supplying him with tiles. After hearing the case the Judge said that in his opinion the letter was a libel. If it was true, there was, however, an end of it; if it was not true, the jury had to say whether it had exceeded the bounds of privilege, and, if so, what damage had been sustained. The jury found for the plaintiff, giving him £20 damages.

Frontage Lines.—On Monday a Divisional Court in the Queen's Bench Division, consisting of Justices Denman and A. L. Smith, heard the case of the London County Council v. D. Cross. Mr. Finlay, Q.C., for the Council, said this was a motion to send the case back to the Hampstead magistrates, who dismissed the summons. It was alleged that the defendant had erected buildings beyond the general line of the Burrard-road, Hampstead, without the license of the Council. The points contended were firstly whether the certificate of the superintending architect as to the houses being in Burrard-road was or was not final, and whether if proceedings were not taken within six months that was a bar to the case being tried. The appellants also contended that the architect's certificate was final, he having said that the house was in Burrard-road. The magistrate thought otherwise, and found that the house, which was at a corner, was in Fortune Green-lane. The action was brought under section 75 of the Metropolitan Management Act of 1862, and was heard at Hampstead in November last year. The house was situated on the Woodbine Estate, which was laid out for building operations in 1887. Mr. Channell, Q.C., argued on the other side, and Mr. Finlay having briefly replied, their lordships reserved judgment to a date not fixed.

Deviations from Authorised Plans.—The Middlesbrough stipendiary has heard a case in which the borough engineer, Mr. E. D. Latham, charged Robert Braithwaite, builder, with omitting to cause the whole surface of the site of five dwelling-houses to be covered with concrete, as shown in his plans. The borough engineer said he sent the plans for these houses back to defendant because he did not show concrete under both the floors and walls, and amended plans were sent in showing 6in. of concrete. The walls had, however, been erected without the concrete beneath. The concrete was absolutely necessary to make the houses habitable, as the ground was of damp clay. He now insisted on concrete being placed beneath both the walls and floors of all dwelling-houses, his 23 years' experience having shown it to be absolutely necessary in Middlesbrough. For the defence Mr. J. W. Bottomley, architect, stated that the concrete was not essential, and that builders were at liberty to deviate from the plans so long as they did not infringe the by-laws. The stipendiary held that defendant was bound by the plans he deposited, but adjourned the case for two months to enable defendant to comply.

In re R. Barlow.—The first meeting of the creditors of Richard Barlow, builder's merchant, Devonshire-street, Ardwick, Manchester, was held on the 10th inst. The liabilities were £3,049 16s. 10d., and the assets were estimated at £871 5s. 7d., leaving a deficiency of £2,178 11s. 3d. The debtor commenced business in 1877 as a builder's merchant in Ancoats with £60 capital, and in 1884 he removed to his present address. A trustee and committee of inspection were appointed.

Employers' Liability.—At the Leicester County Court, on the 10th inst., Fredk. Beaver, bricklayers' labourer, 15, Northgate-street, sued J. E. Johnson, builder, Highcross-street, under the Employers' Liability Act, for £150 damages for injuries alleged to have been sustained by him owing to defective plant and negligence of the defendant, by whom he was employed. Plaintiff was a bricklayer's labourer, and was employed by defendant in rebuilding Royce and Gascoigne's premises in Highcross-street. They were working on November 18th last on the top floor, and were raising the principals by means of a derrick. It was not a proper derrick, but consisted of three poles lashed together, and had no shoe or socket to keep it from slipping. The work was being superintended by Charles Johnson, brother of defendant, and on the previous day his attention was drawn to the dangerous condition of the derrick. Johnson started to move the derrick by a crowbar and a sledge-hammer, and his attention was again called to its dangerous position. When they got it near the wall, notwithstanding that one of the men cautioned Johnson, he gave it another blow with the sledge-hammer. The heel of the derrick slipped towards the wall and pinned plaintiff, breaking his ankle. Charles Johnson denied that he heard Worsdell caution him. The jury found a verdict for plaintiff for £45.

Builders and Mortgages.—At the Liverpool County Court, on the 4th inst., before his Honour Judge Collier and a jury, the case of "Williams v. Evans and Jones" was heard. The claim was for £19 commission on obtaining a mortgage of £1,900, and £3 3s., a valuation fee. The plaintiff is an estate agent and mortgage broker in Liverpool. The defendants are builders in Liverpool. The plaintiff's case was that the defendants had bought through his agency land in Sawney Pope-street, Liverpool, and last summer they erected cottage property thereon. Defendants told him that they wanted a mortgage of £2,400, and a chief of £75, and added that they had put it in other hands, but if plaintiff got it first he would have his commission. Plaintiff got a valuation made, recommending an advance of £1,800, but this defendants refused, and also a further offer of £1,900. Eventually defendants accepted a mortgage for £1,900 at 4½ per cent., made by plaintiff through his solicitor; but when plaintiff claimed his commission defendants repudiated it. For the defence it was submitted that defendants had never contemplated getting a mortgage from the plaintiff, and that they had special reasons for not doing so. The plaintiff came to the defendants in the position of an intending purchaser, and all he had done was with the view of buying. The jury gave a verdict for the defendants.

Employers' Liability Act.—At the Manchester County Court, last week, Edward Riley, a labourer, of Ancoats, sought to recover from Joseph Robinson, builder, of Manchester, compensation for injuries sustained while in the defendant's employ. The defendant was the contractor for the erection of a chimney at a factory in Henry-street, Ancoats. A scaffold was placed around the chimney, and the plaintiff worked at the foot of the scaffold, handing up the materials. On Oct. 27 a wooden hoist fell off a scaffold, and plaintiff sustained injuries to his foot, through which he had been unable to work for seventeen weeks. Judgment was given for the plaintiff for £40, with costs.

In re D. Storer.—An application was made at the London Bankruptcy Court, last week, by David Storer, lately carrying on business at Millwall, Poplar, and elsewhere, as a paint manufacturer, for an order of discharge. His liabilities were returned in the statement of affairs at £64,093, and the available assets have already been distributed at the rate of 10s. in the pound. The Official Receiver opposed by reason of the insufficiency of the assets and the previous arrangement. There was no opposition by any creditor. Mr. Registrar Linklater suspended the order of discharge for two years.

Alleged Breach of Contract.—Unfounded Charge against an Architect.—Smith and Boocock v. Aldridge and Others.—This action, heard at Manchester Assizes, before Mr. Justice Collins, arose out of an alleged breach of contract in the erection of the spire of St. John's church, Facit. The plaintiffs are builders, and the defendants the building committee for the erection of the spire. The plaintiffs' tender for its erection, £972, being the lowest, was accepted. The defendants, however, said they could not afford to give £972, and asked the contractor to reduce it. This he consented to do, provided Healey Hall stone, which had been specified, might be discarded and a stone of inferior quality substituted. The plaintiffs wanted to substitute Blackstone Edge stone, and held that that was the stone which they were to use; but this was disputed by the defendants, who put in a counter-claim for £150, the plaintiffs' claim being £627. Some Blackstone Edge stone was used in construction, but in December the works were stopped by Mr. Rodley, the architect. Mr. Smith, the plaintiff, said the original stone specified was Healey Hall, but by arrangement with the architect, Blackstone Edge stone was to be substituted, in consequence of which he reduced his contract £145, but that only made a difference of £39 so far as the stone was concerned. The balance was made up by an alteration of the quantities and extra labour, and the amended tender was accepted in July. Blackstone Edge stone was brought on the ground and worked, and the architect never objected to the stone. In September the committee objected to the stone, and Greetland stone was selected and then used instead of Blackstone Edge stone. Blackstone Edge stone cost on the ground 1s. 3d. per cubic foot, and Greetland stone cost 1s. 8d. per cubic foot. Mr. Rodley told him that the committee would pay the difference in the cost. Healey Hall stone cost 1s. 5d. per cubic foot. The committee used to come on the ground and interfere with the work, even in the presence and against the previous orders of the architect. On one occasion they went so far as to pull some of the work down. His total for extras was £249 10s. 8d. Practically they did more oversight of the work than the architect. At the close of the plaintiffs' case, his lordship thought there was no case at all on the question of fraud to go to a jury. Every single fact adduced and every single letter written and read seemed to be entirely consistent with perfect *bona fides* on the part of Mr. Rodley. Judgment would accordingly be given for the defendants with costs.

CHIPS.

At the last meeting of the County Council of Cumberland, the election of county architect was proceeded with. There were three candidates placed before the council by the property committee for selection: Messrs. T. L. Banks, Whitehaven; and Messrs. Martindale and Geo. D. Oliver, F.R.I.B.A., Carlisle. On the first vote Mr. Oliver received 25 votes; Mr. Banks, 24; and Mr. Martindale, nine or ten. On the second vote Mr. Banks only received one more vote, and Mr. Oliver, having 32, was elected.

General Crozier, R.E., held an inquiry at the Town Hall, Rhyl, on Tuesday, on behalf of the Local Government Board, into an application made by the Improvement Commissioners to the board for its sanction to borrow £35,000 for the purchase of the property of the local Gas Coke Company. The application was opposed on behalf of a section of the ratepayers.

The ceremony of unveiling a drinking-fountain in Scotland-place, Liverpool, erected in memory of the late Councillor Byrne, took place recently. The memorial fountain is the work of Mr. J. Geraghty, of Bootle. The pedestal is of red Aberdeen granite, resting on a granite plinth in three tiers. It is surmounted by a cupola resting on four circular columns with moulded bases, this also being of granite.

Alterations have been made to the Preston Bank, Preston, embracing the ventilation, which is now carried out on the Boyle system, the latest improved form of the self-acting air-pump ventilator being adopted for the extraction of the vitiated air, and fresh air admitted by their improved air-inlets.

The Bathpool flour-mills, near Bristol, which were burnt down eighteen months since, have been rebuilt, and were reopened on Friday. The engineering work has been carried out by Messrs. Garnish and Lemon, of Barnstaple. The mill proper is a brick building 60ft. by 20ft., built and planned to receive the new machinery. This machinery is driven by a 32½in. Victor turbine waterwheel, which develops about 40H.P.

WATER SUPPLY AND SANITARY MATTERS.

Sewerage Difficulties at York.—At the last meeting of the York City Council, the sewerage committee reported that the sewerage works so long delayed by the determination of Mr. Bottoms's contract, are now proceeding under the direction of Mr. Kellett as contractor. The committee asked the council to authorise the sale to Mr. Abram Cellett for £500 the whole plant, material and tools left upon the work by Mr. Bottoms. The town clerk stated that he had yesterday received notice of Mr. Bottoms's intention to appeal against the judgment of Mr. Justice Matthews, so that it was not desirable that the matter should be further discussed that night. The consideration of the report was adjourned, except that portion authorising the sale to Mr. Kellett of the plant, material, and tools left upon the works.

The Aqueduct Tunnel under the Mersey.—The great boring under the Mersey at Fidler's Ferry, half-way between Warrington and Widnes, intended for the conveyance of water from Lake Vyrnwy to Liverpool, was completed on Tuesday. It is now nearly four years since the contract for the work was given to Messrs. Monk and Newell, the original contractors, and ever since that time the undertaking has met with accidents and difficulties. In August, 1889, the river burst into the works, and shortly afterwards the corporation terminated the contract with Messrs. Monk and Newell, who subsequently recovered £14,000 in the arbitration proceedings against the corporation. The transference of the tunnelling contract was then made to new contractors, Messrs. Cochrane, who elected to recommence it on a higher level, abandoning much valuable machinery and 57ft. run of tunnel. Some months ago, on the advice of Mr. Arthur Hill Holme, Sir Benjamin Baker was consulted as to the best way of working and he recommended alterations by which the great shield, devised by Mr. J. H. Greathead, could be driven through the stratum with more effect. His suggestions were carried out, and Mr. G. F. Deacon was able to report to the water committee on Tuesday the completion of a work which has cost the corporation in the aggregate about £30,000.

CHIPS.

Dr. B. W. Richardson, F.R.S., the eminent sanitarian, has been selected as the Liberal candidate for the Parliamentary division of Walton, Liverpool.

A new Great Seal for Ireland has been completed by Mr. Allan Wyon, chief engraver of her Majesty's seals, to take the place of the seal designed on the accession of the Queen, which is now worn out. The new seal is an exact replica of its predecessor, and is similar in all respects to the Great Seal of England, save that in the exergue a harp with shamrock leaves takes the place of the trident head and sprays of oak, which form the distinctive mark of the English seal. The material is silver, the weight of the whole about 15lb., and the diameter of the impression is 6¼in.

The 14ft. thick puddled wall at Eccup reservoir has given much trouble to the waterworks committee of the Leeds Corporation and their engineer, Mr. T. Hewson, owing to leaks. A trench has now been excavated around the wall to a depth of 164ft., and a distance of 426ft., and the committee, after examining the wall in company with Mr. Hewson, have decided to consult Mr. G. H. Hill, M.Inst.C.E., of London and Manchester.

The first sod of new offices for the Huyton-cum-Roby local board was cut on Monday in Derby-road, Huyton. A special meeting of the board was held last week, when the tender of Charles Burt, Liverpool, was accepted to erect the offices for £2,374, the edifice to be completed in eight months from date of contract. Mr. Henry A. Cheers, of Twickenham, is the architect.

The Queen has had a Mediæval brass tablet placed in St. George's Chapel, Windsor, in memory of the late Sir Edgar Boehm. It is fixed under a stained-glass window in the south aisle, near Boehm's statue of the Emperor Frederick. The border is adorned with shields, bearing the St. George's Cross and the Austrian Eagle, and the upper portion contains the deceased's escutcheon, supported by angels.

Mr. Robert Wilson, C.E., surveyor to the Kingswood Local Board, on leaving that office to take another appointment near London, has been presetned by the men under his supervision with the volumes of Rivington's "Building Construction." The presentation was made at a dinner given at the King's Arms Hotel, Kingswood, on Saturday night.

Additions have been made to the Assize Courts, Manchester, embracing the ventilation, which is carried out on the Boyle system, the latest improved form of the self-acting air-pump ventilator being adopted for the extraction of the vitiated air.

PARLIAMENTARY NOTES.

The Plumbers' Registration Bill.—The Select Committee of the House of Commons, presided over by Mr. Lees Knowles, which is appointed to consider the Bill for the national registration of plumbers, resumed its sittings on Monday. Mr. J. Marjoribanks, secretary of the Scottish Society for the Registration of Plumbers, gave evidence for Scotland. He was not in favour of the proposed Bill—first, because it would place a monopoly in the hands of the Worshipful Company of Plumbers; and, secondly, because as a society they had had no recognition given to them in the Bill. The society had instituted flourishing technical schools for young plumbers in Edinburgh. The public would benefit more by the unfettered action of their society than by the national system of registration as proposed in the Bill. One reason for this was that the technical terms for plumbing were quite distinct in Scotland from what they were in England. Another reason was that in Scotland a plumber was only a plumber, and not a builder, or a decorator, and so on. Mr. James Thomson, secretary of the district council for carrying out the national registration system in Edinburgh and the east of Scotland, gave corroborative evidence.

Westminster Improvements. — The Special Committee of the House of Commons heard important evidence on Monday as to the Westminster (Parliament-street, &c.) Improvements Bill, which provides for the extension of time for widening Parliament-street from the Government Offices to Palace-yard, the widening of Charles-street by the side of the India and Colonial Offices, the closing of King-street, and the pulling down of the Westminster Sessions House, the Surveyors' Institution, and the construction of a new street from Charles-street to the Broad Sanctuary. Mr. Primrose, from H.M. Office of Works, recalled, said the Commissioner of Works was prepared to accept the responsibility of seeing that these works were not commenced until a capital of £200,000 had been raised within a year after the passing of the Act; but he thought the committee should determine whether any further conditions should not be attached to that permission. Colonel Makins, M.P., chairman of the Cadogan Estate Company, said they had received estimates from several eminent surveyors, and it was the intention of the company to carry out this scheme. Mr. A. W. Garrard, surveyor, Cannon-street, was of opinion that £962,640 would pay all compensation and clear the site, and it would be readily lettable, being immensely enhanced in value by the scheme. Mr. Cripps, Q.C., for the opponents, contended that the value of the cleared land would not be near a million, which was the sum proposed to be paid for it, and the formation of the scheme would be really a block to the improvement of the district, as it would certainly be a financial failure. Mr. E. Ryde, surveyor, Great George-street, gave it as his opinion that the proposed scheme could not possibly succeed; and Mr. Spencer Chadwick, surveyor, was also of opinion that it could not be successfully carried out. The committee decided to pass the preamble, on the condition that the work should be carried out in sections, subject to the approval of the First Commissioner of Works, and that the Commissioner should at his discretion have the power to require a deposit not exceeding £50,000 in respect of the works.

Metropolitan Subways.—The Bill for conferring further powers upon the London County Council with respect to subways came before the Select Committee of the House of Commons on Tuesday. The Bill proposes that the County Council should have the power to extend the system of inclosing underground wires and pipes in an easily accessible subway instead of burying them in the earth, so as to mitigate the expense and annoyance caused to the public by the frequent cutting up of the streets. There are now nine streets in which these subways already exist, comprising altogether 7,810 yards of subway, and these existing subways are under the control of the London County Council. Mr. Littler, in opening the case for the promoters, mentioned that these subways cost several thousand pounds per mile, and it was reasonable that some rent should be paid for the use of them. The first witness called was Mr. A. R Binnie, engineer-in-chief to the London County Council, who said there were in their subways 15,043 yards of gas-pipes, 7,614 yards of hydraulic pipes, 6,492 yards of water-pipes, 15,770 yards of telegraph and telephone wires, and 7,117 yards of electric wires. Further evidence was given on Wednesday by Mr. Binnie, and Mr. Cripps, Parliamentary agent to the London County Council, explained a series of clauses which had been settled with the water companies. An agreement was practically arrived at with the gas companies on the same lines for the user of the subways, and the Committee adjourned till Monday next.

* * *

The dissolution of partnership is announced as between Messrs. Stockwell and Spicer, Newcastle-on Tyne, architects and surveyors.

Our Office Table.

The London School Board, at its meeting yesterday (Thursday) afternoon, agreed that in future all repairs to furniture be executed on the furniture schedule of prices, and that competitive tenders for carrying out these repairs for a specified period be obtained at a percentage on or off the schedule of prices. No work to buildings is to be carried out under the schedule of prices without competition, unless the estimated cost of the work included in the order is not more than £50. In the case of repairs to buildings (exclusive of painting or cleaning of schools), the cost of which is likely to exceed £50, competitive lump-sum tenders are to be obtained from a selected number of contractors who are on the Board's list, on a detailed specification (with drawings, if necessary), and any variations on the contract will be measured up on completion, and adjusted on the board's printed schedule of prices for repairs. In the cases of painting and cleaning of schools, competitive tenders are to be obtained for carrying out the work, a detailed specification being supplied when tenders are invited. Tenders are to be sought from three or four firms in the neighbourhood for the repairs of the board offices on the schedule of prices, it being understood that where necessary the work shall be done out of office hours.

In 1889, the Works Committee of the London School Board accepted the tenders of six quantity surveyors for taking out the quantities for new schools and enlargements of schools, the remuneration being at the rate of 1 per cent., with a reasonable charge for special surveys necessary in case of alterations to existing buildings, and the cost of lithography and any other expenses out of pocket. The ordinary discount allowed by lithographers to be received in consideration of the quantity surveyor's labour in examining the transfers, and in connection with the issue of the quantities. The Committee reported yesterday that they are now of opinion that it is not desirable that the system of sanctioning special payments, in addition to an agreed percentage, should be continued, and they propose to obtain fresh tenders from a selected list of firms for taking out the quantities at a percentage which shall be inclusive of all charges, it being understood that the lithography shall be paid for direct by the Board. The report was adopted, and it was resolved that fresh tenders be obtained for taking out the quantities for new schools, enlargements, &c., at a percentage to be inclusive of all charges, and that the measuring surveyor to the Board be instructed to prepare the conditions of tendering, with the understanding that the lithography shall be paid for direct by the Board.

Under the auspices of the Glasgow branch of the Teachers' Guild, a lecture on "Art Knowledge and its Counterfeit," was delivered at Glasgow on Friday evening by Professor G. Baldwin Brown, of Edinburgh University. Mr. William Thomson presided. Professor Brown said that the subject was the best method of spreading a knowledge of art as an integral element in the higher education. It was, first of all, necessary that they should determine what sort of knowledge of art was of general value as taking them into the heart of the subject. Within the last few weeks the Scottish Universities Commissioners had issued the new ordinance for graduation in the Arts, and if that ordinance became law, then art history would, for the first time in Scotland, be recognised as one of the alternate subjects for the M.A. degree. It might be asked if the subject of art was capable of scientific treatment, if it was a humanising study, and if it would inform as well as cultivate the mind? He felt the fullest confidence that the study of the theory and history of the fine arts would be found to be a thoroughly scientific study, and one, moreover, of the most enlightening and humanising. It was a popular misconception that art was a matter which concerned the few, and that the mass of mankind had nothing to do with it, and this was one of the misconceptions which it was necessary to remove.

At a very fully-attended meeting of the Society of Antiquaries on Thursday, the 17th inst., it was proposed, and unanimously resolved : "That the Society of Antiquaries of London hears with much regret that the Dean and Chapter of Lincoln have avowed an intention to pull down the north walk of the cloister of their church, and the library over it, in order to build on the same site an imitation of the other three sides of the cloister, which are of the 14th century ; against this proposal the Society desires to protest as strongly as it can, and at the same time to point out that the existing building, which is the work of Sir Christopher Wren, is a good piece of architecture, well fitted to its place, and convenient for the uses for which it was intended, whilst the substitution of new work in its place will be a falsification of history, and there will be little compensation for the loss of Wren's building, even if the ornamental parts of it should be worked up, as has been proposed, into another building on another site."

WOOD-PAVING manufacturers appear to be very slow in introducing grooved blocks for our streets, especially at those points or gradients which require a good foothold for horses drawing heavy vehicles, and yet we find that in America, and even in India, wood blocks are used with transverse joints or chamfered edges, so as to form V-grooves when the blocks are laid. The chamfer made is about a quarter of an inch on each block. The joints are grouted with neat Portland cement, swept in with a broom. The wood paving used in Karachi is composed of blocks of a species of acacia known as babul. They are 8in. long, 4in. wide, and 6in. deep, and are laid on a concrete bed formed to the road convexity. The fibre of the wood is placed vertically. Surely the number of preventible accidents to overladen horses should stimulate vestries and authorities to adopt a grooved paving.

THE French plan of roller repairs to roadways is receiving attention, and the General Inspector of Highways have made important inquiries into this method. The *Annales des Ponts et Chaussées* recently published a communication by M. Léon Durand-Claye, engineer in chief of that department, advocating strongly the roller system of maintenance, which has great merits. The material required is broken stone or pebbles, and binding, or detritus from the road, sand or marl, a sufficient proportion of the binding material to the broken stone being used. The rolling is done by steam or horse rollers, which are from 3ft. 9in. to 5ft. 6in. diameter, and of a length of from 3ft. 4in. to 5ft. 6in., and the work can be done at all seasons except during frosty weather. We recommend this system of repairs to the attention of highway engineers.

THE employment of iron skeletons or frames for buildings of great height, of ten or more stories, is extending in America. These frames are made to carry all the weight, and take the place of brick or masonry walls and partitions. The foundations laid, the frames are quickly erected, and are then filled in or surrounded by wooden partition work. They consist entirely of vertical and horizontal members which offer no resistance, and the rectangles or spaces left are filled in with by partition-work. One objection to this mode of construction is the want of lateral bracing against wind pressure, as the partitions dividing the lower rooms are large and without cross-braces, and have to resist a maximum wind-shear. The objection to cross-bracing in these frames is that it would interfere with the window and door openings, but Mr. W. H. Breithaupt, M.Am.Soc.C.E., suggests stiff knee-braces at all the intersections of the verticals and horizontals, which would give sufficient lateral resistance. That gentleman shows the mode of construction, and those interested will find a description in the *Engineering Record*, our New York contemporary.

AN American authority says the cheapest and best fireproof construction for a roof can be obtained by using tee-iron and "hook tile." The T-irons should be placed at 18in. centres to the slope of roof, and be 2½in. or 3in. deep, with the same size of hook tile. Tight joints are said to be gained by using this tile, as one tile fits on the other, which supersedes a vertical joint. This tile, which resembles in shape a hook, is bedded in mortar, and all the joints along the tees should be slushed up, leaving an entirely smooth surface. The author prefers tarred paper to concrete, the paper being applied directly to the tile, using a ply or two more of tarred paper. This construction is advocated for flat roofs, or for those not over 45°; if steeper, the tiles are better wired or bolted to T-irons.

A REVISED plumbing ordinance has been adopted by the City of Chicago. Experience has called for certain provisions which have been found necessary. Thus, in Section I., it is enacted that in "all buildings hereafter erected, and in all other buildings already erected, wherein the plumbing shall be repaired or changed, the drains, soil, waste-pipes and traps must be exposed to view for ready inspection at all times, and for convenience in repairing." When placed within partitions, or in recesses, they are to be covered with woodwork easily removable. No bricks, sheet metal, earthenware, or chimney-flue is to be used for a sewer-ventilator, or to ventilate any trap, soil, or waste-pipe. Every vertical soil and waste-pipe is to be of iron, and to extend above the roof at least 12in., and have a diameter of at least 1in. greater than that of the pipe proper, but in no case is it to be less than 4in. diameter through and above the roof. The increase must be placed at least 1ft. below roof. No cowl or cowls to be placed at top of ventilating pipe. Horizontal soil and waste and vent pipes are prohibited. Many other sections follow about traps, overflow pipes, &c. No traps are allowed at foot of soil or waste pipes.

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MEETINGS FOR THE ENSUING WEEK.

MONDAY.—Surveyors' Institution. "Valuation of Feeding Stuffs and Foods," by Professor E. Kinch. 8 p.m.
Leeds and Yorkshire Architectural Society. Lecture by Geo. Corson. 8 p.m.

TUESDAY.—Society of Arts "The Decorative Uses of Sculpture," by E. Roscoe Mullins. 8 p m.
Institution of Civil Engineers. Discussion on "Fluctuations in Average Annual Rainfall." 8 p m.

WEDNESDAY.—Builders' Clerks' Benevolent Institution. Dinner at the Holborn Restaurant. 6 for 6.30 p m.
Civil and Mechanical Engineers' Society. "Modern Sewage Precipitation Works," by A. Wollheim. 7 p m.
Society of Arts. "Foreign Exchange," by Ewing Matheson. 8 p.m.

FRIDAY.—Architectural Association. "Literature and Architecture," by Horace Townsend. 7.30 p.m.
Royal Institution. "Japanesque," by F. T. Piggott. 9 p.m.

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The Architectural Association.—April 1st, the Twelfth Ordinary General Meeting, at 7.30 p.m. Paper by Horace Townsend, Esq., on "Literature and Architecture."

April 2nd, Fifth Spring Visit, at 3 p.m., to the Newington Weights and Measures Offices, Union-road, Blackman-street, S.E., by kind permission of Mr. Thos. Blashill, architect to the London County Council. At 4 p.m., to the Royal Ophthalmic Hospital, St. George's Circus, S.E., by kind permission of Mr. Keith D. Young.

ERNEST S. GALE
F. T. W. GOLDSMITH } Hon. Secs.

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Lord Hopetoun, the Governor of Victoria, opened on Tuesday the new West Melbourne Dock, which, with the exception of Cavendish Dock at Barrow, is the largest in the world.

The Bristol city council have adopted plans by Mr. Henry Williams, M.S.A., of that city, for a central electric-lighting station. The building will cover an area of 140ft. by 100ft., and will be built of Cattybrook bricks with local stone dressings. The chimney will be 180ft. in height.

The Huddersfield Corporation, having invited tenders for a new illuminated clock at the sewage works, Deighton, near Huddersfield, selected the one from Messrs. Wm. Potts and Sons, clock manufacturers, Guildford-street, Leeds, who had previously made them one for the Corporation markets many years ago. The clock shows the time on four dials, and strikes the hours upon a large bell of best bell-metal erected in the building. The whole of the work has been executed under the direction of the borough surveyor, Mr. R. S. Dugdale.

Dr. George Buchanan, F.R.S., has expressed his intention of resigning the post of medical officer to the Local Government Board, which he has held since 1880, as from Thursday next, the 31st inst., being the close of the present financial year. Dr. Buchanan has been for many years employed in the Privy Council in sanitary inquiries, and will be best remembered by his investigation into the results of drainage works in unhealthy towns. This led him to the important discovery of the relation which exists between residence on soil rendered damp by reason of a high level of subsoil water and excessive mortality from pulmonary consumption.

Trade News.

WAGES MOVEMENTS.

ARBROATH.—The Dock and General Labourers' Union, of which the Arbroath operative slaters are members, has come to an agreement with the master slaters of that town respecting the wages and working hours of the men. The rate of wages is to remain at 7d. per hour, the working day is to consist of nine hours in town and ten in the country, and time and a quarter is to be paid for any work done after these hours or on Saturday afternoon. The arrangement comes into force on May 1, and is to be binding for a year. The former hours were ten per day, and no allowance for overtime.

CARLISLE.—The operative joiners in Carlisle are dissatisfied with the present amount of wages, and they have given notice of an advance in wages from 6¾d. per hour to 8d. The employers contend that it is difficult to see how such a large advance can be given at a time when trade is generally on the decline, and competition for contracts is extremely keen. There are about 200 operative joiners in Carlisle.

HULL.—Under the auspices of the Building Trades Council, a well-attended meeting was held in the Baker-street Lecture Hall on the 16th inst., under the presidency of Councillor King. Mr. Bailey moved "That this meeting, representing the building trades of Hull, believes that the time has arrived when it is desirable to put down jerry-building, scamp-work, sub-contracting, and piece-work, as being detrimental to the best interests of the workers and the public generally, and that this meeting pledges itself to use every legitimate means to eradicate those evils." Mr. Ives (secretary of the council), in seconding the resolution, said that there was more scamp-work done in Hull than in any other town in the kingdom. Mr. Annis supported the resolution, which was carried unanimously. A resolution was carried to the effect that the best way to carry out the first resolution was to join in some trade organisation.

PAISLEY.—The joiners of Paisley withdrew their labour from all workshops and buildings on Monday, on account of a refusal of an advance of wages from 7½d. to 8d. per hour.

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CHIPS.

The Pontefract rural authority have adopted a scheme by Mr. Malcolm Paterson for the drainage of the village of Burton Salmon.

At Mercers' Hall, Cheapside, on Tuesday, the Rev. Sir Emilius Laurie, trustee and treasurer of the Royal Female School of Art, made the annual distribution of medals, prizes, and scholarships to the successful students. The Rev. Prebendary Whittington, the hon. secretary, read the annual report.

The Local Board of Northfleet, Kent, have adopted plans prepared by Mr. J. T. Walford for laying out and erecting buildings in a new cemetery.

Mr. Lumley Smith, Q.C., has been appointed arbitrator between the Liverpool corporation and the owners of houses scheduled as insanitary property, in succession to the late Mr. Hunter Rodwell, Q.C. Mr. Smith will open his first court about three weeks hence.

The members of the Paviours' Company dined together on Tuesday evening under the presidency of the master, Mr. George Shaw, at the Guildhall Tavern, Gresham-street, E.C.

Mr. E. H. Shorland, of Manchester, has just supplied his patent Manchester grates to the Yorkshire Banking Co. branch at Pudsey, these grates having proved so satisfactory at their other branch banks.

A carpenter named Mayhew, who had entered builders' workshops and stolen the workmen's tools, which he had disposed of to pawnbrokers, was charged with the offence at the North London Police-court, on Wednesday. He pleaded guilty, and was sent to gaol for three months in each of three cases—nine months altogether. Over eighty pawnbrokers' tickets relating to stolen tools were found on prisoner.

◆

Holloway's Pills taken occasionally in the doses prescribed by the instructions keep the digestion in order, excite a free flow of healthy bile, and regenerate the impoverished blood with richer materials, resulting from thoroughly assimilated food, wanting which, the strongest must inevitably soon sink into feebleness and the delicate find it difficult to maintain existence.

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UNEQUALLED for Staircases, Steps, and Landings, especially for Public Buildings with great wear.
VERY HARD, and NEVER WEARS SLIPPERY.
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The most extensive Stock of every kind of Wood in Planks and Boards, dry and fit for immediate use.

Oak Tree House, Branch Hill, Hampstead, N.W.—As more than one firm possess Cartoons of mine, I find it necessary to state that I have Established my own
GLASS WORKS in HAMPSTEAD,
and am no longer responsible for the execution of any work not entrusted to me personally.
(Signed) HENRY HOLIDAY.

TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

Ardee.—For the erection of labourers' cottages, fencing the plots, and hanging gates, for the rural sanitary authority of Ardee:—

Stabannon Electoral Division:—

One cottage at Charleville	£116 0 0

Drumcar Electoral Division:—

Two cottages in a block at Dunany	£219 0 0
One cottage at Verdonstown ...	119 0 0
One cottage at Corstown	118 0 0
One cottage at Johnstown	117 0 0
One cottage at Adamstown	116 0 0
One cottage at Adamstown	114 0 0

All taken by Nicholas Collegan at the prices above named.

Drumcar Electoral Division.—Salterstown:—

Two cottages in a block at	£209 0 0
Two in a block at	209 0 0
Two in a block at	209 0 0
Two in a block at	209 0 0

Carrol, J. (accepted).

Grangegeeth Electoral Division.—For the building of a single cottage at Broomfield, another at Cardrath, and a third at Grangegeeth:—
Geraghty, T., Smarmore (accepted at £115 each.)

Ardee Electoral Division.—For a cottage at Ballybailie:—
Clarke, D., Ardee (accepted) ... £106 0 0
For a cottage at Caole:—
Sweeny (accepted) £107 10 0
For a cottage at Rathbust:—
Clarke, D., Ardee (accepted) ... £108 10 0

Dromin Electoral Division.—For a cottage at Paughanstown:—
Halpenny, J., Ardee (accepted) ... £129 0 0

Clonkeen Electoral Division.—For a cottage at Glack:—
Rush, N. (accepted) £100 0 0

Tallanstown Electoral Division.—For a cottage at Nicholastown:—
Rush, N. (accepted) £102 0 0

Blackburn.—For villa residence, Mein's-road, Blackburn, for Mr. James Kay. Messrs. Stones and Gradwell, 10, Richmond-terrace, Blackburn, architects:—
Highton, J., and Son, Bridge-street, Witton, Blackburn.

Blackburn.—For villa residence at Wilpshire, Blackburn, for Mr. W. E. Bickerdike. Messrs. Stones and Gradwell, 10, Richmond-terrace, Blackburn, architects:—
Marshall and Dent, Limbrick, Blackburn.

Blackburn.—For new stables, coachhouse, &c., for Mr. Wm. Farnworth. Messrs. Stones and Gradwell, Blackburn, architects:—
Marshall and Dent, Limbrick, Blackburn.

Blackheath.—For carrying out certain alterations and additions to the Hare and Billet, p.h., Blackheath, for Mr. Coppinger. Mr. Albert L. Guy, A.R.I.B.A., 78, High-street, Lewisham, architect:—

Kennard	£815 0 0
Jerrard, S. J.	790 0 0
Robson	750 0 0
Knight, Sidcup (accepted)	729 0 0

Camberwell.—For Public Central Library, Peckham-road, for the Commissioners of Public Libraries, Camberwell. Mr. Robert P. Whellock, A.R.I.B.A., architect. Quantities supplied by Messrs. Franklin and Andrews:—

		A.	B.
Holliday and Greenwood, Loughborough Park—	£11,377 0 0	... £487 0 0†	... £10,890 0 0
Downs, W., Camberwell—	10,999 0 0	... 429 0 0	... 10,570 0 0
Brooks, W., Folkestone—	11,200 0 0	... 859 0 0	... 10,341 0 0
Holloway Bros., Battersea—	10,628 0 0	... 348 0 0	... 10,280 0 0
Richardson, W., Brixton—	10,400 0 0	... 432 0 0	... 9,968 0 0
Allen, J. and Sons, Kilburn—	10,365 0 0	... 405 0 0	... 9,960 0 0
Holloway, H. L., Deptford—	10,437 0 0	... 500 0 0	... 9,937 0 0
Parker, G., Camberwell—	10,350 0 0	... 430 0 0	... 9,920 0 0
Nightingale, B. E.—	10,225 0 0	... 360 0 0	... 9,835 0 0
Scharien and Co., Chelsea—	10,438 0 0	... 714 0 0	... 9,724 0 0
Baalam Bros.—	10,145 0 0	... 487 0 0	... 9,658 0 0
Kirk and Randall—	9,920 0 0	... 320 0 0	... 9,600 0 0
Avard, R., Maidstone—	10,360 0 0	... 815 0 0	... 9,545 0 0
Richardson, J. O., Camberwell—	9,558 0 0	... 590 0 0	... 8,968 0 0
Evans, R. and E., Camberwell‡—	8,998 0 0	... 486 0 0	... 8,512 0 0

A.—Deduct for Bath stone. B.—Total.
† If used in lieu of Portland. ‡ Withdrawn.

Catford.—For repairs to Ratcliffe Almshouses, Catford, for the Trustees of the Ratcliffe Charities. Mr. Albert L. Guy, A.R.I.B.A., 78, High-street, Lewisham, architect:—
Robson, Lewisham (accepted).

ZINC AND COPPER ROOFING
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WITHOUT SOLDER OR EXTERNAL FASTENINGS
FULL PARTICULARS, MODELS, &c., UPON APPLICATION.
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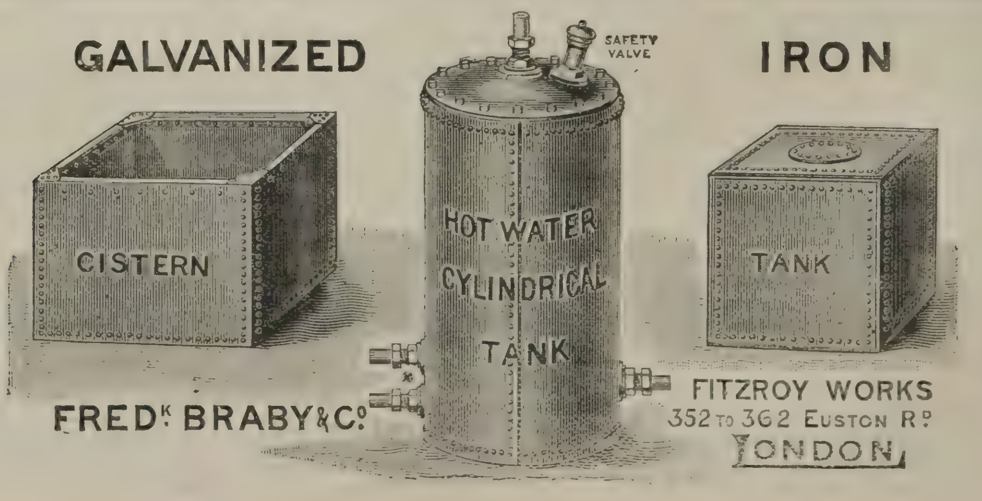
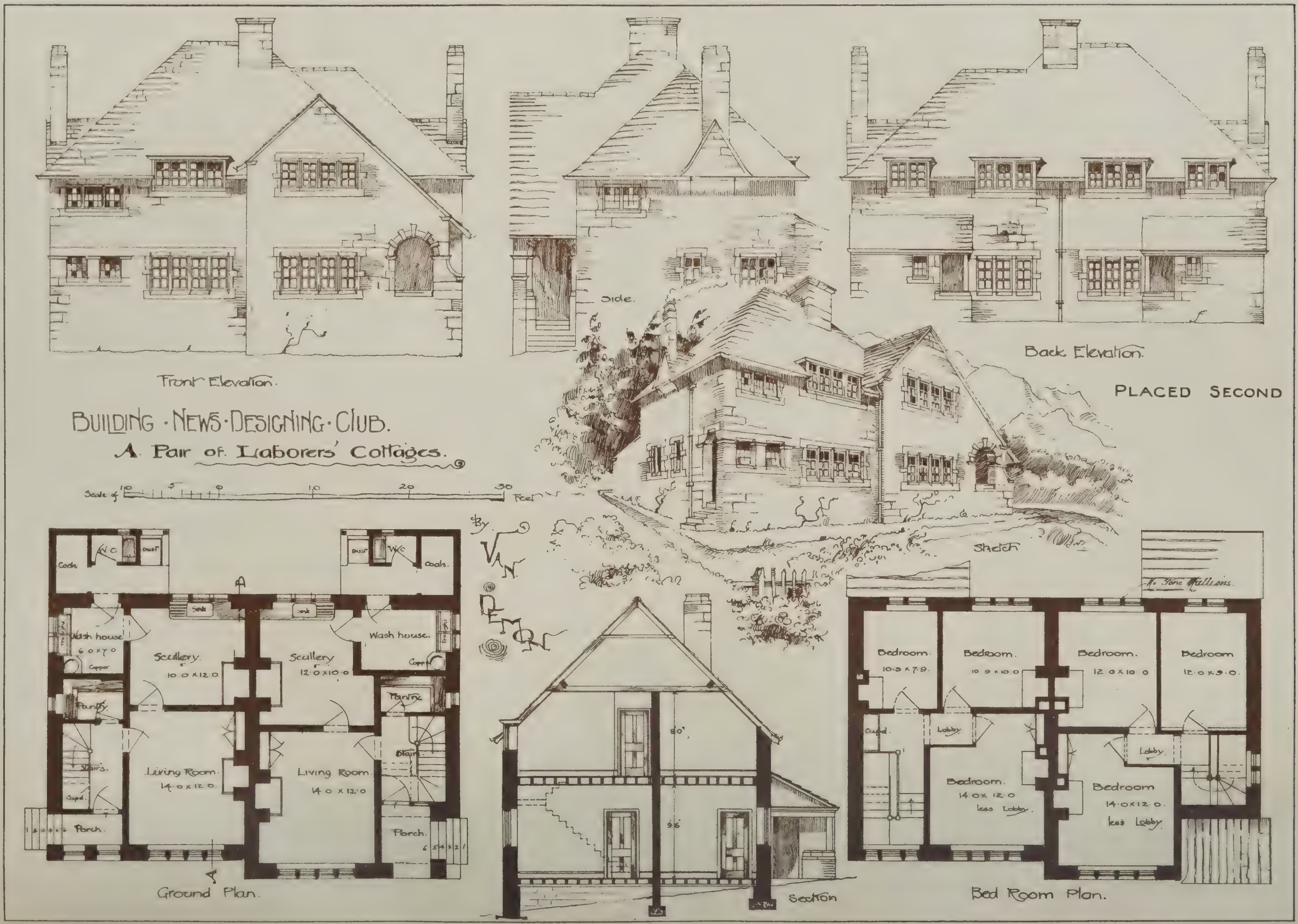




BUILDING · NEWS · DESIGNING · CLUB.

A Pair of Laborers' Cottages.

PLACED SECOND

By VAN DEMON

Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.C.

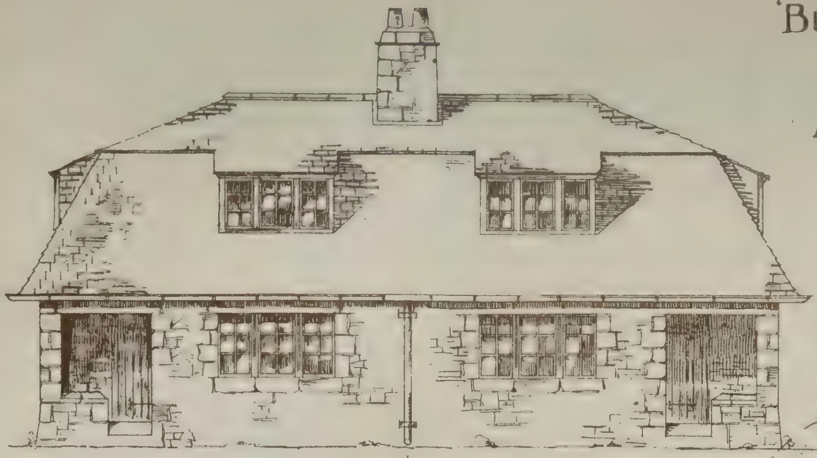
'BUILDING NEWS' DESIGNING CLUB.

Design for

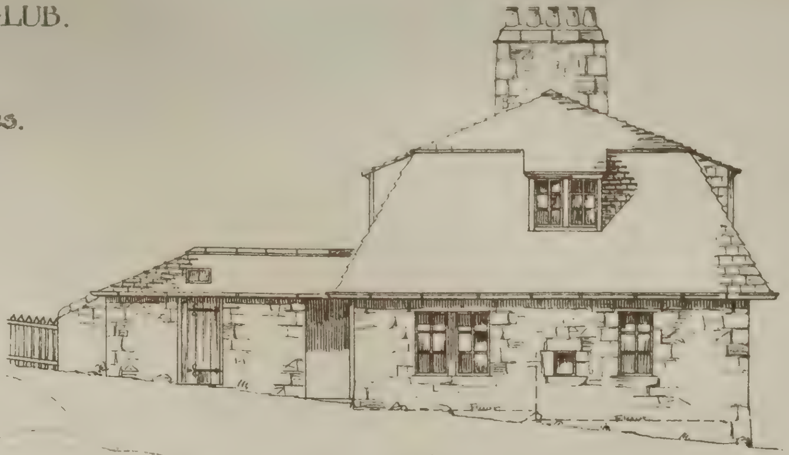
A pair of Labourers' Cottages.

By "Vulcan".

Feby 1892



Front Elevation



Side Elevation.

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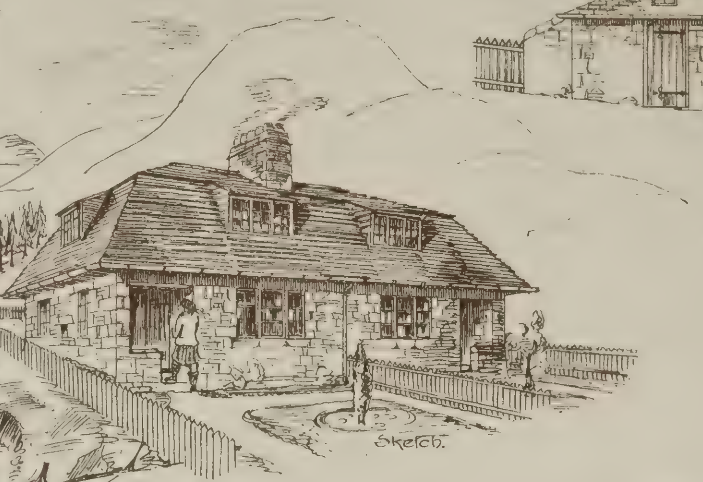
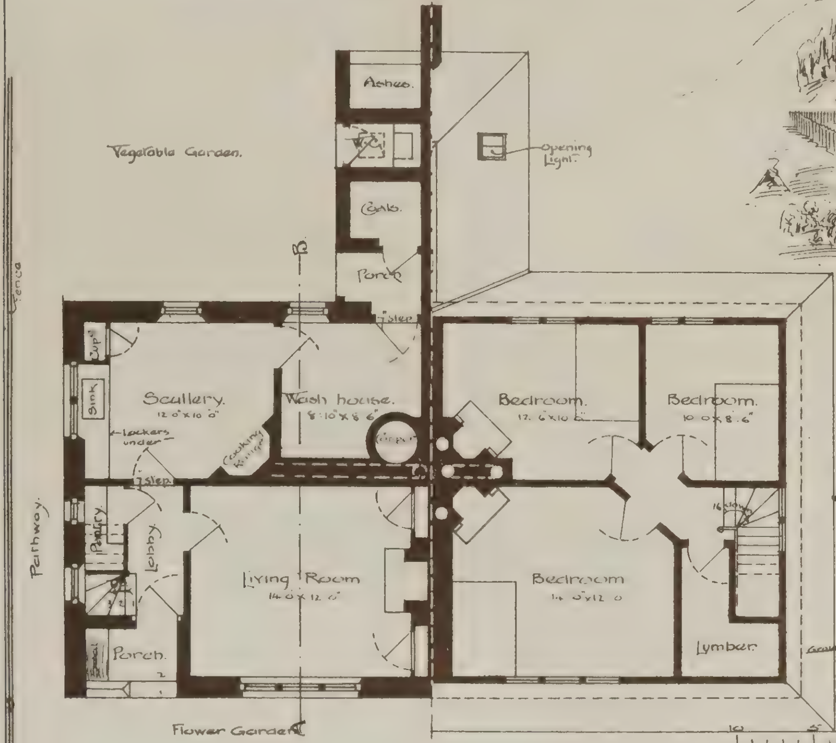
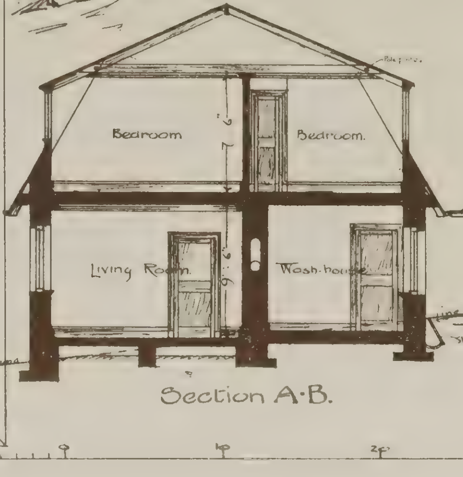


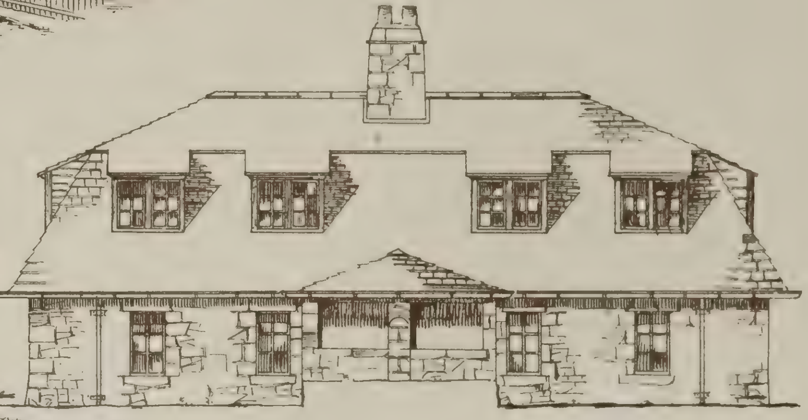
Sketch.



Ground Plan. | Attic Plan.

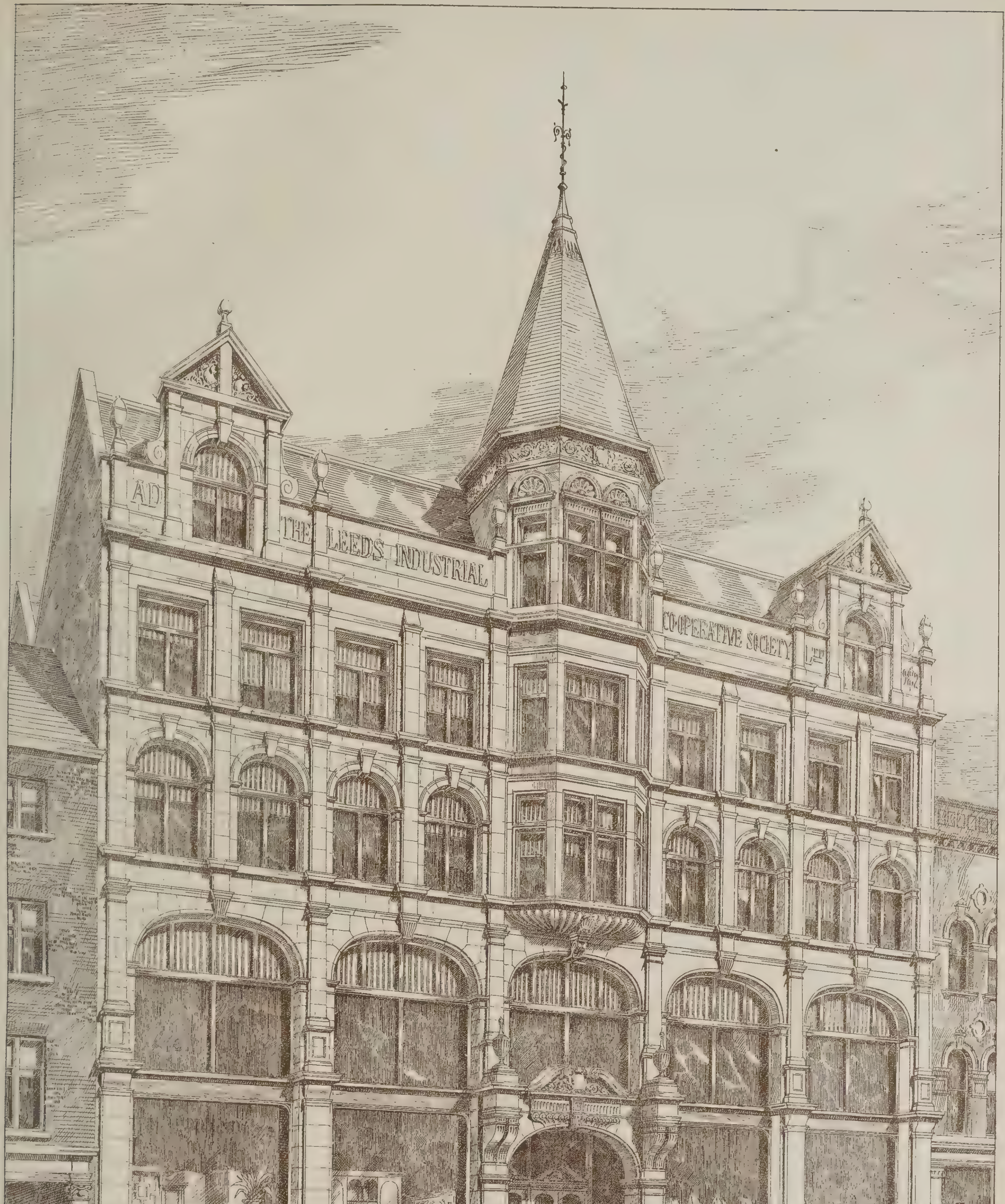


Section A·B.



Back Elevation.

Photo Lithographed & Printed by James Akerman [illegible]



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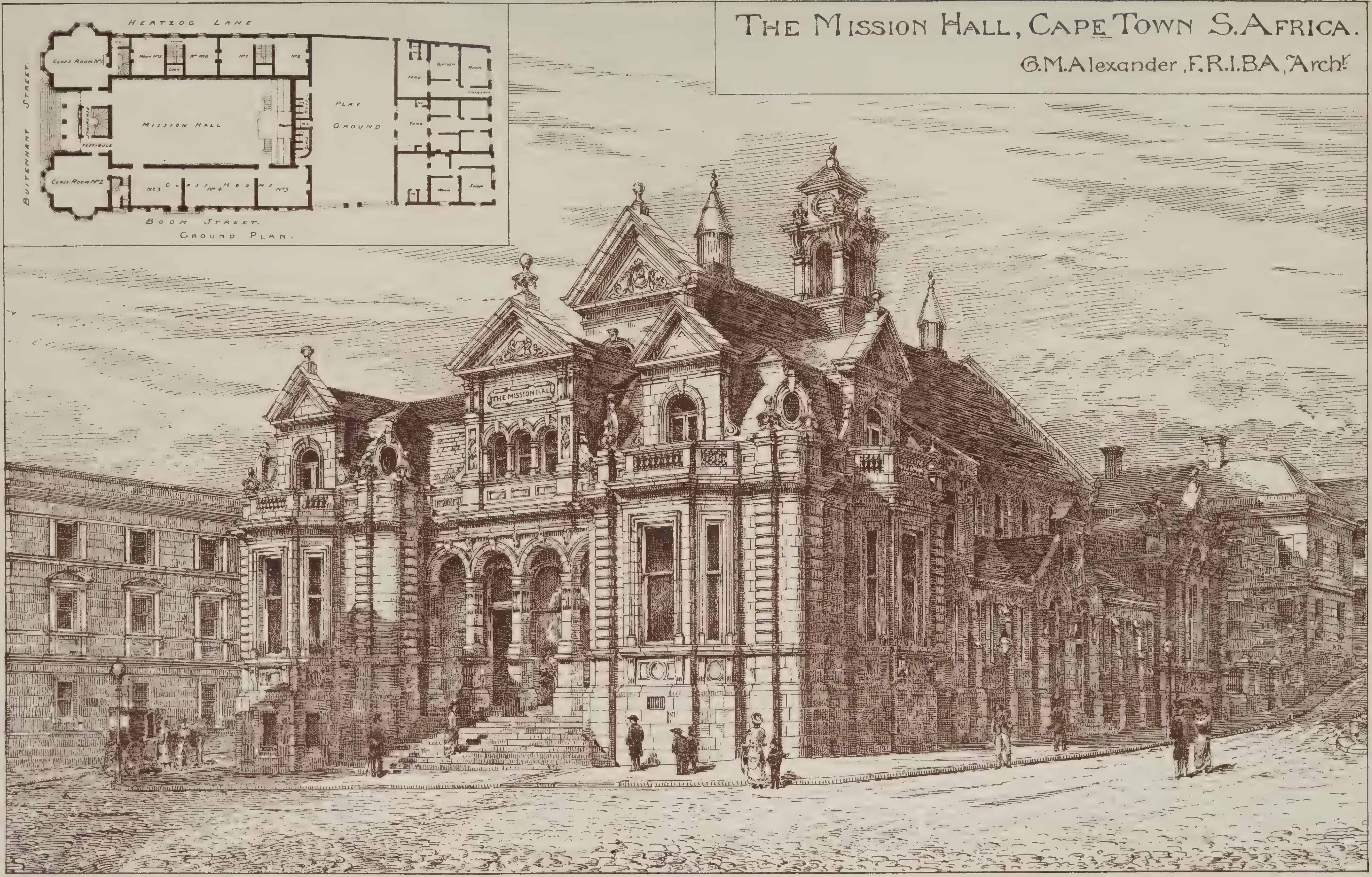
G. M. Alexander, F.R.I.B.A., Archt.



GROUND PLAN.

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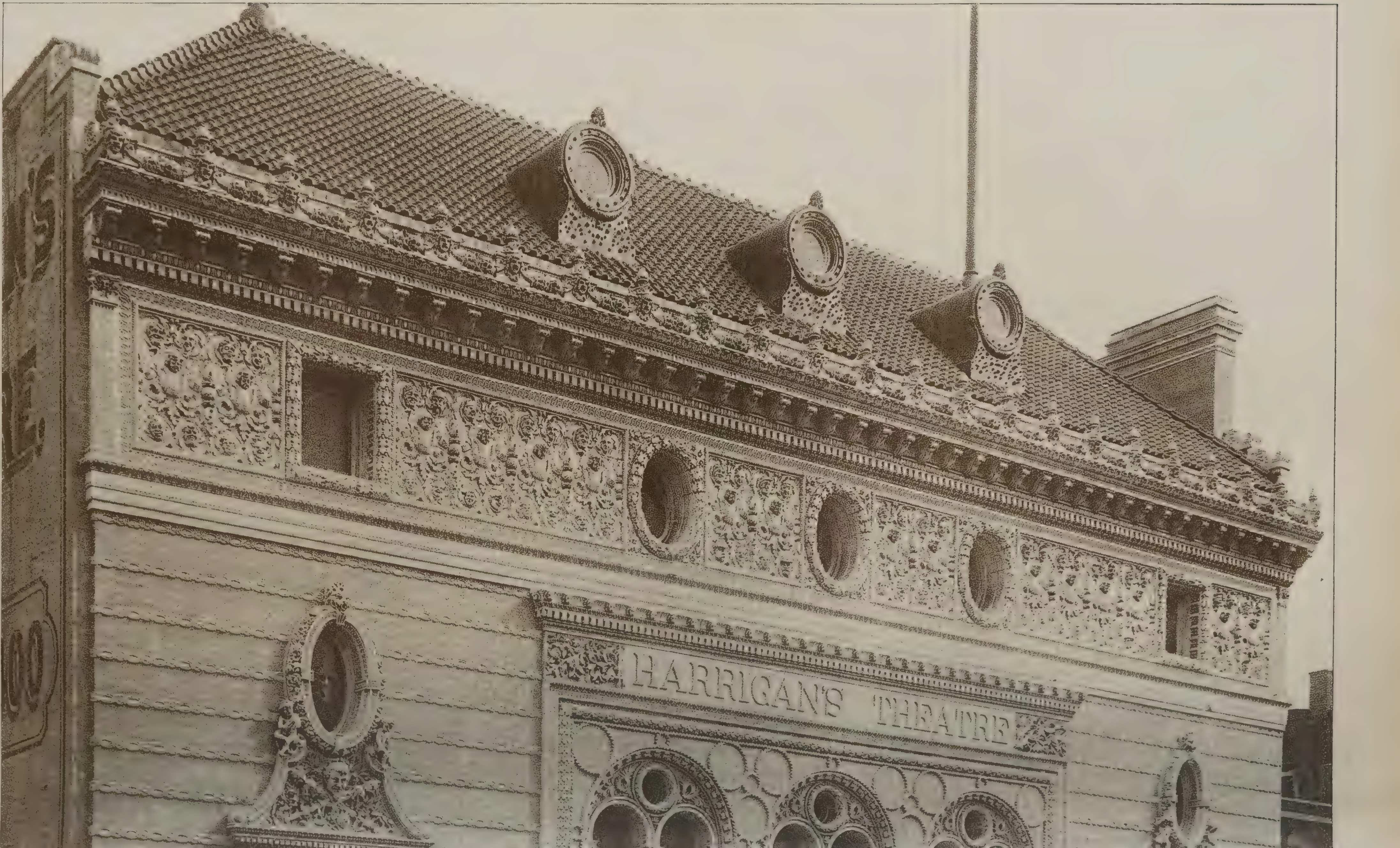
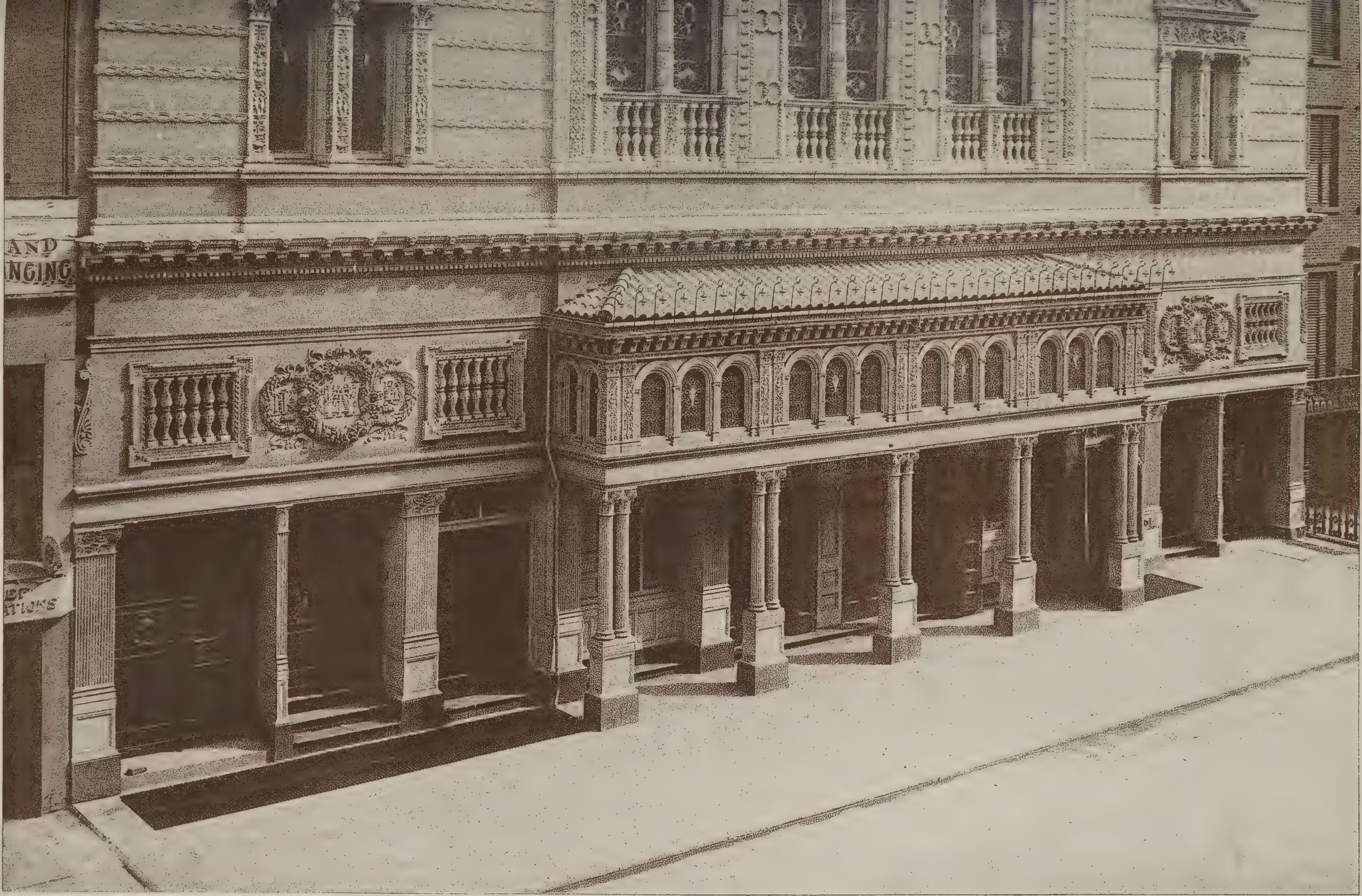

HARRIGAN'S THEATRE



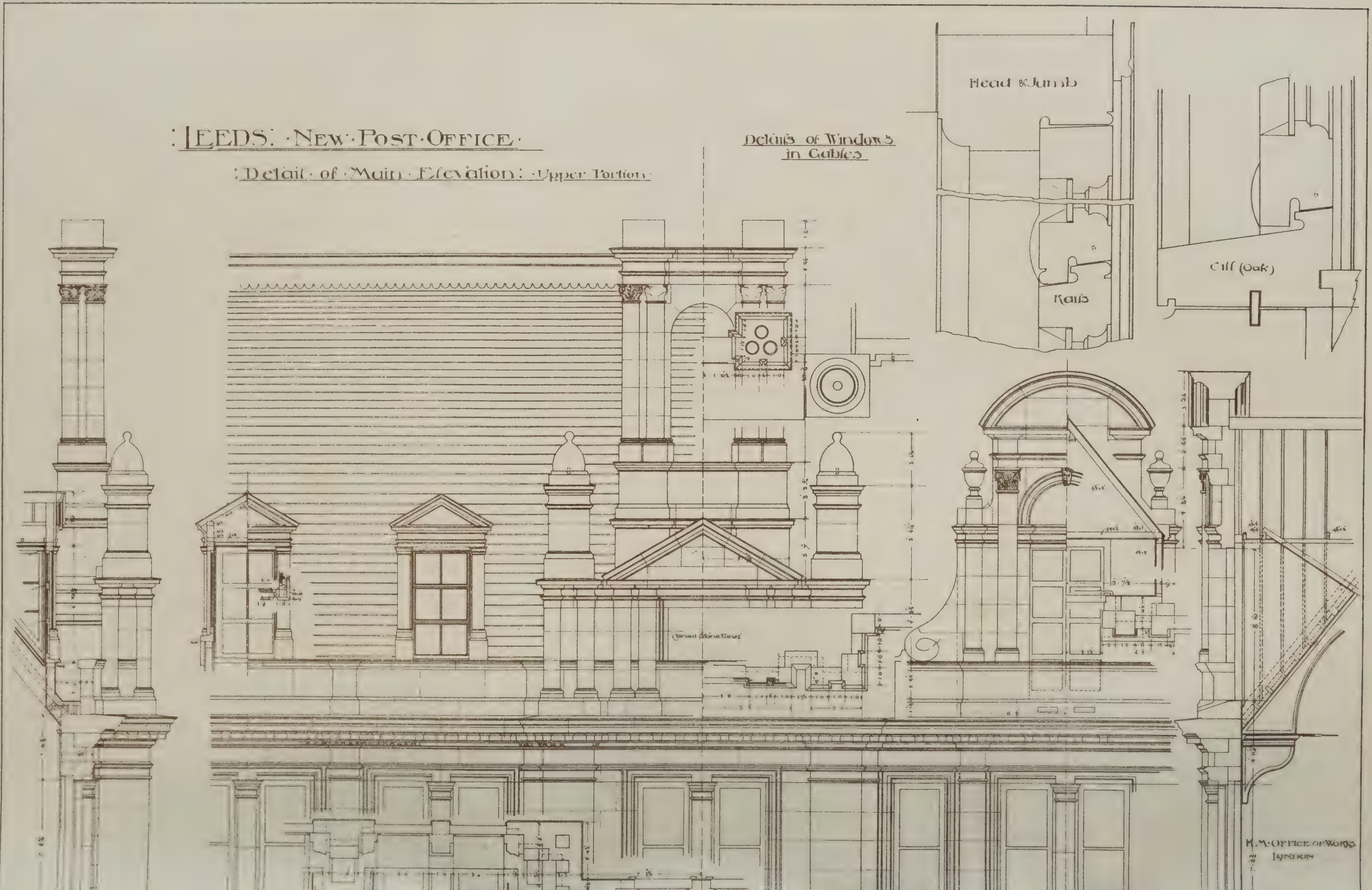
"PHOTO-TINT" by James Akerman, 6 Queen Square, London, W.C.

HARRIGAN'S THEATRE · NEW YORK · F·H·KIMBALL· ARCH^T NEW·YORK·

UNIVERSITY OF ILLINOIS

:LEEDS: ·NEW·POST·OFFICE·

:Detail·of·Main·Elevation: ·Upper Portion·

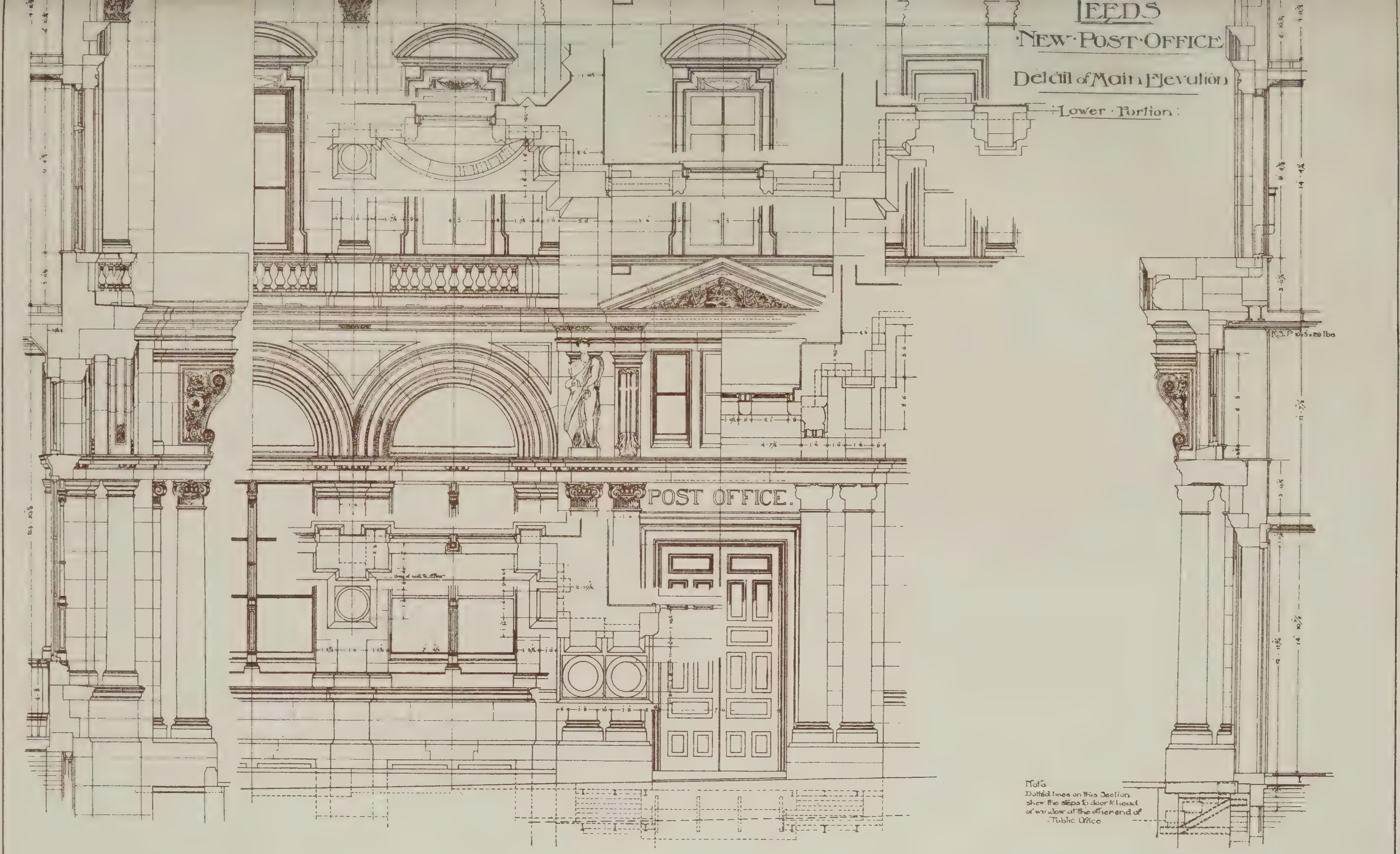


LEEDS

·NEW·POST·OFFICE

Detail of Main Elevation

:Lower · Portion:



Note
Dotted lines on this Section
shew the steps to door & head
of window at the other end of
Public Office

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THE UNPRACTICAL MAN.

OUT of all the varieties of the unpractical man, the worst is the variety which sets up for being practical. There are some departments in which this type of man does not do much harm. As long as he concerns himself with ordinary business matters, every man of business measures and values him pretty correctly; and there are so many men of business everywhere, that his activity is kept within reasonable bounds. It is when he is accepted as an authority on some special subject that he becomes most dangerous, and more dangerous in proportion as the people who trust him are ignorant of that subject. To be seen in his glory, he should be seen on a building committee.

Every fool, it has been said, thinks himself a poet. All rules, however, have their exceptions, and the exception to this rule is when the fool happens to be a builder. In that case, as most of us know, he is likely to think himself an architect. So, some five-and-twenty years since, did Mr. Chouse, the well-known contractor. In many points he was far enough from being what the world calls a fool. He knew well when it was safe to work in a load of place bricks or a quantity of sappy and shaky timber. He could put up red facings with fewer headers than anyone else dared to venture on, and could do his slating with an unprecedentedly small lap. As a conscientious man, there can be no doubt that he used 21oz. sheet in his sashes whenever it was specified, and it is a mystery to this hour why every pane that got broken always turned out to be of 16oz. glass, or even lighter. Mr. Chouse supposed it must be the thin end of the piece. His milled lead suffered from the same unfortunate defect. The edges that could be examined were apt to run a pound or two short; but the parts that were hidden away or built into walls were, he assured his employers, fully up to the mark. And even if they were not, he would go on to say, that was not his fault: the architect alone was to blame. So Mr. Chouse went merrily along—lined his own pockets, and ruined the reputation of every member of the profession who trusted him; and if on week-days he did slightly transgress the moral law, he always spent his Sundays in trying to escape the penalty. Thus he remained a highly respectable man, and was held up as a shining example to the young, of "How to make the best of both worlds."

A man so good and so prosperous seemed meant by Nature to adorn committees and to preside over charitable institutions. A man so accomplished in building must needs be an infallible guide when such institutions began to build. Gladly indeed they would have been to put the work entirely into his own hands; but Mr. Chouse was a trustee, and it was impossible. Another builder they were bound to have, but the architect would direct that builder, and Mr. Chouse would direct the architect. Then all would certainly go well. The architect was young, the work was important: if he lost this commission it might be hard for him to get another, and he accepted the condition. Mr. Chouse's time had come. He was going to show what was in him. He got a drawing-board and a square and drew his plans. His rooms were shapeless, his passages were cramped, his stairs lacked headway, his kitchens were dark, and his bedrooms in a blaze of light. The front doors opened full on those offices which it is customary to put in retired and inconspicuous corners. Elsewhere door clashed with door, and the fireplaces were placed just where, for comfort, they should least of all have been. The architect suggested improvements: Mr. Chouse thought his plan unimproveable, and the committee supported him. They had no idea that he was an unpractical man.

The work went on. Mr. Chouse saw every day opportunities of economising. To save sixpence was his ruling passion, and he did not care if it cost half-a-crown to do it. So he made his foundations a little shallower, and his concrete a little thinner, and his mortar a little poorer—taking care, of course, to require from the builder, who, for reasons of his own, had to be submissive, the utmost value of all these reductions. At every meeting he did not fail to speak of the expense he had avoided, and of the way in which he had protected the committee from their architect's extravagance. The committee adored him, and pitied neighbouring institutions which pursued their perilous way unguided by a Chouse. In time the works were complete. The great man's plans had been carried out, unspoilt by the touch of meaner hands. The result, however, was appalling. The inconvenience was so great that the ugliness was almost lost sight of. And then the cracks and settlements became so numerous, that even the inconvenience grew to be a secondary thing. Mr. Chouse, it may be thought, felt ashamed of himself? Not at all. He simply pointed to the architect, and said: "There, gentlemen, is the author of all your calamities." And the committee, well knowing the history of the case from first to last, pretended to believe him. They passed votes of thanks to him, and named parts of their institution after him, and did all they could to efface from his mind the unpleasant results of his connection with them. When a man is so great and so good, it does not do to offend him. It is far better, as every rightly-thinking committee-man knows, to sacrifice a dozen architects of no importance.

It is needless to relate in detail how Mr. Chouse subsequently erected, alone and from his own designs, a large wooden building in the grounds of the same institution, and how a slight puff of wind a few weeks after turned it over and broke it to splinters. This no more convinced his admirers that he was unpractical in construction, than his previous doings had shown them that he was unpractical in planning. They were faithful to the end,—for to him and to many of them the end has long since come,—and the lesson of their proceedings and his, to everybody who wants to blunder with impunity, is simply this: "Put money in thy purse." Let us turn to another type of the unpractical.

The committee for building the Stuccup-street Church was no ordinary one. It was as if Mr. Dombey, Mr. Podsnap, and Mr. Perkyn Middlewick had associated themselves together, and had then added to their number Bar, Boots, and Brewer. They soon found that there were many things to be done which it would be beneath their dignity to meddle with, and they therefore admitted—at a proper distance—Mr. Compo and a few others of the baser sort. But though differences of rank thus existed between the members, there was no difference in aim or principle. Their aim was the Promotion of Universal Rectitude, and their principle was never to give more than ninepence for a shilling's-worth of anything. Their fundamental belief was that no architect can be trusted; and Mr. Compo, above all, took care that this belief should never grow faint. In his chequered career he had suffered much from architects. They had objected to his sand, condemned his lime, slandered his stocks, and ordered his timber off the premises. Fortune had at last delivered one enemy at least into his hands, and Mr. Compo resolved to make the most of the opportunity.

The working drawings and specification were laid before the committee, and Mr. Compo, posing as the "practical man," was, for once, in the place of honour. It is needless to say that nothing pleased him. In matters of taste, however, his opinion did not go for much. Everyone in this country has by nature plenty of taste; everyone of the Dombey and Podsnap order, especially, is far above correction on such points as architectural merits and defects. On these subjects, therefore, Mr. Compo was soon reduced to silence. It was otherwise on matters of construction. Mr. Compo had never built a church. His work had been confined to repairs and speculative house-building—to third-rate brickwork beautified by stucco. The present church had a massive tower, and stone piers carrying unusual weights. The pressure on the foundations had been carefully calculated and evenly distributed, to avoid unequal settlement. Consequently the size of the tower and pier footings was the first thing complained of. "'Undreds of pounds," Mr. Compo said, were being wasted there. If it was his job, he was certain he could get the district surveyor to pass it with less than half the concrete. And then what need was there for these buttresses to the arches? If the architect could not make his arches stand without abutment, why what a pretty architect he must be! And what need was there for arches at all? Why not put in a rolled joist, and make it out into a plaster arch with cradling? So the criticisms went on as the specification was read, till at last the point was reached at which the coursed rubblework was described. Here it was specified that the thicker courses should be next the base of the building, with the thinner ones above them. "Monstrous!" said Mr. Compo. No builder could do such a thing, or, if he did, it would raise his tender by nearly a thousand pounds. The committee heard with fear and trembling; but they they were reassured when the tenders came in, and when they accepted one considerably lower than the architect's estimate. The end was, that Mr. Compo began to be seen through. He kept on his watch-tower, as he called it, during the progress of the works, pried into everything, and made mischief as far as he could. But he found his level; and if the members of this long-dissolved committee had to describe him to-day, it would not be as the "practical," but rather as the "unpractical man."

* * *

NEW STREETS AND BUILDINGS.

MANY parts of London are at the present time in a state of transformation that is anything but agreeable or satisfactory. Whole blocks and rows of premises are shored up or barricaded, streets are undergoing widening, old buildings that for generations have been looked upon as landmarks have disappeared, trees and gardens have been swept away, and large areas present the appearance of dreary wastes. Such areas are at the present moment to be seen in the neighbourhood of Clerkenwell, between Gray's Inn-road and Rosebery-avenue, Clare-market, Fulham-road, &c. On these areas thousands of the working classes lived, and their displacement has been one cause of the piecemeal and unsatisfactory progress made in forming the new thoroughfares, because they had to be re-housed by instalments, as no sufficient accommodation could be obtained for all the displaced inhabitants at once. Blocks of artisans' dwellings had to be erected on suitable sites before the entire area could be cleared. Hence it is we find the deplorable desolation of these reconstructed areas—gaps of waste land between dilapidated blocks of old tenements; large prison-like dwellings in flats next to old-fashioned residences in their own grounds. Nothing can present such cruel contrasts as these strange jumbles of old and new, repose and unrest. The new building-estate appearance is deplorable enough—unfinished buildings and roads; but worse than this is that confusion which results from combined demolition and rebuilding. Then the method adopted by the London County Council in carrying out improvements is not perhaps the happiest. We mean the acquirement of property for some proposed street improvement by piecemeal, or, as opportunity offers by fire or expiration of lease, so as to avoid the cost of compensation for compulsory purchases. The effect of this method we see everywhere, notably in the widening of Ludgate-hill, which was commenced so long ago as 1864, and is still far from complete. This piecemeal course of reconstruction has many drawbacks and some advantages. It precludes any desirable programme, any great public improvement, or architectural scheme being carried into effect. On the other hand, it prevents ill-conceived or imperfect plans, the misfortune of perfectly straight streets, and uniform architecture, which would lead us to a system of rebuilding our towns like that adopted in New York or Chicago. But although we avoid monotony and mechanical repetition, we pay dearly for it. The cost of this “intermittent” plan of proceeding, as it is called, is greater, the expenditure is unproductive till the whole of the properties along one side of a street have been acquired, and the street is completed. Another great disadvantage is that the public are subjected to great inconvenience by this piecemeal mode of proceeding, and the tenants of the set-back houses are serious losers, as many years may elapse before the adjacent properties are acquired and rebuilt to the line.

Looking at the architecture of these reconstructed areas of London, we cannot boast much, as there has evidently been an endeavour to study only frontage. The setting-back to increase the width of street has the obvious demerit of cramping the depth of building to avoid obstruction of windows in the rear. All kinds of expedients are used not to impede the light, such as cutting down the back premises in height, and shaping the roof in the rear so as to allow an angle of 45° to be drawn, producing some queer results. The façade only receives attention, and this is generally some version of brick Renaissance or “Queen Anne” of the most superficial character. At solid or perspective effect there is no attempt, as little inducement is held out to design the sides and back of the building, which will be hidden sooner or later. A certain patchiness is the consequence of the partial intermittent system of reconstruction. The architect of a large block of chambers or residences does not know what will be built next to it, and thus he cannot design the building with any reference to effect, or to perspective or grouping. Thus in Clerkenwell, Hammersmith, Islington, Fulham-road, we see piles of brickwork with architectural fronts devoid of any artistic adaptation to the surroundings. Ugly and ungainly erections are to be seen here and there in which all the art has been lavished on elaborate fronts of red brick and terracotta, or red brick and stone, rising out of a dreary level of housetops. If, on the contrary, plans of the new thoroughfares had been prepared before buildings were commenced, we should see some effort made to produce a premeditated whole; but this course is one that can only be taken by Parliamentary action. A house is burned down, or the lease runs out, and it is demolished; the new building is set back and rebuilt. What is likely to happen with the adjoining property no one knows, and the architect simply does his best under the circumstances.

The cramped sites of some of these reconstructed areas are prejudicial to architecture. We may see what they have done at Chelsea and Kensington. The rows of red brick houses or mansions in Cadogan-square or Lennox Gardens, all of which are of recent erection, and built in a sort of Queen Anne or 17th-Century Renaissance, show how well we may spoil the best architecture by crowding rows of tall houses together, and how even the most varied elevations may defeat the good intentions of the designers. Here we find all kinds of “cleverness” in picturesque planning, the recessed bay windows, the “ingle-nook” porch, the wide squat doorway, the small-paned window, three-panelled door, a variety of quaint bits and details in carved brickwork, all jumbled together in capricious confusion. The old builder of Queen Anne date was never so ridiculous as to use the same features in a street row of houses as he did in a country villa: the old Georgian street house was plainly treated, and seldom had more than a flat brick pilaster centre between two plain wings. But his imitator attempts to do a great deal more. He appears to have made a confection of all the dainty bits of the English, Dutch William, and Flemish—an *olla podrida* which he presses into his street façades, under the apparent conviction that, as he has only one front to deal with, he must make the most of it. Our new streets are painfully infected by this craze for Queen Anneism without the redeeming breadth of treatment which characterised the best works of the style.

ROYAL SOCIETY OF BRITISH ARTISTS.

The Royal Society of British Artists opens with a display of pictures that will suit all tastes. Examples may be seen of the French Impressionist, the English Traditional and Naturalistic schools. In the large room R. W. A. Rouse has one of his strong, stormy, and, if we may call them, lugubrious landscapes in “The Close of the Day” (3). Dark, agitated clouds, lit up with gleams of cold light, overcast the yet darker masses of foliage; and in the same mood is “Evening Clouds” (276). The grey tones and the sullen masses of clouds, pierced by glints of the evening sky, produce a wild and weird-like effect. How different in feeling and sentiment to the warm tones of sunset we see in Stewart Lloyd's “Bosham, Sussex,” a little further on, or his “Evening on the Yealm” (147). Another disciple of this cold grey manner is G. Sherwood Hunter, whose “Home of Marken Fisherman” (94), and “Sunday” (127), are even more excessively hard and leaden-like in their tones. Nelson Dawson also has somewhat of the same French Impressionism in his large picture (9) “The Last of the Light,” where he depicts the entrance to a harbour under a dark twilight, a murky scene such as we may see in one of the Northern ports. These painters at any rate give us truthful renderings of our sombre skies, and their very gloom and mystery lend poetry to them. A very masterly coast study is W. Gilbert Foster's “Village Fleet” (26) which hangs in the corner of room. The foreshore, with its wild flowering weeds, the dinghies, and the distant estuary of the sea, with its small fleet of fishing-boats, are painted with an exquisite sense of distance and colour. Other landscapes which merit notice are John Gray's (32) and “A Still Morning,” and Yeend King's “Nearly Home” (41). In the latter we are glad to discern a more healthful tone of colour; though in all other respects Mr. King is absolute master of landscape; we may note most approvingly his delightful breadth of feeling and colour in a small landscape “End of an Autumn Day” (326) in the south-west room. A powerful picture is John Fraser's “A Late Arrival,” a large vessel entering harbour, with mast-head, port, and starboard lights, during a dark, stormy night (48). The painter has cleverly depicted the threatening, lurid sky, the rough waves; we almost instinctively see that the vessel has a living freightage on deck, and the vessel and scene has the appearance of a stormy passage. Hayne King's “Quiet Day in Port” (63) is a splendid figure study of a fisher-girl; “Watching,” by Dudley Hardy (55), is a pathetic little canvas, and Flora Reid's “Flemish Market Place” (67) and “A Reverie” (54), by F. M. Skipworth, and Edgar Bundy's small canvas, “For Future Use” (62), are subject pictures of merit. A vigorous and expressive head study is W. H. Llewellyn's “Cornish Fisherman” (52); but in this class of subjects the Anglo-Dutch painter, Hubert Vos. has surpassed all comers by his “Faith” (140), a full-length figure of an elderly woman clad in black kneeling at prayers in church. The fervency of her devotions has been cleverly represented in the expression of the old lady and her clasped hands on the back of the chair. The careworn, wrinkled face is well lighted, and the eyes are full of expression and pathetic sadness. L. C. Henley paints an accepted (164) and a rejected lover (169), rather overdone subjects, with much feeling, and knowledge of Georgian costume and detail, and John A. Lomax (176), another interior, where a young lady is looking at the portrait of her youthful lover, riding-whip in hand, leaning over her. The study of head and shoulders of a young lady (194), with hat and fur, is by R. J. Gordon. Other pictures of merit include one of “Windermere” (89), by Ernest Parton, whose delicate handling and colour always please; a large canvas at the end of the room by A. Priestman (123), “Whitbarrow Scar,” a fine luminous painting of cliff, sky, and reflection; a “Hayfield” (160), by Anderson Hague, fresh and bright. F. Brangwyn's “Sketch” (172) is charming in colour, grouping, and atmosphere, and represents a sailor's funeral passing amidst a crowd of people on the quay. The president has one important picture in this room, “The Golden Duomo, Pisa” (167), in which the majesty of this grand Romanesque fane, its perspective of arches and transepts, is finely rendered. It is needless again to assert the poetic power of Mr. Wyke Bayliss's pencil—how he can invest the form and colour of an architectural interior with true poetry, and, by a pencil dipped in all the glowing hues of the prism, conjure up a scene of splendour such as that of the ceremonial procession here depicted. Here we have reflected light from marble pillar, painted glass, mosaic of gold, pendent lamps and scarlet vestments, but all subdued and harmonised by masses of shadow in the mysterious gloom of the long-drawn aisles.

In the south-east room the principal pictures are two clever studies of the coast by John R. Reid—“A Storm Brewing,” a view of sea and headland, in which there is much knowledge and cleverness displayed in the grouping of the craft and foreshore, also in the colour and light. “River Sport” (265) is less meritorious. John A. Lomax has two clever figure subjects, “The Attack” (261) and “The Recovery,” in which there is good drawing, and some humour in the old gentleman subject to gout. A portrait by Hubert Vos (281), and works by J. E. Grace, J. Peel, J. L. Pickering (231), G. S. Knowles may be of interest. In the next room A. W. Strutt has a humorous picture of a butcher boy on a nag chaffing an elderly cook at the garden gate, who is in great rage, and has evidently been waiting for the rump-steak (301). Other works include a study of girl's head, "Sehnsucht" (305), and an idealised figure of Flora (347), by H. T. Schafer, also a cleverly-painted study of two owls. "The Waning of the Honeymoon" (337) is full of humour and character, by the secretary, Robert Morley, whose other animal subject, "A Cry for Help" (360), may be mentioned for its individuality. Yeend King (326), Jas. Peel (341), and, not least, the President's "Certosa di Pavia." Albert Kinsley's landscapes depicting autumn and summer (373 and 377) in the north-west room, a quiet, poetically-painted village by L. Rivers; Wyke Bayliss's fine drawing of the "Ambulatory in Chartres Cathedral" (386), W. Harding Smith's "St. Mark's, Venice," a drawing and landscapes by R. R. Nisbet (412), W. H. J. Bast (414), a luminous silver-grey seascape by C. D. Mottram (406); and works by O. Baker (389), Reginald Jones (387), W. Harding Smith (374), O. Rickatson 369), H. C. Fox (478), A. Ludovici (481), deserve notice.

SOMETHING ABOUT CHIMNEYS.—V.

By F. Dye.

THE most strange experience that has occurred to the writer in connection with pipe-chimneys was an instance in which a portable cooking-range of large size was placed in a building for temporary cooking purposes. It was fitted up with a pipe-chimney of full height, and correctly erected in all other ways except that the pipe was only 7in. diameter. This sized pipe was found insufficient, for although the range did manage to cook when the pipe was quite clean, it worked very sluggishly, and this brought about a rapid accumulation of soot. Of course, as the soot accumulated in the pipe so the passage-way became reduced, and altogether it became necessary for something to be done.

Upon examination nothing could be found to account for the inefficient results except the smallness of the pipe, and it was decided that a larger one was needed, and it was suggested that it should be of double the area or size of the existing one. This alteration was left for the owners of the range to do, as they had men and abundance of the necessary stores, but this is where the peculiar part of the work occurred.

It was discovered that there was plenty of 7in. pipe ready made, but none larger, and it occurred to the engineer that as a pipe of double the area of a 7in. pipe was needed, why not use two pipes of this size, instead of making a new pipe for this temporary purpose. This idea was acted upon. The existing 7in. pipe was disconnected at the range, a short length of larger pipe made with a junction piece, and placed at that point, and a second pipe run up, as Fig. 11. (This illustration shows straight pipes for the sake of making the explanation clear. They were not exactly straight, but they ran side by side all the way.)

The result of this arrangement was a most pronounced failure, and until the cause was discovered it was a most difficult failure to account for. All the usual causes were searched for, such as leakages, openings, bad joints, &c., without avail, and the pipes were found to be quite clear. Ultimately it was noticed that what smoke did pass into the chimney only issued from one pipe, and the idea was entertained that the second pipe, for some reason, was refusing to act, and the work was being done by one pipe, as before. A moment's thought, however, showed that this theory did not quite meet the case, for the range was working in a much worse manner than when it had one pipe only, and if it was now a case of one pipe being actively working, and the other idle, the results ought at least to have been as good as before, which, however, they were not by any means.

It was ultimately discovered that what up-draught existed in one pipe was supplied from the other. The direction of the air or draught in the pipes was as indicated by the arrows in Fig. 12. There was a certain amount of warmed air and gases passing up from the range, but only what would naturally rise by the fact that they were warm; not sufficient by any means to work the range. The really active force of the draught was busy in the pipes, down one and up the other, quite ignoring the range below.

A very little consideration shows that this is a very natural result. Wherever two chimneys exist it matters not how exactly alike they may be built, one will work differently to the other. In this case one chimney was a little more effective than the other, and instead of drawing its air through a mass of fuel, and through a ramification of oven flues, &c., it naturally preferred to have its supply from the free and open source that the other pipe constituted. It has been explained in previous papers that the rush of air into a chimney will take place equally through every opening it can find, only showing a preference when one opening is more free from obstruction than another. In this case results were obtained practically the same as providing a simple opening (instead of another pipe) at the junction piece, as Fig. 13.

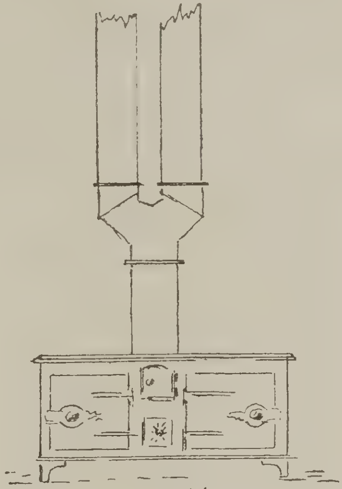

FIG. 11.

It is somewhat strange, but instances have been known where twin chimneys something like this have worked well; but such a result could in no way be relied upon. It should never be attempted, for should results be bad there is no remedying the matter except by putting a single full-sized chimney.

Sometimes two brick chimneys become joined in this way unintentionally, and cause a deal of trouble. It occurs through the sweep tools or some other cause, dislodging some of the brickwork which forms the partition between chimneys when they are run up side by side. The displacement of a single brick is sufficient. A fault of this sort is usually very difficult to discover, as it probably means opening the chimney at various points, until the defect is found. Sometimes a workman has become impressed with the idea that this fault exists in a chimney, and he cuts away and does infinite damage, only to discover that the defect does not exist. This should not occur if ordinary care is used in testing the chimney to find the cause of its inefficacy.

The method that can be adopted with a prospect of discovering the fault with certainty is to make a fire in the stove or range that is giving the trouble, and stand by it and watch results while an assistant places a sack over the top of this particular chimney, and afterwards over the chimney-top next to it. Previous to doing this, the chimney-tops should be watched to see the action of the smoke coming from them.

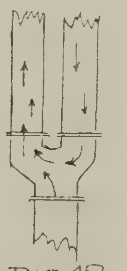

FIG. 12.

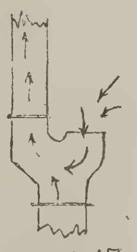

FIG. 13.

A usual and commonly troublesome phenomenon in connection with sheet-iron pipe chimneys is the trickling of water down inside them. Sometimes the quantity is really large, and provision has to be made for its escape. This trouble is seldom noticeable with indoor pipes, or with any that are fixed in warm situations. With outside pipes it is more noticeable, particularly if the pipe is a flue to a gas-stove, and has no soot within it. When soot is present, its poor heat-conducting properties bring about results somewhat approaching those obtained by covering the pipe with material to conserve its heat, in the way recommended in the last paper. When no rapid cooling influence is manifested, the water difficulty does not present itself.

The cause of water appearing in this way cannot very well be explained in a few words as it necessitates inquiring into the action that takes place when fuel or gas is consumed—that is to say, the process of combustion. Combustion is effected by the chemical union of carbon and oxygen. The carbon, which is termed the combustible matter, is the substance that composes coal fuel, and in gas-flames it is minute particles of the same material carried or suspended in the gas itself. The union of oxygen with this material causes combustion to take place, and combustion is, as everyone knows, accompanied by the evolution of heat. The supply of oxygen that is needed is furnished by the air, the ordinary atmosphere, which is composed of oxygen and nitrogen. Now, with coal fuel and gas we have another material combined or rather mixed with the carbon, and which is termed hydrogen, and whenever either coal or gas is burnt hydrogen is present and performs a part that is quite its own. As just explained, carbon in process of combustion unites with the oxygen of the air, but it will be found that the hydrogen that is present has also every inclination to unite with oxygen also, and by the union of oxygen and hydrogen water is formed.

It is not so generally known as might be that of the different products or results of combustion water is one, and that it is formed very freely indeed. We never notice it with our ordinary grates and stoves, which are worked with brick chimneys, and which are always warm. The water is formed in exceedingly minute particles, so as only to form an extremely thin vapour, and this passes up and out of the chimney with the smoke, as the warmth of the chimney does not permit it to condense.

When the smoke and products of combustion from coal or gas are carried up into a pipe-chimney outside a house, the cooling influence of the air through the thin metal causes the water vapour to be condensed, in the same way that steam would be; and the instant this takes place the water ceases to rise with the other products, and falls or trickles down the pipe. Sometimes the quantity of water-vapour and its condensation are such that a small but continuous stream passes down the pipe.

When a pipe gets coated internally with soot, this condensation becomes less, and commonly ceases altogether. The soot is a poor conductor of heat, and the contents of the chimney, the gases and water-vapour, do not get cooled, and the results are (though in a very limited way) more like those obtained with a brick chimney.

The pipe chimneys attached to gas-stoves (of all descriptions) suffer most with the water difficulty in question. With these the pipes always remain clean, and any cooling influence there may be acts upon them very quickly and surely. We may also look for a little more water vapour to result from the combustion of gas than from coal, as the former has hydrogen so abundantly and so free in its constitution, much more so than with coal.

Another feature in connection with pipe chimneys which should always have consideration if coal fuel is to be used is the soot deposit, which occurs more rapidly in these than in brick chimneys. It is brought about in this way. We may consider the soot as being exceedingly minute particles of solid carbon; carbon dust, which, like very many solids when reduced to such a fine state of division, is readily carried up by a more or less rapid current of air or gases. The gases in rising exert a sufficient lifting power to carry this material up, even if rising but very slowly. Soot is also of a sufficiently clinging nature to attach itself readily to surfaces if brought in contact, and the rougher the surface the more readily a deposit occurs. For this reason a brick chimney would have a greater collection than a pipe chimney, if the pipe chimney was surrounded by something to prevent loss of heat, or prevent cooling influences acting upon it in the way that a brick chimney has. A very effective chimney is made by a glazed earthenware pipe imbedded in the brickwork of the chimney breast. It fouls less rapidly, and it is more readily cleaned when required.

Now, as the passage of gases laden with carbon is occurring in an iron pipe chimney, we may suppose that but a small proportion of the soot would have actual contact with the straight smooth sides of the vertical pipe if some other action did not occur. Another action does, however, manifest itself, due to the cooling of the pipe by the air as just referred to. As the heated gases pass up the pipe, those particles which come near the metal are cooled and contracted, and this (as fully explained in previous papers) arrests their progress. These particles only drag their way but slowly up the pipe, their movement now being due in a great measure to the impetus of the rapid-moving particles in the centre of the pipe. If the expression could be allowed, we might say that the movement of the active heated particles in the centre of the pipe was rolling the outer cool particles up the way they were going.

It will be readily seen how this sluggish and irregular movement of the particles against the metal of the pipe causes the carbon that is carried up to be deposited. The carbon is practically laid on to the pipe by this action, instead of being swiftly carried up in a direct line. This, it will be understood, applies to pipes that are erected vertically; the collection of soot in horizontal pipes is greater, for, as sheet-iron pipe gives but little aid in inducing a draught of itself, it follows that every piece of horizontal pipe is an obstruction to the heated gases, which require to take a directly upward course. The provision of sweeping-doors at every angle, as was recommended, is particularly necessary for the removal of fallen soot—soot that falls down the vertical pipes, and in other ways collects at these points. The falling of soot occurs much more frequently and readily from the smooth surfaces of pipes than from brickwork.

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PRICES.* — XXXIII.

(All Prices Include Profit.)

JOINER (*continued*).

Honduras Mahogany, bars, rails, &c.

		£	s.	d.
1¼ by 2 rebated and moulded bar framed	per ft. run	0	0	7
1½ by 2 ditto ditto	ditto	0	0	8
2 by 2 angle bar ditto	ditto	0	0	10
2½ by 2 ditto ditto	ditto	0	1	0
2 by 2½ rebated and moulded rail or stile	ditto	0	0	11
2 by 3 ditto ditto	ditto	0	1	2
2 by 4 ditto bottom rail	ditto	0	1	3
2 by 5 ditto ditto	ditto	0	1	6
1¼ by 2½ ditto bar, &c.	ditto	0	0	8
1½ by 2½ ditto ditto	ditto	0	0	9
2 by 2½ ditto ditto	ditto	0	1	0
2½ by 2½ ditto angle ditto	ditto	0	1	2
2¼ by 2½ ditto rail	ditto	0	1	1
2½ by 3 ditto ditto	ditto	0	1	6
2½ by 4 ditto bottom ditto	ditto	0	2	0
2½ by 5½ ditto ditto	ditto	0	2	6
1¼ by 3 ditto bar	ditto	0	0	9
1½ by 3 ditto ditto	ditto	0	0	11
2 by 3 ditto angle ditto	ditto	0	1	2
2½ by 3 ditto ditto	ditto	0	1	6
2½ by 3 ditto top rail, &c.	ditto	0	1	6
3 by 3 ditto ditto	ditto	0	1	9
4½ by 3 ditto bottom ditto	ditto	0	2	3
5 by 3 ditto ditto	ditto	0	2	6

Spanish Mahogany ditto.

		£	s.	d.
1¼ by 2 rebated and moulded bar framed	ditto	0	0	9
1½ by 2 ditto ditto	ditto	0	0	10
2 by 2 ditto ditto	ditto	0	1	0
2½ by 2 ditto ditto	ditto	0	1	3
2 by 2½ ditto rail, &c.	ditto	0	1	2
2 by 3 ditto ditto	ditto	0	1	4
2 by 4 ditto bottom ditto	ditto	0	1	10
2 by 5 ditto ditto	ditto	0	2	4
1¼ by 2½ ditto bar	ditto	0	0	10
1½ by 2½ ditto ditto	ditto	0	0	11
2 by 2½ ditto ditto	ditto	0	1	2
2½ by 2½ ditto angle ditto	ditto	0	1	5
2¼ by 2½ ditto rail	ditto	0	1	3
2½ by 3 ditto ditto	ditto	0	1	9
2½ by 4 ditto bottom ditto	ditto	0	2	4
2½ by 5½ ditto ditto	ditto	0	3	0
1¼ by 3 ditto bar	ditto	0	0	11
1½ by 3 ditto ditto	ditto	0	1	0
2 by 3 ditto angle ditto	ditto	0	1	4
2½ by 3 ditto ditto	ditto	0	1	7
2½ by 3 ditto top rail	ditto	0	1	9
3 by 3 ditto ditto	ditto	0	2	3
4 by 3 ditto to bottom ditto	ditto	0	2	10
5 by 3 ditto ditto	ditto	0	3	6

Wainscot or American walnut—

		£	s.	d.
1¼ by 2 rebated and moulded bar	ditto	0	0	7½
1½ by 2 ditto ditto	ditto	0	0	8½
2 by 2 ditto angle ditto	ditto	0	0	11
2½ by 2 ditto ditto	ditto	0	1	1
2 by 2½ rebated and moulded rail or stile	ditto	0	1	0½
2 by 3 rebated, moulded rail or stile	per ft. run	0	1	3
2 by 4 ditto bottom rail	ditto	0	1	4
2 by 5 ditto ditto	ditto	0	1	8
1¼ by 2½ ditto bar, &c.	ditto	0	0	8½
1½ by 2½ ditto ditto	ditto	0	0	10
2 by 2½ ditto ditto	ditto	0	1	1
2½ by 2½ ditto angle ditto	ditto	0	1	3
2¼ by 2½ ditto rail	ditto	0	1	2½
2½ by 3 ditto ditto	ditto	0	1	8
2½ by 4 ditto bottom ditto	ditto	0	2	2
2½ by 5½ ditto ditto	ditto	0	2	8
1¼ by 3 ditto bar	ditto	0	0	10
1½ by 3 ditto ditto	ditto	0	1	0
2 by 3 ditto angle ditto	ditto	0	1	3
2½ by 3 ditto ditto	ditto	0	1	8
2½ by 3 ditto top rail, &c.	ditto	0	1	8
3 by 3 ditto ditto	ditto	0	1	11
4 by 3 ditto bottom ditto	ditto	0	2	5
5 by 3 ditto ditto	ditto	0	2	8

Window Finishings: Honduras mahogany, unpolished—

		£	s.	d.
1in. wrot. and beaded or rounded linings tongued to frames	per ft. sup.	0	1	8
Ditto ditto splayed and ditto	ditto	0	1	10
1¼ ditto ditto	ditto	0	1	11
Ditto ditto splayed	ditto	0	2	1
Ditto framed square in ordinary sized panels	ditto	0	2	2
Ditto moulded	ditto	0	2	5
Ditto bead flush	ditto	0	2	5
Ditto in small square panels	ditto	0	2	4
Ditto moulded	ditto	0	2	8
1½ wrot. and beaded as above	ditto	0	2	2
Ditto splayed	ditto	0	2	4
Ditto framed square in ordinary sized panels	ditto	0	2	5
Ditto moulded	ditto	0	2	8
Ditto in small panels	ditto	0	2	8
Ditto moulded	ditto	0	2	11
1in. square framed window backs	ditto	0	1	7
1¼ ditto ditto	ditto	0	1	10
Ditto moulded	ditto	0	2	1
Ditto small panels	ditto	0	2	0
Ditto moulded	ditto	0	2	3
1½ ditto square framed	ditto	0	2	1
Ditto moulded	ditto	0	2	4
Ditto small panels	ditto	0	2	4
Ditto moulded	ditto	0	2	8
Ditto bead flush	ditto	0	2	7
1in. square-framed elbows	ditto	0	1	9
1¼in. ditto ditto	ditto	0	2	0
Ditto moulded	ditto	0	2	3
Ditto bead flush	ditto	0	2	3
Ditto small panels	ditto	0	2	3
Ditto moulded	ditto	0	2	7
1½in. square framed	ditto	0	2	4
Ditto moulded	ditto	0	2	8
Ditto small panels	ditto	0	2	8
Ditto moulded	ditto	0	3	0
Ditto bead flush	ditto	0	2	7
1in. wrot and moulded window board, tongued to frame or deal bearers	per ft. sup.	0	1	10
1¼in. ditto ditto	ditto	0	2	1
1½in. ditto ditto	ditto	0	2	4
1in. ditto splay edge	ditto	0	0	0¾
1¼in. ditto ditto	ditto	0	0	1
1½in. ditto ditto	ditto	0	0	1¼
¾ by ¾ moulding planted under window board	per ft. run	0	0	2
Ditto small bead or moulding planted on panels and mitred	ditto	0	0	4
1 by 2 window nosing tongued to frame	ditto	0	0	5
1¼ by 2½ ditto ditto	ditto	0	0	6
1½ by 2½ ditto ditto	ditto	0	0	7
1½ by 3 ditto ditto	ditto	0	0	8
2 by 3 ditto moulded	ditto	0	0	10
⅝ by 2 ditto beaded capping	ditto	0	0	3
¾ by 2½ ditto ditto	ditto	0	0	4
1 by 2½ ditto ditto	ditto	0	0	5
1 by 5 tongued and beaded linings tongued to frame and deal backings	ditto	0	0	9
1 by 6 ditto ditto	ditto	0	0	11
1¼ by 6 ditto ditto	ditto	0	1	1
1¼ by 6 twice rebated jamb linings	ditto	0	1	0
1¼ by 11 ditto ditto	ditto	0	1	10
1½ by 6 ditto ditto	ditto	0	1	2
1½ by 11 ditto ditto	ditto	0	2	0
Ends of window nosing returned	each	0	0	3
Ditto ditto moulded	ditto	0	0	4
Ditto window board notched and returned	ditto	0	0	6
Elbow caps to ditto ⅝ by 2	ditto	0	0	6
Ditto ditto ditto ¾ by 2½	ditto	0	0	7
Ditto ditto ditto 1 by 2½	ditto	0	0	8
Mitres to ditto	ditto	0	0	2
Bead let in frieze rail	ditto	0	0	9
Moulded ditto	ditto	0	1	0
1 by 1 groove for iron shutters	ditto	0	0	2

Window Finishings, Spanish Mahogany—

		£	s.	d.
1in. wrot and beaded or rounded lining tongued to frame	per ft. sup.	0	2	4
Ditto ditto splayed	ditto	0	2	6
1¼in. ditto ditto	ditto	0	2	9
Ditto ditto ditto	ditto	0	2	11
Ditto ditto framed square in ordinary-sized panels	ditto	0	3	0
Ditto ditto moulded	ditto	0	3	4
Ditto ditto bead flush	ditto	0	3	4
Ditto ditto in small square panels	ditto	0	3	3
Ditto ditto ditto moulded	ditto	0	3	8
1½in. ditto wrot and beaded	ditto	0	3	0
Ditto ditto ditto splayed	ditto	0	3	3
Ditto ditto framed square in ordinary-sized panels	ditto	0	3	6
Ditto ditto moulded	ditto	0	3	10
Ditto ditto in small panels	ditto	0	3	9
Ditto ditto moulded	ditto	0	4	1
1in. square framed window backs	ditto	0	2	3
1¼in. ditto ditto	ditto	0	2	7
Ditto ditto moulded	ditto	0	2	11
Ditto ditto bead flush	ditto	0	3	2
Ditto ditto small panels	ditto	0	2	10
Ditto ditto moulded	ditto	0	3	2
1½in. square-framed window backs	per ft. sup.	0	3	4
Ditto ditto moulded	ditto	0	3	8
Ditto ditto small panels	ditto	0	3	7
Ditto ditto moulded	ditto	0	3	11
Ditto ditto bead flush	ditto	0	3	11
1in. wrot and rounded window-board, tongued to frame and including deal bearers	ditto	0	2	8
1¼in. ditto ditto	ditto	0	3	0
1½in. ditto ditto	ditto	0	3	4
1in. ditto splayed edge	per ft. run	0	0	1
1¼in. ditto ditto	ditto	0	0	1¼
1½in. ditto ditto	ditto	0	0	1½
¾ by ¾ moulding planted under window-board or nosing	ditto	0	0	2½
Small bead or moulding planted on panels and mitred	ditto	0	0	5
⅝ by 2 beaded capping	ditto	0	0	4
¾ by 2½ ditto	ditto	0	0	5½
1 by 2½ ditto	ditto	0	0	6½
1 by 2 window nosing tongued to frame	ditto	0	0	7
1¼ by 2½ ditto	ditto	0	0	8
1½ by 2½ ditto	ditto	0	0	10
1½ by 3 ditto	ditto	0	0	11
2 by 3 ditto moulded	ditto	0	1	2
1 by 5 tongued and beaded linings tongued to frame	ditto	0	1	1
1 by 6 ditto	ditto	0	1	4
1¼ by 6 ditto	ditto	0	1	7
1¼ by 6 twice rebated jamb linings	ditto	0	1	5
1¼ by 11 ditto	ditto	0	2	10
1½ by 6 ditto	ditto	0	1	9
1½ by 11 ditto	ditto	0	3	0
Ends of window nosings returned	each	0	0	4
Ditto ditto moulded	ditto	0	0	5
Ditto ditto window board notched and returned	ditto	0	0	7
Elbow caps to ditto ⅝ by 2	ditto	0	0	8
Ditto ditto ditto ¾ by 2½	ditto	0	0	10
Ditto ditto ditto 1 by 2½	ditto	0	1	0
Mitres to ditto	ditto	0	0	3
Bead set in frieze rail	ditto	0	1	0
Moulded ditto	ditto	0	1	6
1 by 1 groove for iron shutters	ditto	0	0	2½

Wainscot or American Walnut—

		£	s.	d.
1in. wrot and beaded or rounded lining tongued to frame	per ft. sup.	0	1	10
Ditto ditto splayed	ditto	0	2	0
1¼in. ditto	ditto	0	2	1
Ditto ditto ditto	ditto	0	2	3
Ditto ditto framed square in ordinary-sized panels	ditto	0	2	5
Ditto ditto moulded	ditto	0	2	8
Ditto ditto bead flush	ditto	0	2	8
Ditto ditto in small square panels	ditto	0	2	7
Ditto ditto ditto moulded	ditto	0	2	11
1½in. ditto wrot and beaded	ditto	0	2	4
Ditto ditto ditto splayed	ditto	0	2	6
Ditto ditto framed square	ditto	0	2	8
Ditto ditto moulded	ditto	0	2	11
Ditto ditto in small panels	ditto	0	2	11
Ditto ditto ditto moulded	ditto	0	3	2
1in. square framed window backs	ditto	0	1	9
1¼in. ditto ditto	ditto	0	2	0
Ditto ditto moulded	ditto	0	2	3
Ditto ditto bead flush	ditto	0	2	3
Ditto ditto small panels	ditto	0	2	2
Ditto ditto moulded	ditto	0	2	6
1½in. ditto square framed	ditto	0	2	3
Ditto ditto moulded	ditto	0	2	6
Ditto bead flush	ditto	0	2	6
Ditto in small panels	ditto	0	2	6
Ditto moulded	ditto	0	2	10
1in. square framed elbows	ditto	0	1	11
1¼in. ditto	ditto	0	2	2
Ditto moulded	ditto	0	2	5
Ditto bead flush	ditto	0	2	5
Ditto small panels	ditto	0	2	5
Ditto moulded	ditto	0	2	9
1½in. square framed	ditto	0	2	6
Ditto moulded	ditto	0	2	10
Ditto bead flush	ditto	0	2	9
Ditto small panels	ditto	0	2	10
Ditto moulded	ditto	0	3	2
1in. wrot and rounded window board tongued to frame, and including deal bearers	ditto	0	2	0
1¼in. ditto	ditto	0	2	3
1½ ditto	ditto	0	2	6
1in. splayed edge	per ft. run	0	0	0¾
1¼ ditto	ditto	0	0	1
1½ ditto	ditto	0	0	1¼
¾ by ¾ moulding planted under window board or nosing	ditto	0	0	2
Small bead or moulding planted in panels and mitred	ditto	0	0	4
⅝ by 2 beaded capping	ditto	0	0	3½
¾ by 2½ ditto	ditto	0	0	4½
1 by 2½ ditto	ditto	0	0	5½
1 by 2 window nosing tongued to frame	ditto	0	0	5½
1¼ by 2½ ditto	ditto	0	0	6½
1½ by 2½ ditto	ditto	0	0	7½
1½ by 3 ditto	ditto	0	0	9
2 by 3 ditto moulded	ditto	0	0	11
1 by 5 tongued and beaded linings tongued to frame	ditto	0	0	10
1 by 6 ditto	ditto	0	1	0
1¼ by 6 ditto	ditto	0	1	2
1¼ by 6 twice rebated jamb linings	ditto	0	1	1
1¼ by 11 ditto	ditto	0	2	0
1½ by 6 ditto	ditto	0	1	3
1½ by 11 ditto	ditto	0	2	2
Ends of window nosings returned	each	0	0	3
Ditto moulded ditto	ditto	0	0	4
Ditto window board notched and return moulded	ditto	0	0	6
Elbow caps to ⅝ by 2	ditto	0	0	6
Ditto ¾ by 2½	ditto	0	0	7
Ditto 1 by 2½	ditto	0	0	8
Mitres to ditto	ditto	0	0	2
Bead let in frieze rail	ditto	0	0	9
Moulding ditto	ditto	0	1	0
1 by 1 groove for iron shutter	ditto	0	0	2

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Public House and other Fittings, Honduras mahogany, unpolished—

		£	s.	d.
⅝in. wrot one side, plinths or linings finished for polishing	per ft. sup.	0	1	4
Ditto moulded	ditto	0	1	6
¾in. ditto	ditto	0	1	6
Ditto moulded	ditto	0	1	8
1in. ditto	ditto	0	1	8
Ditto moulded	ditto	0	1	10
1in. square framed wrot one side inclosure to counter, made to remove	ditto	0	2	0
Ditto moulded	ditto	0	2	3
Ditto bead flush	ditto	0	2	3
Ditto bolection moulded	ditto	0	2	5
Ditto raised panels	ditto	0	2	9

(Note.—These prices do not include the framed bearers at back.)

1¼in. square framed inclosure	ditto	0	2	3
Ditto moulded	ditto	0	2	6
Ditto bead flush	ditto	0	2	6
Ditto bolection moulded	ditto	0	2	8
Ditto raised panels	ditto	0	3	0
Ditto square framed, circular on plan	ditto	0	6	0
Ditto moulded	ditto	0	6	6
Ditto ditto bolection ditto	ditto	0	7	0
1½in. square framed	ditto	0	2	6
Ditto moulded	ditto	0	2	9
Ditto bead flush	ditto	0	2	9
Ditto bolection moulded	ditto	0	2	11
Ditto raised panels	ditto	0	3	3
Ditto square framed, circular on plan	ditto	0	7	0
Ditto moulded	ditto	0	7	6
Ditto bolection ditto	ditto	0	8	0
2in. square framed	ditto	0	2	10
Ditto moulded	ditto	0	3	1
Ditto bead flush	ditto	0	3	1
Ditto bolection moulded	ditto	0	3	3
Ditto raised panels	ditto	0	3	9
Ditto square framed, circular on plan	ditto	0	8	0
Ditto moulded	ditto	0	8	6
Ditto bolection moulded	ditto	0	9	0
Allow extra for 1in. door	each	0	2	0
Ditto ditto 1¼ ditto	ditto	0	2	6
Ditto ditto 1½ ditto	ditto	0	3	0
1in. counter top buttoned to bearers, including plain edges, but not bearers	per ft. sup.	0	2	3
Ditto circular on plan, including edges and measured square	ditto	0	3	0
1¼in. ditto	ditto	0	2	6
Ditto circular on plan	ditto	0	3	4
1½in. ditto	ditto	0	2	8
Ditto circular on plan	ditto	0	3	7
2in. ditto	ditto	0	4	0
Ditto circular on plan	ditto	0	5	0
1 by 2½ moulded edging or nosing screwed on	per ft. run	0	0	6
1¼ by 2½ ditto	ditto	0	0	7
1½ by 3 ditto	ditto	0	0	9
2 by 4 ditto	ditto	0	1	3
1 by 2½ ditto circular	ditto	0	1	3
1¼ by 2½ ditto	ditto	0	1	5
1½ by 3 ditto	ditto	0	1	10
2 by 4 ditto	ditto	0	2	9
½ by 4 plain pilasters	ditto	0	0	6
½ by 6 ditto	ditto	0	0	7
¾ by 4 ditto	ditto	0	0	8
¾ by 6 ditto	ditto	0	0	11
Ends fitted	each	0	0	3
¾ by 6 framed ditto	per ft. run	0	1	6
1 by 6 ditto moulded	ditto	0	2	0
Ditto ditto bolection ditto	ditto	0	2	3
Ditto ditto reeded (not framed)	ditto	0	1	6
1 by 9 square framed	ditto	0	2	3
Ditto moulded	ditto	0	2	8
Ditto bolection ditto	ditto	0	2	11
Ditto raised panels	ditto	0	3	3
1¼ by 9 square framed	ditto	0	2	6
Ditto moulded	ditto	0	2	11
Ditto bolection ditto	ditto	0	3	2
Ditto raised ditto	ditto	0	3	6
Small moulded neckings, mitred round	each	0	1	3
Moulded caps ditto	ditto	0	2	0
Ditto bases	ditto	0	2	6
Ditto ditto large	ditto	0	3	0
2in. carved pateræ (in solid)	ditto	0	1	0
2½in. ditto	ditto	0	1	3
3in. ditto	ditto	0	1	6
4in. ditto	ditto	0	2	0
4 by 2½ by 2 moulded and carved trusses (ordinary)	ditto	0	2	6
6 by 3 by 2 ditto	ditto	0	4	0
6 by 4 by 2½ ditto	ditto	0	5	0
6 by 4 by 4 ditto	ditto	0	6	0
4 by 4 by 2 carved caps, ordinary character	ditto	0	3	6
6 by 6 by 2 ditto	ditto	0	7	6
9 by 9 by 3 ditto	ditto	0	15	0
10 by 10 by 4 ditto	ditto	0	17	6
1½in. wrot. two sides, and framed bar division, fitted and fixed	ditto	0	2	6
Ditto moulded both sides	ditto	0	3	0
Ditto bolection moulded both sides	ditto	0	3	6
Ditto stop-chamfered both sides, plain stops	ditto	0	3	6
Ditto raised panels ditto	ditto	0	4	6
Extra for door in ditto	ditto	0	4	0
2in. wrot two sides and framed bar division, fitted and fixed	ditto	0	3	0
Ditto moulded both sides	ditto	0	3	6
Ditto bolection moulded both sides	ditto	0	4	0
Ditto stop-chamfered both sides, and including plain stops	ditto	0	4	0
Ditto raised panels both sides	ditto	0	5	0
Extra for door in ditto	ditto	0	5	0
2½in. square-framed	ditto	0	3	4
Ditto moulded both sides	ditto	0	3	11
Ditto bolection moulded both sides	ditto	0	4	5
Ditto stop-chamfered both sides, and plain stops	ditto	0	4	4
Ditto raised panels both sides	ditto	0	5	6
Extra to door in ditto	ditto	0	5	6

Panels left out for glass, including loose beads or mouldings, price at square-framed, and price one set of loose beads extra.

		£	s.	d.
1 by 3½ moulded capping, screwed	per ft. run	0	0	6
1½ by 4 ditto ditto	ditto	0	1	0
Ditto and small mouldings under on both sides	ditto	0	1	4
2 by 5 grooved and moulded on solid	ditto	0	2	0
1 by 3½ ends return moulded	each	0	0	6
2 by 5 ditto ditto	ditto	0	0	8
1½in. square-framed elbows, open for glass in one square, with moulding on solid and one set of loose beads, and capping, fixed complete	ditto	0	9	0
Ditto ditto ramped, ogee-shaped in one edge, and capping	ditto	0	15	0
Carved corbel or bracket, to carry either of the above	ditto	0	10	0
2in. square-framed elbows, as first item	ditto	0	11	0
Ditto ditto ramped, ogee, &c.	ditto	0	17	6
Carved corbel or bracket, to carry either of the above	ditto	0	12	0
2½in. square-framed elbows	ditto	0	13	6
Ditto ditto ramped, ogee, &c.	ditto	1	0	0
Carved corbel or bracket	ditto	0	15	0

Counter Screens, no ironmongery included—

1in. framed screen framing with beads both sides, fixed in square about 15 by 12	per ft. sup.	0	2	6
Ditto with each square framed separate, rounded on edge, and hung on centres, not included, top and bottom	ditto	0	4	0
Ditto framed separately, and made to slide	ditto	0	3	9
1½in. all as first item	ditto	0	2	9
Ditto all as second item	ditto	0	4	3
2½ by 2¼ wrot framed and beaded rails, in short lengths	per ft. run	0	1	9
2½ by 3 ditto ditto	ditto	0	2	0
2½ by 4 ditto ditto	ditto	0	2	6
3 by 2¼ ditto ditto	ditto	0	2	0
3 by 3 ditto ditto	ditto	0	2	4
3 by 4 ditto ditto	ditto	0	3	0
3 by 3 wrot all round posts	ditto	0	1	2
3½ by 3½ ditto ditto	ditto	0	1	6
4 by 4 ditto ditto	ditto	0	2	0
Chamfered angle	ditto	0	0	2
Plain stops	each	0	0	2
Moulded ditto	ditto	4d. to 6d.		
Staff beaded angle	per ft. run	0	0	2
Cut tops	each	2s. to 5s.		
Moulded neckings, mitred round	ditto	0	1	6
Ditto bases	ditto	0	2	6
½in. flutings (short), with quadrant stops	ditto	0	0	9
1in. carved pateræ	ditto	0	0	9
1¼in. ditto ditto	ditto	0	1	0
1½in. ditto ditto	ditto	0	1	3
1¼ by 3 capping, moulded both edges and fitted to posts	per ft. run	0	0	8
1½ by 3 ditto ditto	ditto	0	0	10
1½ by 4 ditto ditto	ditto	0	1	2
2 by 4 ditto ditto	ditto	0	1	6
Ends of posts framed through counter	each	0	0	9
1in. wrot both sides and square-framed dwarf framing under cabinets, hung with butts	per ft. sup.	0	2	0
Ditto moulded	ditto	0	2	3
Ditto bolection moulded	ditto	0	2	5

Pilasters, see Counters.

Deal Backs, &c., see earlier part of Joiner.

½in. wrot two sides, shelves over: 6in. wide	per ft. sup.	0	1	5
¾in. ditto ditto	ditto	0	1	8
1in. ditto ditto	ditto	0	1	11
1¼in. ditto ditto	ditto	0	2	2
1in. deal ditto, with 2in. of mahogany glued on (staining deal to be charged extra)	ditto	0	1	0
1¼in. ditto ditto	ditto	0	1	1
1½in. ditto ditto	ditto	0	1	2
¾in. wrot two sides, mahogany divisions, grooved in	ditto	0	1	10
1in. ditto ditto	ditto	0	2	1
1¼in. ditto ditto	ditto	0	2	4
1½in. ditto ditto	ditto	0	2	7

(For deal ones see earlier part of Joiner.)

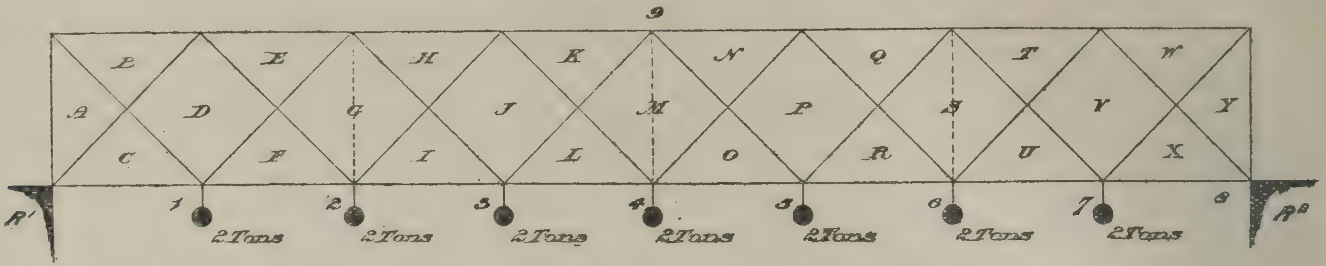
¾in. wrot one side, bottom on deal bearers 3in. high	ditto	0	1	8
1in ditto ditto	ditto	0	1	11
Stopped grooves in mahogany under 12in. long for shelves	each	0	0	6
½ by 1½ wrot and chamfered mahogany shelf, bearer rounded on end and screwed on	ditto	0	0	4
¾ by 2 ditto ditto	ditto	0	0	5
1 by 2 ditto ditto	ditto	0	0	6
½in. moulded edge	ditto	0	0	1½
¾in. ditto ditto	ditto	0	0	2
1in. ditto ditto	ditto	0	0	2¼
1¼in. ditto ditto	ditto	0	0	2½
1½in. ditto ditto	ditto	0	0	2½
Circular corners to ditto	ditto	6d. to 1s.		

THE SURVEYORS' INSTITUTION.

At the ordinary general meeting of this society, held at 12, Great George-street, on Monday evening last, the president, Mr. R. Collier Driver, in the chair, a paper was read by Professor Edward Kinch (associate) on the "Valuation of Feeding Stuffs and Foods," which, although it affected but little, if at all, the branch of the surveying profession which is nearly concerned with the interests of our readers, was of very great importance to the large number of the members of the institution whose business it is to manage and to represent the ownership of land, especially agricultural land. To the tenant farmer it is of very considerable importance to have, in the first place, some reliable data on which to calculate the value of the various feeding stuffs, whether artificial or natural, on which he maintains and fattens his stock; and to the land agent it is essential to be able to decide to what extent the different foods consumed on the farm, while improving the stock of the farmer, at the same time tend to improve the land, by their residual manurial value. Under the Agricultural Holdings Act of 1883 many points may arise as to the calculable value of the manurial effect on the soil of different foods imported on to, and consumed by the stock on, the farm; and any paper, like that of Professor Kinch, which attempts to formulate some strictly scientific principle on which to base such a calculation, cannot fail to be of great value to the surveyor or land agent who has to decide or advise under such circumstances. To quote the paper to any extent would be, we fear, to plunge our readers in a mass of chemical formulæ and calculations, which we must honestly confess are beyond the scope of our technical experience, while to sum up the discussion which followed, and in which such eminent specialists as Dr. Voelcker, Mr. Lloyd, and Mr. T. A. Dickson took part, would be merely to announce the somewhat depressing fact that on this point, as on most others, experts disagree to a lamentable extent. While all agreed that it was most necessary for the future of successful agriculture that the farmer should have some guide to enable him to determine the value of the materials which it is his business to deal with, one side seemed, as far as we could judge, to despair of any agreement between the chemists as to what should be taught, and the other to think it equally hopeless to expect the farmer to understand and intelligently apply any scientific teaching whatever. It seems, however, that really honest efforts are being made by the great agricultural and other learned societies, and by gentlemen who, like the reader of the paper, lay the results of their researches before those interested, to help the British farmer to better times and more prosperous methods; and if ever so small a step in this direction can be made, it must command the best wishes and the earnest commendation of everyone interested in land, labour, commerce, or the general welfare of the country at large.

THE PORTLAND CEMENT TRADE OF THE WORLD.

Mr. Giron recently read before the Engineers' Club at Philadelphia a paper on the trade of the world in Portland cement. The present annual production in Europe amounts, he stated, to over 20,000,000 barrels, and its commercial value to over 36,000,000dols. The first factory was established at Northfleet, on the Thames, and in 1850 only four factories were in operation. In England there are now over 8,300,000 barrels made each year. The process is much the same as it was 20 years ago. The raw materials are chalk and clay, both very pure, and although inferior processes are employed, they make a satisfactory cement. A few years ago the entire product of the kilns was put on the market; but the fineness of the Continental cements led English makers to improve their processes, although even now English cement is not, as a rule, as firm as Geneva or French Portland. The manufacture was first introduced into Germany in 1852. Now there are 60 large works, having the same annual production as England. The raw materials are of exceedingly unfavourable character; but the manufacturers have made a study of the property and uses of Portland cement, and now know exactly what rules to follow to regulate their operations. The association of manufacturers has had much to do with the immense development of the industry in Germany. In France the industry grew slowly, the total production in 1880 hardly exceeding 750,000 barrels a year; now it is 1,800,000 barrels. The works of the Company of French Cements at Boulogne form the largest Portland cement factory in the world, turning out about 800,000 barrels a year. In Russia the first works were established in 1857, and there are now eight factories producing 900,000 barrels a year. In



Belgium there are four works producing 800,000 barrels. In Italy the Portland cement industry does not really exist, although a certain kind of natural Portland is made. In Denmark and Norway and Sweden there are ten factories, making about 800,000 barrels. Portland cement was imported into the United States as early as 1868. In 1882 the amount imported was 370,406 barrels, and last year it exceeded 3,000,000 barrels. Little effort has been made to develop the manufacture there. The materials for manufacture are as difficult to handle as in Germany, and the processes are similar. The cost of the system is too great to make it successful in America. The process used in the Portland cement works at Coplay in Pennsylvania has entirely revolutionised the science of cement making. At that factory the raw compound is burnt in a powdered condition while travelling in an inclined rotary furnace in an intensely hot petroleum flame, and a few hours is sufficient to finish the process. The cement is guaranteed to stand 400lb. in seven days, 500lb. in a month, and 600lb. in three months, and to leave no more than 10 per cent. residue on a No. 80 sieve.

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BUILDERS' CLERKS' BENEVOLENT INSTITUTE.

THE fourteenth annual dinner of this institute was held on Wednesday evening at the Holborn Restaurant, and passed off very successfully. Nearly three hundred friends and supporters of the institution sat down, under the chairmanship of Mr. Colin G. Patrick (Mark Patrick and Son), the President, the company including many well-known builders. In proposing the toast of the evening, "Increasing Success and Prosperity to the Institution," the President remarked that it was founded in 1866 for the relief and for granting permanent pensions to decayed clerks who had spent their best years in builders' offices, and also for affording regular aid to their widows To these objects had of late years been added a fund for the maintenance and education of clerks' orphans. They had now between £4,000 and £5,000 invested in Consols, but satisfactory as that was, the committee felt that the charity was capable of much greater development. He earnestly appealed to the 5,000 builders of the Metropolis to support the institution more generally, and felt that it was yet more pressingly incumbent on the 10,000 London builders' clerks to aid it. If each would give a small sum each year, the committee would be relieved from anxiety, and the funds placed on a permanent basis. In response to this appeal, a long list of donations and subscriptions was read by Mr. H. J. Wheatley, the secretary, the total amounting to £315. The donations included one of twenty-five guineas from the president, another of twenty guineas anonymously given through the president, and others of ten guineas each from the Institute of Builders, the Worshipful Company of Carpenters, Messrs. John Mowlem and Co., and Mr. Joseph Randall (Kirk and Randall), and five guineas each from Messrs. E. and C. Braby, W. Brass and Son, the Burham Brick Co., Claridge's Asphalte Co., Jas. Clark and Son, B. Colls and Sons, T. and W. Farmiloe, Thos. Gabriel and Sons, B. Hannen, junr., Alex. Hawkins, J. W. Hobbs and Co. ; Lee, Smith, and Co. ; Mackrell, Maton, and Co. ; Mander Brothers, and Geo. Trollope and Sons. Other toasts were "The Architects and Surveyors," proposed by Mr. W. A. Colls, and responded to by Mr. George Pearson; "The Builders," proposed in humorous terms by Mr. J. E. Trower, and acknowledged by Mr. Joseph Randall; "The Builders' Merchants," felicitously given by Mr. W. R. Freeman (John Mowlem and Co.), and replied to by Mr. J. Nicholls (Nicholls and Clarke); for "The Past Presidents," proposed by Mr. Edwin Brooks, the treasurer, the chairman's immediate predecessor, Mr. B. Hannen, junr. (Cubitt and Co.) replied, and the health of "The President" was then given by another ex-president, Mr. J. W. Hobbs, J.P., and suitably acknowledged, that of the committee and the secretary closing the list.

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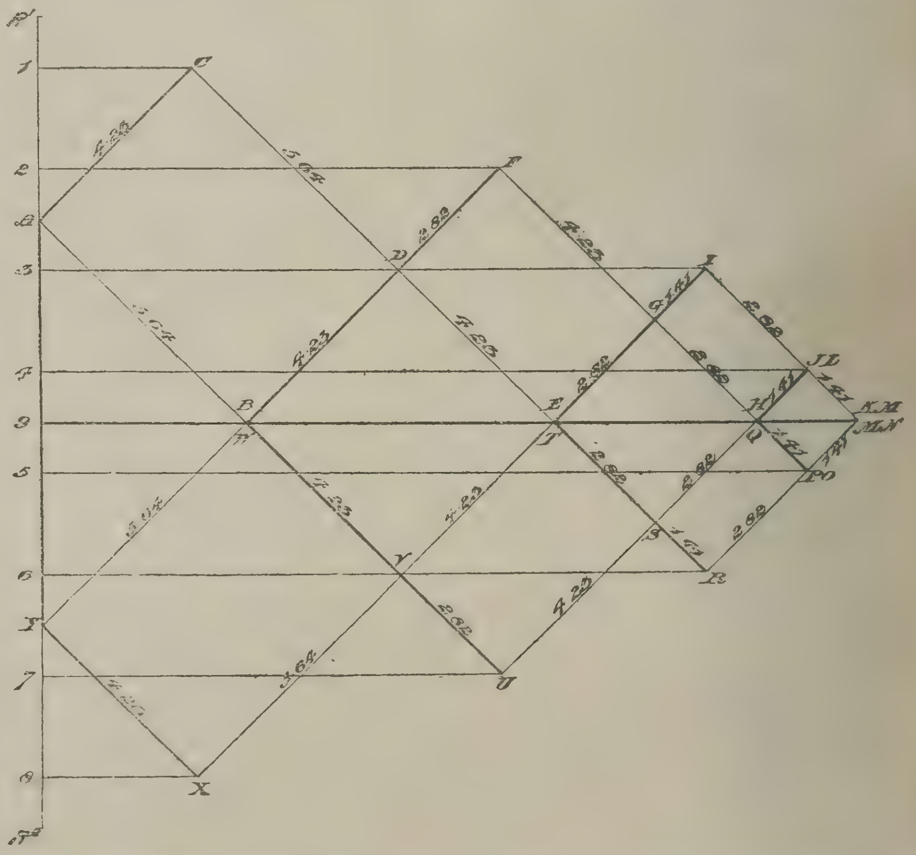
CONSTRUCTIONAL DRAWINGS.—II.

Details of an Iron Foot-Bridge.

(EXTRACT FROM SPECIFICATION.)

WROUGHT IRON.—The plates, bars, tees, angle irons, &c., are to be of the best quality iron, and all of British manufacture, capable of bearing the following strains:—That for plates lengthwise, 21 tons per square inch, contraction of area at point of fracture 8 per cent. ; that for plates crosswise, 17 tons per square inch, contraction of area at point of fracture 3 per cent. ; that for angle and tee-irons, 22 tons per square inch, contraction of area at point of fracture 15 per cent. ; that for flat bars, 23 tons per square inch, contraction of area at point of fracture 20 per cent. ; that for round bars up to 1½in. diameter, 21 tons per square inch, contraction of area at point of fracture 17 per cent. ; that for round bars above 1½in. diameter, 20 tons per square inch, contraction of area at point of fracture 15 per cent.



Testing.—All the ironwork will be subjected to such tests as the engineer may direct, at the contractor's expense, and should any parts fail or be broken in the testing, or be objected to on account of bad workmanship or materials, the contractor must replace the same at his own cost.

Drilling, Riveting, &c.—All bolt and rivet holes must be accurately marked from templates. All rivet holes to be carefully drilled. All rivets must be of the sizes and pitch shown on the drawings, and must be upset throughout their whole length, and entirely fill the hole. All rivet-heads to be of the proper size and carefully snapped, the two heads bedding truly on the plates, and their centres coinciding with the centre of the rivet. Any that may be found loose or imperfect in any way whatever must be cut out and replaced at the contractor's expense. The rivets, bolts, and nuts shall be made of the best scrap iron. All the bolts and nuts to have strong and clean threads cut upon them of uniform pitch ; all heads exposed to be hexagonal. All rivets on bearings to be neatly and properly countersunk.

Cast Ironwork.—The metal for the castings shall be of such a mixture of irons as is best adapted for the purpose, and shall be such that a bar 1in. square and 4½ft. between the supports shall bear without fracture not less than 550lb. in the centre. The castings, when cold, must be of the pattern and dimensions shown on the drawings, and all to be cast smooth, with sharp arrises, and free from air blows, twists, and flaws of every description. The edges of all road plates, as well as all joints and bearing areas, to be planed to an even surface.

Columns.—All columns shall be cast vertically, and in dry sand ; and for the purpose of gauging the thickness of the metal, small holes shall be drilled where directed, and the thickness of metal shall be uniform in all parts of the circumference.

Dimensions and Weights.—The whole of the ironwork shall be made of the exact dimensions shown on the respective drawings. Any ironwork made of less dimensions than those shown on the drawings will be rejected, and any excess

STRAINS IN LATTICE BARS. (Tabulated Method.)

Loads.	AB CD	DF EG	GH IJ	JL KM	MN OP	PR QS	ST UV	VX WY	AC BD	DE FG	GI HJ	JK LM	MO NP	PQ RS	SU TV	VW XY
1	−7/8	−1/8	+1/8	−1/8	+1/8	−1/8	+1/8	−1/8	...	...	...	...	...	...	...	...
2	...	...	...	...	...	...	...	...	+6/8	−6/8	−2/8	+2/8	−2/8	+2/8	−2/8	+2/8
3	−5/8	+5/8	−5/8	−3/8	+3/8	−3/8	+3/8	−3/8	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	+4/8	−4/8	+4/8	−4/8	−4/8	+4/8	−4/8	+4/8
5	−3/8	+3/8	−3/8	+3/8	−3/8	−5/8	+5/8	−5/8	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...	+2/8	−2/8	+2/8	−2/8	+2/8	−2/8	−6/8	+6/8
7	−1/8	+1/8	−1/8	+1/8	−1/8	+1/8	−1/8	−7/8	...	...	...	...	...	...	...	...
	−2 5·64	+1 2·82	−1 2·82	0 ...	0 ...	−1 2·82	+1 2·82	−2 5·64	+1½ 4·23	−1½ 4·23	+4/8 1·41	−4/8 1·41	−4/8 1·41	+4/8 1·41	−1½ 4·23	+1½ 4·23

Strain in lattice bars = sum of weights × load on apex × cosec of angle of inclination (45° = 1·41).

of weight beyond 3 per cent. caused by the given dimensions having been exceeded will not be paid for. Before being sent out to the works, the whole must be carefully erected and fitted together in the maker's yard, and each piece numbered so as to come together again and correspond when being permanently fixed in position.

Seatings to Girders, &c.—All wrought-iron girders to have seatings of the best hair felt, in two or more layers. The cast-iron bed plates and columns to have seatings of 8lb. lead for the full width and length of their bearings on masonry.

Painting.—The inner surfaces of all plates, bars, &c., which are to be riveted together, shall be well coated with best oxide paint before joining. The whole of the cast and wrought ironwork to have one coating of best red lead before fixing, and four other coats of approved colours when completed. The ironwork shall not be painted before an examination of it has been made by or under the orders of the engineer, who must be apprised in writing when it is ready. All the wrought ironwork shall be well oiled before commencing to build the girders.

LOAD ON GIRDER.

Dead Load.—	
Floor plates 47·0 × 6·5 × ($\frac{3}{8}''$) 15lb.	4,582
T.I. covers 65·0 × (5″ × 3″ × $\frac{1}{2}''$) 12·5lb.	812
Broken stone (120lb. per c.ft.) 47′ 0″ × 7′ 0″ × 2″ = 55 × 120	6,600
Asphalte (26lb. per sup. ft.) 47′ 0″ × 7′ 0″ × 26lb.	8,554
Live Load.—	
47′ 0″ × 6′ 0″ × 120lb.	33,840
	2,54,388
	112)27,194
	20)243
	12
Approximate weight of girder (5 per cent. added for rivets)	3¼
	15¼ tons.

(Allowing 2 tons on each apex gives a total load of 16 tons.)

Strain in Flanges.—

$$\frac{\text{W.L.}}{8\,\text{D}} = \frac{16{\cdot}00 \times 47}{8 \times 6} = 15\tfrac{2}{3} \text{ tons.}$$

We can only give one double-page sheet of diagrams illustrating this article this week. The other will appear next week.

SANITARY MANUFACTURES AND SPECIALITIES.

Messrs. Thos. Crapper and Co., sanitary engineers, of Marlborough Works, Marlborough-road, Chelsea, have been making extensive alterations and additions to their premises, including a new foundry, trimming-shop, warehouses, show-rooms, &c. By the courtesy of the able and enterprising manager, Mr. Robt. H. Wharam, we have viewed these premises, where every facility is given for turning out the best work and the largest orders. In the new foundry the operations of casting brass and gunmetal goods are vigorously carried on. The sink-taps we saw turned out were exceedingly true and clean castings. Having inspected the trimming shop, we enter a large, well-lighted store, in which the unfinished goods are placed, round which is a gallery lighted by a central glazed roof, where the lathes are fixed, and which is called the finishing shop, a large number of hands being engaged in finishing screw-down taps and other brasswork fittings. Spacious stores for lead, earthenware, and galvanised iron goods are in the basement, where lavatories and closets, drain goods, &c., are stored in a great variety of patterns. The show-rooms have been greatly enlarged, and two large rooms are now thrown into one.

In this spacious and well-lighted part of the establishment we notice several important sanitary improvements and specialities to which we may confine our remarks. An automatic tank fitted to registered gully and grease trap, with egg-shaped bottom, is an excellent arrangement for breaking up and getting rid of grease, and preventing the objectionable clearing out. These admirable grease traps are of glazed stoneware, and have a galvanised iron grate. This trap and "automatic flushing tank," which latter is a simple and very efficient flush tank made in galvanised iron for 30 to 100 gallons, may be here seen in action. The "Improved Kenon" disconnecting trap is too well known to need description. It has the decided merit of quickening the flow of sewage by the egg-shaped invert, has a gunmetal valve, which can be attached to an iron chain, to be pulled up if placed in a manhole, also a screw cap for cleaning. Improved white-glazed channel pipes are made for inspection chamber, and the sizes are 4in., 6in., and 9in. We saw a large size used for the Board Schools. Crapper and Co.'s improved manhole cover has the advantage of a deep groove into which the cover fits, thereby making a perfect air-tight lid for manholes and chambers, which we think cannot be surpassed for its freedom from all parts like hinges to get out of order. Among the many varieties of improved closets made by this firm, we must mention particularly an elastic valve closet, "No. 78," with white glazed earthenware top in one piece, which forms a very clean form of closet; and also Crapper's improved registered ornamental flush-down w.c., with new design cast-iron siphon water-waste preventer, a much more artistic form than the box-shaped receptacle. In this closet all wood casings are dispensed with. Crapper's improved self-rising closet seat, an automatic seat action for hotels, public offices, &c., is a very excellent arrangement, and these are made of good thickness in mahogany. Amongst other specialities which demand the architect's attention in specifying sanitary goods, we can only refer to Crapper's "improved silent-siphon water-waste preventors," fitted with Rawling's patent air-tubes, an admirably quiet appliance; the "Ovington" wash-down closet basin and trap, slop-sink and closet combined, also several improved lavatory basins in a large variety of shapes and patterns.

CHIPS.

A chancel has been added, at a cost of £1,600, to the parish church of St. Gregory, Preston Patrick, near Milnthorp.

On the retirement, in January last, of Dr. Rieu from the Keepership of Oriental MSS. at the British Museum, it was decided by the trustees to create a new Oriental Department to consist of Oriental printed books and MSS. This has now been done, and Professor Douglas has been appointed Keeper of the new department.

A larger number of pictures has been sent in the Royal Academy than in any previous year. Whereas last year 11,000 canvases, architectural drawings and works of sculpture were sent in, this year the Hanging Committee have had to adjudicate on the merits of 31,000 works.

At the last meeting of the London School Board, Mr. J. W. Pope was appointed clerk of works for repairs at a commencing salary, under the scale, of £150 per annum. There were, the Works Committee reported, over 300 applications for the appointment!

Two stained-glass windows have been placed in St. John's Church, Foord, in memory of the late Miss Lewis, one in the south aisle, and one near the font. That in the south aisle is divided into three lights, the subjects being "Eunice Teaching Timothy the Scriptures," "Mary hath chosen that good part," and "Dorcas, full of good works." The window near the font illustrates "Christ Blessing the Children." The work has been executed by Messrs. Warrington and Co., of Fitzroy-square, London.

LINCOLN CATHEDRAL.

At a meeting of the Society of Antiquaries, on Thursday, March 24th, the following letter was read from the chair:—

> The Deanery, Lincoln, March 19th.
>
> The Dean of Lincoln begs to acknowledge receipt of Mr. Milman's letter and enclosure.
>
> The Dean and Chapter are acting under the strongly-expressed opinion of their highly-competent architect, Mr. Pearson, and they have no doubt that his judgment is right in the matter.
>
> The Library will not be destroyed, but re-erected in a far better situation, and made more available for its purpose, which is to hold books and encourage study. They have reason to believe that for lack of proper accommodation they have already lost a most valuable legacy of books.
>
> It is moreover to be remembered that the cloister existed for 400 years before the library, and there is ample evidence in the other three walks for the restoration of the fourth, of which indeed traces still remain.
>
> H. S. Milman, Esq.
> The Society of Antiquaries of London,
> Burlington House, Piccadilly, W.

Thereupon it was moved by Mr. Higgins, seconded by Sir J. Charles Robinson, and carried unanimously: "That the Society of Antiquaries of London, having heard the Dean of Lincoln's reply to the resolution passed by the Society at its meeting of March 17, desires to point out that the competency of Mr. Pearson as an architect, which the Society does not question, affects in no way the point at issue—viz., whether it is proper to demolish a piece of architecture of undoubted historic interest and of considerable beauty, to make way for a presumed reproduction of a building which has long since disappeared, and thus to destroy a portion of the history of an important national monument. That it is quite clear from an inspection of the plans of the cloister and adjacent buildings that ample room might be found for the extension of the library without interfering with the present buildings. That this is the only example of a cathedral cloister of post-Reformation date in England. And that, for these reasons, the Society views with the greatest possible concern the proposal to remove, and thus practically to destroy, this interesting example of the work of Sir Christopher Wren."

On the motion of Mr. Franks, seconded by the president, it was also unanimously resolved:—"That a copy of the Resolution be forwarded to the Dean and Chapter of Lincoln."

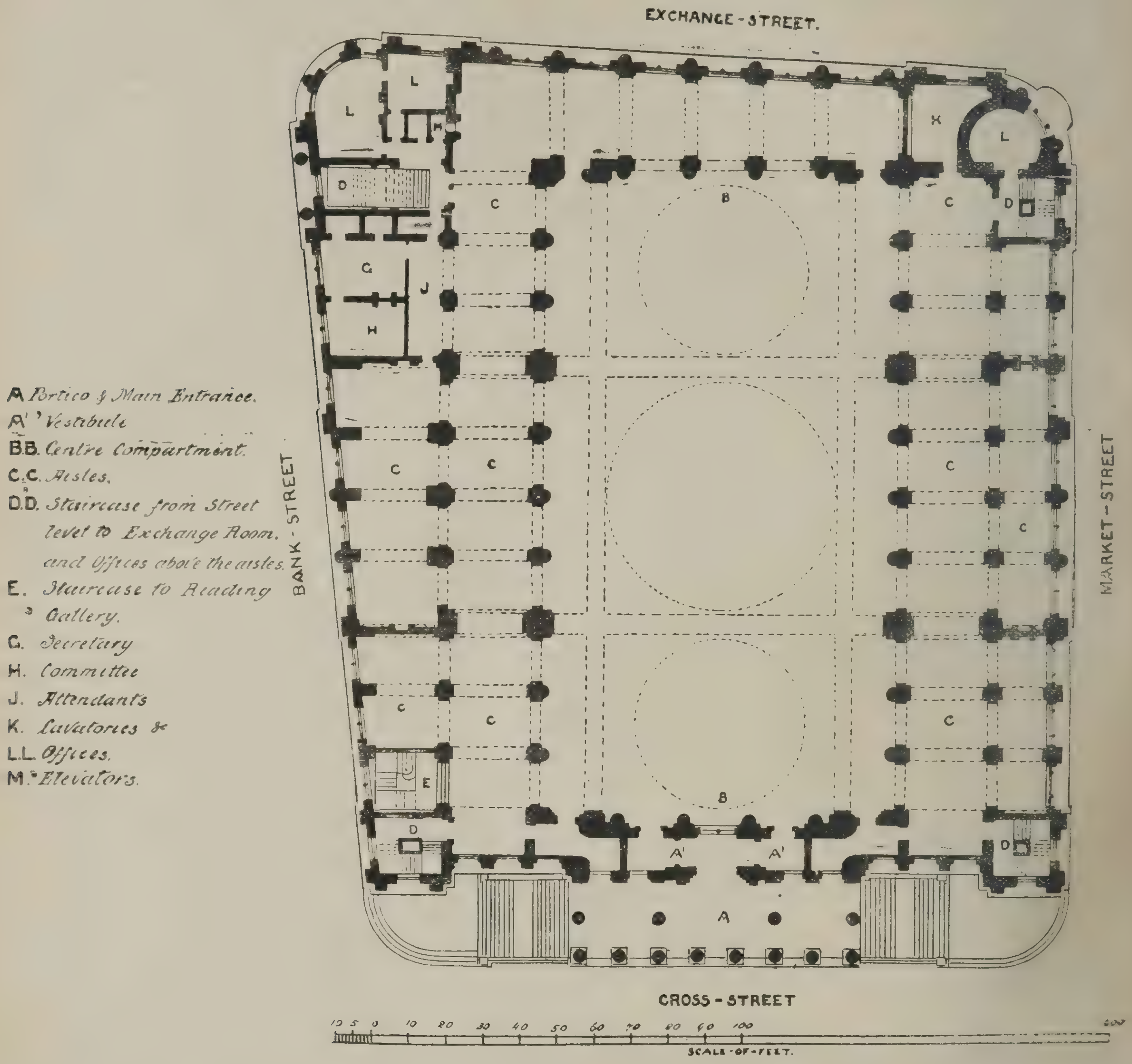
It was also resolved:—"That the Officers of the Society be empowered to take any steps to make the matter public, whenever and in such manner as they may deem necessary."

MANCHESTER ROYAL EXCHANGE.

[WITH LITHOGRAPHIC ILLUSTRATIONS.]

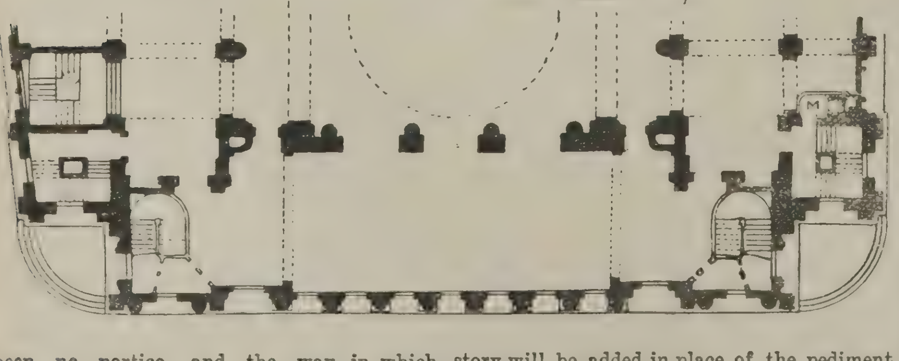
This building, which is believed to be the largest commercial building under one roof in the world, was erected in the years 1867-1872, by Messrs. Mills and Murgatroyd, architects, of Manchester. It occupies the site of the old Exchange, erected some 20 years previously by Mr. Mills, together with additional land acquired under Act of Parliament; the total area of the building-plot is close upon 6,000sq.yds. The room itself measures 206ft. by 192ft. within the walls, and is divided into a nave of 96ft. in width, crowned by three domes, and two aisles on each side. The style of the building is Corinthian. The ground floor is occupied mainly by shops, while the whole of the main floor, of the dimensions above given, and containing upwards of 4,000sq.yds., is devoted to the use of the subscribers. Above the aisles are offices. The main front to Cross-street contains a handsome Octastyle portico, approached by easy flights of steps at each end. The number of subscribers at the time of the completion of the old Exchange above alluded to, was 2,383, in 1867 it was 6,278, at the end of 1891 it was 7,320. The directors, finding the number constantly increasing, have determined to add the space occupied by the portico and the approach steps to the room, by which it is expected that the present rate of increase of subscribers will be provided for for the next twenty years. Mr. Mills, the senior partner of the firm, enjoyed the unique position of having twice in his lifetime erected an important octastyle portico, that of the old Exchange and that of the present one. Although it must be a matter of deep regret to an architect to lay hands upon so important an architectural feature as a portico of these dimensions, yet when the time

PLAN OF EXCHANGE AS AT PRESENT.



comes that he must do so, his object naturally will be to prepare such a composition as would at all events be equal to what might have been originally designed had there been no portico, and the way in which that is being met in the present instance is shown by the two perspective views which we publish. The whole of the eight front columns of the portico will be retained, together with their horizontal entablature. A screen will be built up behind them, making them into three-quarter columns, and an attic story will be added in place of the pediment A short space will separate the colonnade at each end from a pavilion, which will range in frontage with the old columns, and be, in its architectural features, similar to the pavilions at the other corners of the building. After the removal of internal walls, &c., an addition of the floor space of the room of about 400sq.yds. will be made. The two staircases (there are six, in all, to the room) will be internal instead of external. The portion added to the Exchange Room will be 27ft. in height, and above that will be a large room for public meetings, and some additional offices, approached by a passenger-lift. It is intended to commence the works immediately, under the directions of Mr. Murgatroyd, who still carries on the business, from which Mr. Mills retired a few years ago.

PLAN SHEWING ALTERATIONS.



* * *

For having improperly reconstructed a house drain in Gateley-road, Brixton, Benjamin Oakshott, builder, of Robsart-street, was fined at Lambeth Police-court on Saturday £5, and ordered to pay £2 4s. costs. The prosecution was brought by the Lambeth Vestry, under the new Public Health Act.

At Runcorn a new road is being made from Halton-road to Newtown and the railway station. The roadway is 30ft. wide exclusive of the footpath, which is formed of granolithic pavement by Stewart and Co., of Liverpool. The contract for sewering and roadmaking has been taken at about £2,200 by Mr. Valentine, of Bootle.

CONTENTS.

The Unpractical Man ... 459
New Streets and Buildings ... 459
Royal Society of British Artists ... 460
Something About Chimneys.—V. ... 461
Prices.—XXXIII. ... 462
The Surveyors' Institution ... 463
The Portland Cement Trade of the World ... 463
Builders' Clerks' Benevolent Institution ... 464
Constructional Drawings.—II. ... 464
Sanitary Manufacturers and Specialities ... 465
Lincoln Cathedral ... 465
Manchester Royal Exchange ... 465
The BUILDING NEWS Directory ... XIII
Our Illustrations ... 467
Competitions ... 467
Wayside Notes ... 486
Building Intelligence ... 487
Architectural and Archæological Societies ... 487
Correspondence ... 487
Intercommunication ... 488
Parliamentary Notes ... 488
Legal ... 488
Legal Intelligence ... 488
Water Supply and Sanitary Matters ... 489
Our Office Table ... 489
Meetings for the Ensuing Week ... 489
Trade News ... 490
Tenders ... 490

ILLUSTRATIONS.

MANCHESTER ROYAL EXCHANGE.—LODGES IN SUSSEX.—SELECTIONS FROM THE EXHIBITION OF THE ROYAL INSTITUTE OF PAINTERS IN WATER-COLOURS.—CHURCH OF ST. ALBAN, SOUTH NORWOOD.—CONSTRUCTIONAL DETAILS OF AN IRON FOOT-BRIDGE.—PULPIT, WESTERGEMEINDE CHURCH, ALTONA.

Our Illustrations.

MANCHESTER ROYAL EXCHANGE.

(SEE description and plan of present Exchange on page 465.)

SUSSEX LODGES.

THESE lodges need very little description. They are built, as the view indicates, in the style of most Sussex cottages, with red brick walls and plain tiled roofs, parts of the walls being tile-hung, and half-timber work being sparingly introduced. Local builders were employed and local materials used. The architects in each case were Messrs. C. E. Clayton and E. Black, of North-street, Brighton.

SELECTIONS FROM THE SPRING EXHIBITION OF THE ROYAL INSTITUTE OF PAINTERS IN WATER COLOURS.

WE published on the 18th ult. a review of the works exhibited in these galleries, and to-day we print some small studies by the painters themselves of a few of the more architectural subjects exhibited by members of the Royal Institute. Mr. John Fulleylove's charming view of the Ducal Palace at Venice from a distance is supplemented by the more detailed drawing of the main façade and entrance furnished by Mr. H. Pilleau. The balustraded terrace walls from Montacute, with their obelisks and urn-capped piers, enclosing the gardens adjoining that celebrated house, supply Mr. Geo. S. Elgood with the subject for a characteristic sketch, rich in colours of time and old English associations. The Kutscher Hof, Nuremberg, drawn by Mr. Thomas R. Macquoid, shows a suggestive open staircase turret rich in German Gothic traceries and covered with a quaintly patterned roof, having boldly projecting eaves which give good shadows. The balconies add to the picturesque effect.

CHURCH OF ST. ALBAN, SOUTH NORWOOD.

THIS church is in course of erection in the parish of St. John the Evangelist, South Norwood, and is designed to seat about 800 persons. It is rectangular in plan. A vaulted narthex at the west end, separated from the church by iron grilles, is 13ft. 6in. wide, the principal porch being at the pseudo-south end, and another entrance at the pseudo-north end of narthex. The nave is 89ft. long, and 29ft. 6in. wide, with aisles making a total width of 50ft. 6in. This is to be very severe and plain, the nave arches and piers, and other simple dressings being of Bath stone, the walls finished with plaster. Above the nave arches is a plain band for fresco painting, and a clerestory of lancet windows. The chancel, separated from the nave by a more richly-moulded chancel arch, is rather more ornate in character, with tracery windows and iron grilles separating it from the aisles and east wall. The length is 44ft., the width being the same as the nave. Owing to the restricted area of the site, and the slope of the ground, a chapel and vestries are placed below the chancel, and the floor of the chancel is raised 3ft. above the nave. The altar, surmounted by a richly-carved stone baldachino, is raised on steps 4ft. above the chancel, and thus at an elevation of 7ft. above the nave floor. The chapel, 36ft. long and 14ft. wide, is approached by two flights of steps from the north and south aisles respectively, descending transversely below the broad central flight of steps leading from the nave to the chancel. The chapel will be vaulted with stone ribs springing from the floor. A tracery window will be at the pseudo-east end. Above the narthex is a musicians' gallery, and there are organ-chambers north and south at entrance of the chancel. The roofs throughout are very low in pitch. In the nave and aisles the rafters will be visible; in the chancel the roof will be panelled with moulded ribs. The exterior is of red brick with stone facings. The total cost is estimated at from £8,000 to £9,000. The architects are Messrs. W. Bucknall and J. N. Comper, 7, Queen Anne's-gate, Westminster, and the builders are Messrs. Jas. Smith and Sons, South Norwood.

CONSTRUCTIONAL DETAILS OF AN IRON FOOT-BRIDGE.

(For specification and further sketches, see page 464.)

PULPIT, WESTERGEMEINDE CHURCH, ALTONA.

THIS detail drawing is reproduced directly from Professor Otzen's original working details, which he has lent us for the purpose of illustration. Mosaic figure panels elaborate the sides of the pulpit, which, like the church, is constructed of brick in various colours, and some of the parts are glazed, and enriched with patterns. The arched parts as well as the bases and caps are in terracotta. The sounding board is of wood, supported by wrought-iron brackets and chains. The complete set of plans, sections, and elevations furnished by our double-page plate fully illustrate and explain the design. Those who would seek more of the celebrated Professor's designs will find much suggestive material in his handsome folios of details now being published by Herr Ernst Wasmuth, of Berlin, the well-known architectural publisher.

CHIPS.

The Northwich board of guardians have adopted plans prepared by Mr. Cawley for alterations and additions to the workhouse, estimated to cost £3,500.

At Bradford, last week, the foundation-stone was laid of the Canon Scruton memorial schools, adjoining, and in connection with, St. Patrick's Roman Catholic Church, Rebecca-street. The buildings will be Gothic in style, three stories in height, and will accommodate 600 children. Mr. E. Simpson is the architect, and Messrs. Wray and Co., of Bradford, are the contractors. The cost will be about £5,000.

At St. Mark's, Torquay, a series of new fittings have just been completed from the designs of Messrs. Tait and Harvey, of Exeter. They include a screen of English oak at the western end, and a reredos of polished Devonshire marble and alabaster, containing a sculptured representation of the Crucifixion, both executed by Mr. Harry Hems, of Exeter. A stained glass window, by Messrs. Burlison and Grylls, has been placed in the morning chapel, which contains a reredos of carved oak and teak, the work of Mr. Hems.

The town council of Salford, at their meeting on Friday, accepted the resignation of Mr. Arthur Jacob of his office of borough engineer and surveyor, and, in consideration of many years' good service, appointed him consulting engineer at a salary of £200 per annum.

Major-General Crozier, R.E., one of the Local Government Board Inspectors, attended at the offices of the Standish Local Board on Thursday, the 24th of March, to inquire into the application for the sanction of the Local Government Board to borrow £9,955 for works of water supply, and £2,500 for the provision of offices. Mr. George Heaton, engineer to the Standish board, gave evidence in support of the application.

COMPETITIONS.

HALIFAX.—The *Halifax Free Press* of Wednesday says:—"By the second week in April the sanitary committee of the Halifax Corporation will have before it a number of competitive plans for the erection of artisans' dwellings. The last day open to competing architects is the 9th, and it may be taken that no time will be lost in passing judgment on the drawings sent in. Upwards of a hundred applications have been made for the conditions, and a variety of designs ought, therefore, to be forthcoming in abundance; but a correspondence between a local architect (Mr. T. L. Patchett) and the borough engineer on the subject starts a doubt in the mind as to whether this is really desired. We have it in black and white that Mr. Patchett has decided to 'eschew the competition' because the instructions are vague, and a condition which he considers unfair is imposed; and letters which have appeared in the BUILDING NEWS show that Mr. Patchett's objections are shared by other architects who in the first place evinced a disposition to take part in the competition. . . . . It will be regrettable if, by reason of the obscurity of the instructions, or the introduction of unreasonable conditions, the competitors are few. We are, however, more immediately concerned with the probable fate of the successful designs rather than with the designs themselves, though we cannot pass from that aspect of the question without expressing a hope that the commitee have not a number of back-to-back dwellings in contemplation. Halifax is afflicted already with more than enough of these. At the meeting of the council at which it was finally agreed to invite competitive plans, the necessity for the erection of 'a suitable number of dwellings for the requirements of the poorer classes' was not seriously contested; but as to whether they should be provided by the corporation and held as municipal property there was a difference of opinion which has yet to be adjusted. Some members of the council are avowedly hostile to the corporation trespassing on the happy hunting ground of the speculative builder, while others are willing that the experiment should be made, as it has been made with good results in Edinburgh, Glasgow, and Liverpool."

LEICESTER FEVER HOSPITAL.—For some reason, the sanitary committee of the town council of Leicester have deferred for the present issuing their report and award of premiums in the fever-hospital competition, the result of which we announced last week p. 452. The drawings are on view this week at the Museum, and have evoked some criticism in the local journals, the *Post* asserting that the design placed first would be so costly in execution as to exceed the £50,000 limit set by the committee.

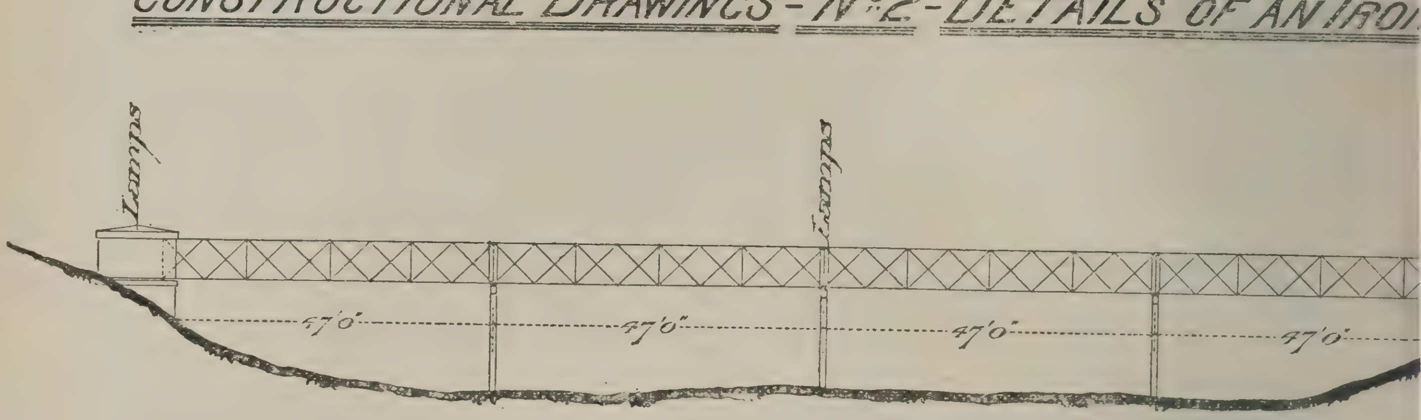
SOUTHPORT NEW INFIRMARY.—At a general committee meeting held on Friday, it was resolved to limit the competition for the plans to six outside architects (probably to be selected from Liverpool, Manchester, Burnley, and Halifax) and the local architects who wished to compete.

STONE.—The Stone (Staffordshire) local board a few months ago invited engineers to submit designs for the drainage of the town, and for the disposal of the sewage, and a premium of one hundred guineas was offered for the most suitable. Twelve schemes were submitted. A special committee having carefully considered these, have now reported in favour of the scheme prepared by Mr. Theo. McCallum, C.E., of Manchester, and at a meeting of the board on the 24th March, the committee's recommendation was unanimously adopted. Every street in the town will require a new sewer. About nine-tenths of the sewage will reach the purification works by gravitation, the remainder will have to be pumped. The sewage will be purified by the International process, precipitation by ferozone, and filtration through polarite. The sludge will be pressed. A large proportion of the sewage of Stone consists of brewery refuse.

* * *

At a meeting of the governors of the National Gallery of Ireland, held at Dublin on the 24th March, Mr. Walter Armstrong, a well-known writer on art, was elected director in succession to the late Mr. Henry Doyle, C.B.

CONSTRUCTIONAL DRAWINGS - Nº2 - DETAILS OF AN IRO



ELEVATION OF BRIDGE.

Notes,

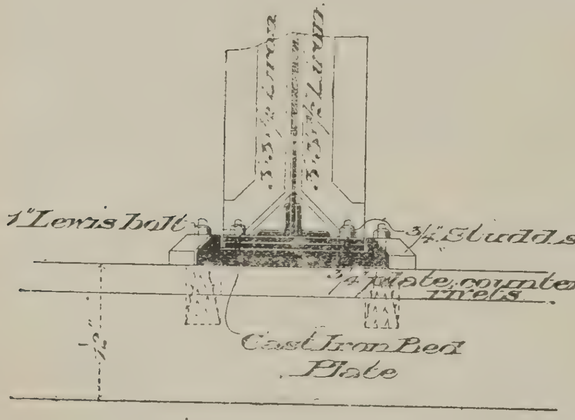
Diameter of all rivets to be ¾" and 4" pitch in flanges.

Rivets on all bearings and where necessary to be properly countersu

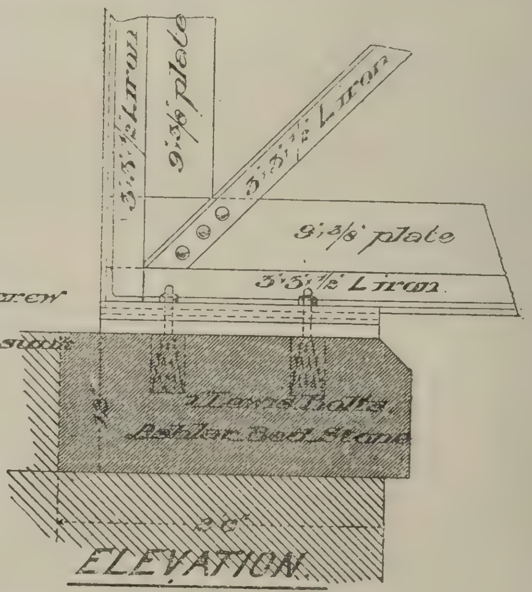
Rivetholes to be drilled not punched

Edges of all plates to be machine planed

Girders to bed on 2 layers of hair felt and to Camber 2 inches.



SECTION.



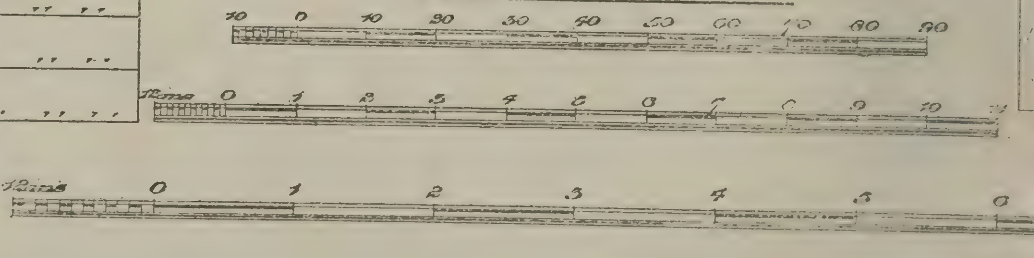
ELEVATION.

Weight of Angle and Tee Irons.

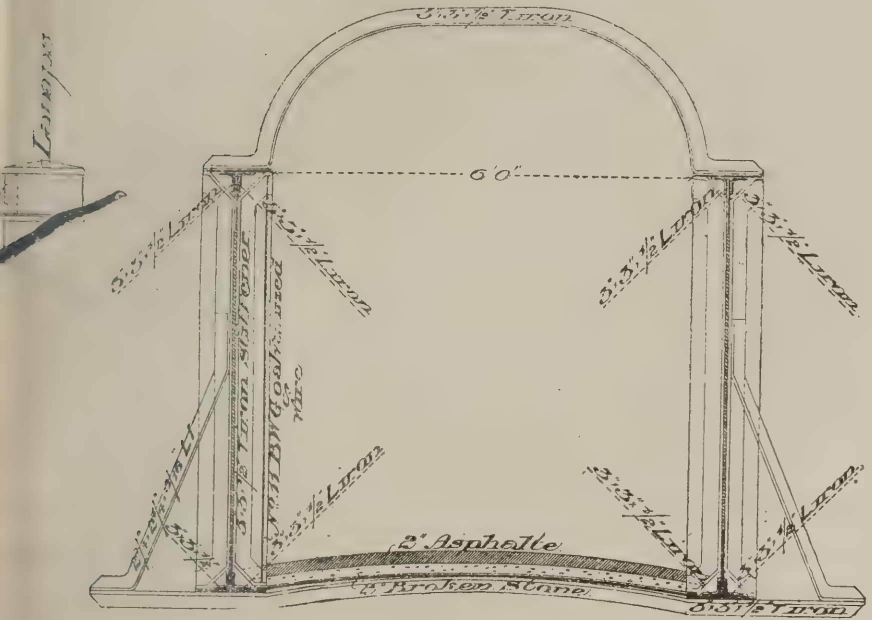
L iron	3"3"½"	9.17 lbs per lin ft
.. .. ..	2½"2½"½"	7.50 .. ..
.. .. ..	2¼"2¼"7/16"	4.36 .. ..
T	3"3"½"	12.50 .. ..

DETAILS OF BED PLATE

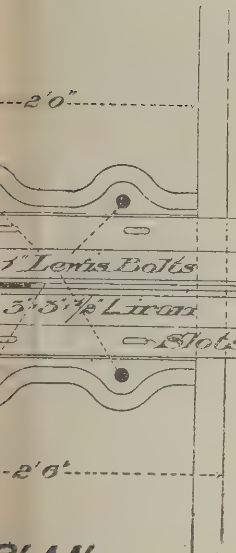
Scales of Feet.



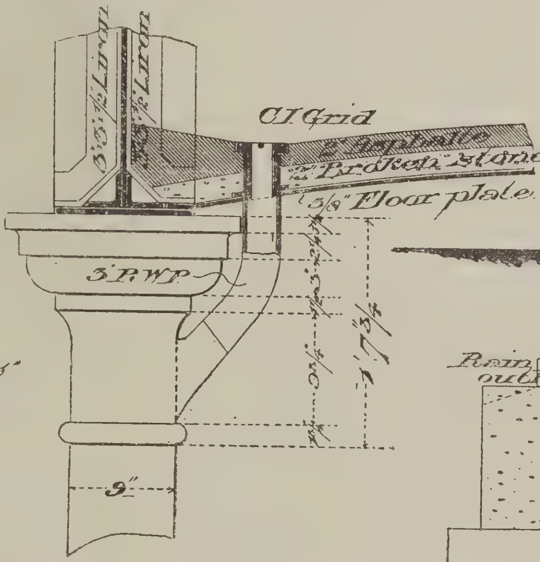
FOOTBRIDGE IN 47'0" SPANS.



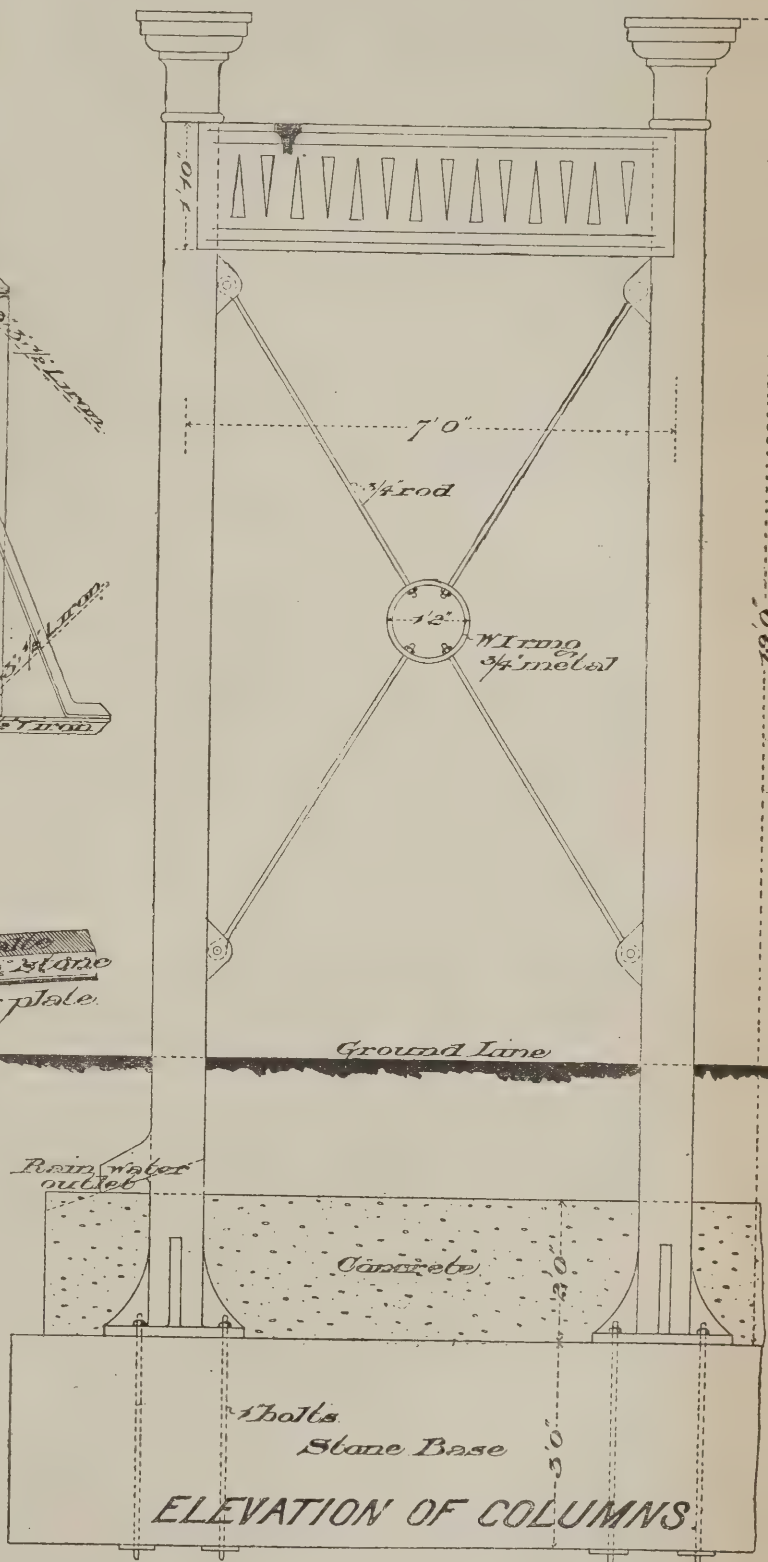
SECTION



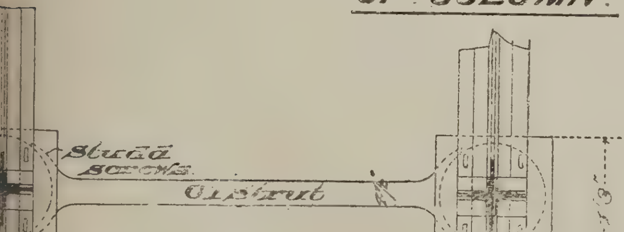
PLAN.



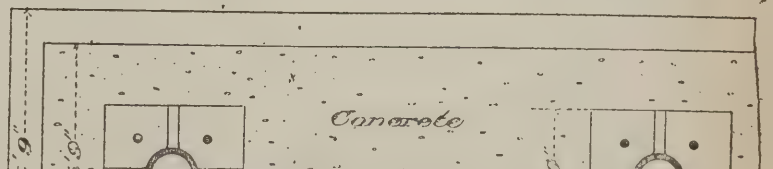
DETAIL OF HEAD OF COLUMN.



ELEVATION OF COLUMNS



PLAN OF COLUMNS SHEWING FIXING OF GIRDERS.



PLAN AT FEET OF COLUMNS.

DELLAGANA Sc. Stuart M Davies del.

WAYSIDE NOTES.

WHILST destruction threatened old Paul Pindar's house—late of Bishopsgate-street Without—we had representations thereof, *ad nauseam*, in illustrated journals, and now that a sort of sword of Damocles overhangs Anne Hathaway's cottage at Shottery, near the only Stratford, a similar rush with pen and pencil may be expected towards Shakespeare's country. Like other matters concerning the life of Shakespeare, there seems some suspicion of doubt even as to this cottage of Anne's; but all true admirers of our "immortal bard" will scorn any suggestion calculated to lessen the brilliancy of the halo of romance that surrounds the building. If such persons do not want to see Anne Hathaway's cottage re-erected, labelled, and ticketed in the grounds of the Chicago "Exposition," they had best be up and doing early in the day. The building is to be sold to the higher bidder, and if the enterprising American has a mind to secure it, he will be prepared to pay a long price for an article certain to prove a "draw" at the exhibition. The proper parties to take action in this matter would seem to be the trustees of the "birthplace," and it is to be hoped, for the sake of old national traditions, that their action will be prompt, and to the point.

At a meeting held in Hastings last week, a doleful tale was told as to the condition of Arlington Church, in Sussex, towards the restoration of which funds were asked. Of course, would-be restorers make the most of things; but Arlington Church certainly seems in a bad way. The Bishop of the Diocese says it has brought scandal on the parish. The vicar states that when he took over the incumbency four years ago he found the porch falling away from the nave, and holes in the roof letting in the rain; the owls and other birds made it their home, and flew about the church at all times. No means of heating being at hand, only the robust could attend service in the winter. Evening service was never held, and no one remembered seeing a light in the church. Everything was fast going to ruin. Little has apparently been done since the Rev. T. Bunston became incumbent, or the building would not have continued in such disrepair; but blame cannot attach to anyone connected with a church where "often the congregation numbered only one or two," and money must with difficulty be obtained for structural repairs. Happily, funds have now been subscribed for restoration, which one trusts may be in accordance with modern views, and not amount to a destruction of the building. I see that the vicar described the church tower as covered with a "green slime." One is led to reflect upon the possible differences in terms and description between "green slime" and the eulogies on mosses and lichens of the writer of a "descriptive" magazine article.

If the death of a soldier is to die upon the field of battle, it may be supposed that the death of a steeple-jack would be to die amid the dangers of his hazardous calling. Such an end has unfortunately come to Charles Shaw, described as "the most celebrated steeple-jack in America." Shaw may be claimed as of our own country. According to the *Sheffield Telegraph*, he was born in Sheffield, and when quite a young man took to the business of building and repairing high chimneys. It is said that he was in the habit of boasting that before he was ten years old he had climbed many of the high chimneys of Sheffield and Manchester; but this statement requires a little explanatory side light. In Manchester he became famous as a steeple-jack. He had been employed in many of the principal cities of Europe, and on one occasion climbed to the top of Cologne Cathedral to do some work. At 25 years of age he went to the United States and settled at Portland, his first American job being at the Clark Thread Factory at Newark, New Jersey, which is said to possess the highest chimney on that continent. He soon became recognised as the most expert in his line in the country, and was entrusted with all the difficult work. He had been recently employed in repairing the spire of a church in South Livermore, Maine, and on Thursday morning last climbed to the top of the spire to finish his work. While seated in a chair fastened by slings to the top of the spire, one of the ropes broke or became detached, and he fell to the ground. His skull was fractured, and death was instantaneous. Poor Shaw, who was about forty years of age, leaves a widow and two children, whom, it is to be hoped, if not otherwise provided for, will not suffer privation or destitution while any of his numerous patrons remember the work he has accomplished, which, were his peculiar services not available, might have remained undone.

Saturday last saw some strange experiments at the Neasden Works of the Metropolitan Railway. Members of the Institute of Civil Engineers, the London County Council, and other bodies were invited to witness an application of an invention for keeping railway tunnels free of the smoke of locomotives. The invention is bold, but does not recommend itself to the ordinary intelligence. It consists of the laying upon the top of the "sleepers" in the tunnel a cast-iron drain of rectangular section, having on the top, at close intervals, certain valves. An attachment under the locomotive—some sort of pipe conveying the smoke—slides along the top of the smoke-drain, making connection with each valve. A "rotary exhauster" clears the drain of the smoke. It is said that, at the trials on Saturday, with every test from a stationary locomotive to one running at the rate of 45 miles per hour, the smoke disappeared from the engine, and was almost immediately ejected from the chimney of the exhaust station. It is so difficult to imagine the successful action of this curious invention that if ever there was a case where one would like to see results before believing it is this one. Could smoke be cleared out of the tunnels of the underground railways of London, it would be a great thing; but it seem too difficult a problem for solution at present. The experiment was tried only with some seven hundred yards of tunnel. On the other hand, it is but fair to the experimenters and inventor of the system to say that the trials have been proceeding for eight months. It was thought that on Saturday the arrangements were sufficiently perfected to invite experts to witness the results of the trials.

Sir Myles Fenton is in favour of the extension of the M.S. and L.R. to London, which is scarcely a fact to cause surprise, since the object of the new line—or *one* of its objects, and certainly a pet hope of its promoters—is to run traffic through from the North to the Continent *viâ* the South Eastern. The general manager of the S.E.R. says that the proposed line would be an enormous advantage to the district through which it would pass, and that London traffic north and south would greatly increase. The line would not injure the existing trunk lines North and South. Sir Myles had examined the plans for the new terminal station, and was of opinion that it was laid out with great skill, and in a convenient manner.

Water-divining is still a flourishing art—or profession? Mr. John Mullins, a "water-spring discoverer by means of the divining-rod," recently paid a visit to the Northamptonshire County Asylum at Berry Wood, and has indicated two spots where he recommends wells being sunk for increasing the supply of the asylum, the institution having experienced a decrease in water supply. Mullins divined several springs, and ultimately fixed upon two places, where he said water would be found in most abundance. In one of these cases he said the spring was only 25ft. or 30ft. below ground, and in the other it was 70ft. to 80ft. under the surface, and would yield from 10,000 to 15,000 gallons of water a day. The question was to have been discussed at the next County Council meeting. What I should like someone to divine would be a spot, in any ordinary locality, where water would not be found by digging down.

I am glad to see that the London County Council have decided to interest themselves in the matter of Mr. Tate's offer of pictures. On Tuesday the Council agreed to refer to the Corporate Property Committee to report whether there was any land on the Thames Embankment or elsewhere belonging to the Council which would be suitable to offer the Government for the purpose of building a picture gallery. It may be that the Council has nothing suitable; but it at least shows interest in Mr. Tate's kindly offer to take the question of site under consideration. It may make up in some measure for the coldness and apathy exhibited in other quarters.

With half-an-hour to spare on Monday, in the "Ever-faithful City," I found myself near the works of your frequent correspondent and that most genial good fellow, Harry Hems. I expect few of your readers who have not been inside the gates at Longbrook-street have any idea of the extent of his establishment or the comprehensive character of the work carried on there. Below are the sculptors' workshops, flanked by heavy masses of marble and stone, which the 20-ton traveller overhead has to tackle to get into the yard. At the rear are more workshops for the sculptors, all full of men busy on various objects. Some very vigorous figures for Mr. Stevens, of Bombay, attracted my attention more especially. Then came a pleasant stroll through the double tier of carvers' shops above, then a visit to the cosy office and well-arranged drawing-room, and finally an adjournment to the snug dwelling-house beside the works, under the shadow of St. Sidwell's Church, where Mrs. Hems and her olive-branches help the heartiness of her husband's hospitable reception of all comers. It so happened that only that morning news of a missing son at sea had arrived to cheer the home after six months' silence. My own visit to Exeter had a purpose of a sort likely to interest the fathers and mothers of many sons; and these good folks, as if inspired by thankfulness for the safety of their own absent dear one, at once set themselves to serve my interests with a sympathetic heartiness that will always render me their debtor. But I found, after all, wherever I went in Exeter, whenever a good turn was to be done, they were always to the fore. GOTH.

CHIPS.

General Lord Roberts has conveyed the approval of the Indian Government to the contribution of the bronze gunmetal necessary for the erection of an equestrian statue in London of the late Field Marshal Lord Strathnairn. The statue will be erected at Knightsbridge, and the commission has been intrusted to Mr. Onslow Ford, A.R.A.

The Comte de Rouville, who designed the Palace of Industry for the Paris Exhibition of 1855, and superintended that exhibition, died on Sunday at the age of eighty-six.

Some interesting discoveries of cremated interments of the Romano-British period have recently been made in the neighbourhood of Larkfield, near Maidstone. The investigations are being made by Mr. James, the curator of the Maidstone Museum. Detailed plans and sections are being made.

Mr. Genge has been appointed, from a large number of applicants, surveyor to the Shaftesbury Highway Board, in succession to the late Mr. Soppitt.

At the Portsmouth Bankruptcy Court on Monday, James Collings, builder, came up for his examination. The Portsea Island Building Society, which recently stopped payment, claimed £14,000; but the liquidators of the society admitted that the account was that of Pratt Wills, the late secretary, and that Collings was in no way answerable for the debt.

The foundation-stone of a Baptist chapel was laid last week in Launceston. The building, which will face the town-hall, will be Gothic in style, and will be seated for 120 persons. Under the chapel will be a schoolroom. Mr. Otho B. Peter, of Launceston, is the architect, and Mr. G. H. Strike, of the same town, has taken the contract.

Two interesting historical portraits have been secured for the National Portrait Gallery. One, a portrait of the famous Lord Castlereagh, by Sir Thomas Lawrence, came out of the collection of Lord Clancarty, and was purchased at the recent sale at Christie's by Messrs. Agnew for 350 guineas. The other, a portrait by Vandyck of Thomas Killigrew, and dated 1638, belonged to the late Colonel Tyrrell, of Haughley. Messrs. Agnew gave 56 guineas for this picture, and sold both it and the Castlereagh portrait to the Gallery for the prices which they paid for them.

An inquiry was held on Tuesday at the offices of the Shipley Local Board by Col. Hasted, inspector to the Local Government Board, into an application by the local board for sanction to borrow £2,600 for works of street improvements, £300 for the completion of the Stoney Ridge Hospital, and £400 in improving Gallows Bridge.

Building Intelligence.

DINBURGH.—The Song School attached to Mary's Episcopal Cathedral has just been orated by a series of mural pictures designed executed by Mrs. Traquair, as a purely intary labour. The work has occupied the st about three years. The theme is the ticle in the Book of Common Prayer entitled *edicite Omnia Opera.* All four walls of the ool, which measures 47ft. by 26ft., are ered. The plaster surfaces were first pre- ed for decoration with white paint, and n that the pictures have been executed in with turpentine, the ground of white plying the high lights wherever these ear. The prevailing tones are red and blue gold, with greys and other neutral tints to harmony to the scheme.

IAINS, N.B.—Operations have been begun in nection with the alterations which it has n resolved to carry out on the Free church. walls will be raised 5ft. all round, and a western gable will be erected. At the s of the corridor ladies' and gentlemen's ms will be placed, and from it by swing- rs access will be obtained to the church. pulpit will be removed from the southern l to the eastern end, the pews being turned s to run across the church, and not down its gth as at present. The alterations are being ried out under the superintendence of Mr. Hutcheson, architect, Dundee.

HORNCLIFFE, FOLKESTONE.—Good progress eing made with the works being carried out Shorncliffe Camp. The new officers' mess field officers' and commanding officers' rters are being roofed in. There are also reation rooms, sergeants' mess, canteen and es, and offices for the Royal Artillery. se are being carried out by Messrs. Wallis Sons, of Maidstone, who have just obtained rther contract, amounting to about £30,000. ssrs. J. and M. Patrick, of Chatham, are lding a large riding school and forage stores, six blocks of cavalry stables, each capable ccommodating 48 horses. These works are ig erected under the supervision of the clerk he works (Mr. Walter Mitchell, C.E.) to the r Department, from the directions of the nmanding Royal Engineer, Colonel Clayton, the Divisional Officer, Lieut. Ashworth.

VALSALL.—The Building Committee have epted the tender of Mr. H. Wilcock, of Wol- hampton, to rebuild St. Paul's Church for sum of £8,037, in accordance with the igns prepared by Mr. J. L. Pearson, R.A., the material for the exterior to be Codsall ne. This does not include interior fittings, hitect's fees, spire, or tower; and these ns, with other incidentals, are expected to e the total outlay to at least £9,000. The rch Rebuilding Fund stands at present at 400. The last services in the present build- are to take place on Sunday next, the inst.

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he sudden death is announced of Mr. H. J. y, of Weymouth, member of a well-known of local contractors, Messrs. Jesty and Son. Jesty, who was recovering from an attack of ienza, expired at the breakfast-table. The de- ed was a well-known Freemason, and was last r W.M. of the Weymouth Lodge.

he redecoration of the ceilings of the State rtments at Windsor Castle, which has been in gress for twelve months, is now approaching pletion. Some of the ceilings renovated are se which replaced several pictures executed by onio Verrio in the time of Charles II., and in inting them the colouring of Sir Jeffery Wyat- , the Palace architect in the reign of George IV., been followed by the Lord Chamberlain's f.

he memorial stones of the first of a series of sion halls which are in contemplation by the diff Evangelistic Movement were laid on dnesday week at the East Moors, Cardiff. hall is situated in Carlisle-street, and will ommodate 1,000 worshippers. The large hall 2ft. by 48ft., and a gallery runs round the entire ding, supported upon light iron columns, which to support the roof. In front of the hall is a e committee-room. The cost will be £2,000. building is being erected by Messrs. Thomas James, Quay-street, from the design of Messrs. pershon and Fawckner, architects, Pearl-street, diff; London and Newport.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.—A lecture on "Steel as Applied to Construction" was given before this Society on Monday night by Professor Goodman, of the Engineering Department of the Yorkshire College. Mr. W. H. Thorp presided. The lecturer gave a comparison between timber and cast iron, wrought iron, and steel, pointing out the irregularities and defects of cast iron and its low tensile strength. Wrought iron, he showed, was considerably stronger, but very inferior to the best qualities of mild steel. By using iron and steel any structure could put in much bigger spans, and take up less head room. Steel, until recently made by the Siemens process, was now very largely made by the basic process, and first-rate material was turned out by the various steel works in Leeds. The strength of each varied from 30 to 32 tons per square inch, and stretched 25 per cent. before breaking. A much stronger steel could be made, but it was brittle and not so reliable for structural purposes. Steel was liable to hidden defects, which could only be detected by testing. It required more careful handling than wrought iron, otherwise it might be very seriously damaged. Although from 30 to 50 per cent. stronger than iron, it was only about 10 to 12 per cent. stiffer; consequently steel girders deflected more in proportion than iron. It cost about £1 per ton more than iron, but the extra cost was more than compensated by the increased strength. On the motion of Mr. Hobson, seconded by Mr. G. B. Bulmer, and supported by Mr. Bruce and Mr. Thorp, a vote of thanks was passed to Professor Goodman for his practical lecture. The following officers were elected for the ensuing year:—President, Mr. G. B. Bulmer; vice-presidents, Mr. H. B. Buckley and Mr. J. H. Greaves, and the past presidents of the society; hon. treasurer, Mr. W. A. Hobson; hon. librarian, Mr. J. Mettam; hon. secretary, Mr. W. Carley Hall; council, Messrs. W. Watson, C. H. Thornton, A. Neill, E. J. Dodgshun, Reevers, and Marshall; auditors, Messrs. F. Musto and F. W. Bedford.

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CHIPS.

Over £5,000 towards the sum of £6,000 required for the restoration of the fabric of Gloucester Cathedral has now been subscribed. It is proposed after Easter to appeal for funds for the restoration of the Lady-chapel, which remains in the same condition as it was left in after the depredations of Cromwell's soldiers.

The Louvre has received as a legacy two portraits by the 18th-century Swiss painter, Melchior Wyrsch, of Zurich.

It being desired to build a new wing to Callaby Castle, Northumberland, application was on Saturday made to Mr. Justice Stirling to sanction the expenditure from trust funds, and his lordship authorised the trustees to enter into a contract for the erection of the proposed wing at a gross cost not to exceed £8,000.

Mikhail Ivanovich Semevsky died at Cronstadt rather suddenly at the age of 55 on Wednesday week. He was the well-known editor of the *Russian Antiquities*, a monthly journal of archæology and Russian history of great repute among students of Russia.

Alderman Barton, of Ryde, has secured the contract for the erection of a new Church of St. John at Forton. It is to be of brick with stone dressings, from the designs of Sir Arthur W. Blomfield, and is to cost £4,000.

The untimely death is announced, at the early age of 31, of Mr. Arthur Lyman Tuckerman, an architect of New York, whose most notable piece of design was the extension to the Metropolitan Museum of Art in Central Park. Mr. Tuckerman was a pupil at the Ecole des Beaux-Arts in 1883.

A new free library has been erected at Richmond, Surrey, and special attention has been paid to the ventilation, which is carried out on the Boyle system, the latest improved form of the self-acting air-pump ventilator being adopted for the extraction of the vitiated air.

At Stockton-on-Tees on Tuesday the centre stone was laid of the new gas-holder tank, which the corporation have built for the purpose of extending the gas supply of the borough. The tank is 132ft. in diameter by 26ft. 6in. deep. The work has been carried out under the superintendence and according to the design of the Gas Manager (Mr. Wm. Ford) by Messrs. Holme and King, of Liverpool.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

TERMS OF SUBSCRIPTION.

One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 0d. (or 6dols. 30c. gold). To France or Belgium, £1 6s. 0d. (or 33fr. 30c.) To India, £1 6s. 0d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front Page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No front page or paragraph Advertisement inserted for less than 5s.

SITUATIONS.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is ONE SHILLING for TWENTY-FOUR WORDS, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

RECEIVED.—R. M. and Co.—Martinet.—R. and S. T. Co. —J. G S.—J. S. (Tiverton).—Vigilance.

"BUILDING NEWS" DESIGNING CLUB.

SIXTH LIST OF SUBJECTS.

G.—A Rosewood Drawing-room Cabinet, for the display of works of art and china. The piece to be one of a pair to stand at the end of the room on either side of a central doorway. The upper part is to be glazed in front and partly so at the ends for light. The lower part to have glazed cupboards about 15in. high, measuring down from the "table-top" level, which is to be 3ft. 6in. from the floor. Below the cupboards the cabinet legs are to be free from any inclosure. The greatest depth of the pice is not to exceed 1ft. 6in. The width is to be 4ft., and the greatest height 7ft. Scale inch to the foot, and full-size details of mouldings, &c. Elevations and plans and sketch.

H.—A brick-built Garden or Summer House, 14ft. long by 8ft. wide, inside measure, with an open front, suitable for a site at the end of a walk in a gentleman's garden. Roof to be covered with red tiles. Seats to form part of the structure on the three sides of the interior, and an oaken-panelled dado rising from the back of the seats to be carried up 5ft. high above the floor. Over the dado the walls to be treated in stucco duro plaster, with a frieze, 2ft. deep, and a barrel-arched ceiling running from end to end. Floor to be three steps above path, and laid with black and white marble tiles in simple pattern. Steps to project outside building the whole width of opening, which may be 10ft. wide. Height left to designer. Scale, half-inch to the foot. Plans, two elevations, and sketch.

DRAWINGS RECEIVED.—"Nimrod," "Q. E. F.," "Supervision," "Jocelin," "Excelsior," "La Cigale," "Graham," "Amor Patriæ," "Hawthorn," "Nodrah," "Black and White," "Compass Box," "B in a Circle," "Vulcan," "Dum Spiro Spero," "Westward Ho," "Excelsior," "Juvenile," "Hardwich," "Goblin," "Yorkshire Tradition," "Wyandotte," "Sweet Auburn," "Mars," "McGinty," "Clansman," "Zingarella," "Symbol" (almost too late).

EXCELSIOR, ABERDEEN. (Yes, you had better adopt another motto. Some of our contributors take very extravagant ones, but anything is better than a commonplace one. Your cottages show care in drawing and some skill in plan. There is much waste of space in passage and hall; in fact, the houses are planned in a type better suited for clerks than labourers. Your elevations are poor.)—JUDGE KEY. (You really must judge by the corresponding remarks made respecting the other designs. We cannot repeat the same criticism over and over again.)—BOSS. (Received.)

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Correspondence.

THE SCHOOL BOARD FOR LONDON.

To the Editor of the BUILDING NEWS.

SIR,—I notice in your last issue a resolution of the London School Board to endeavour to get the quantities of the schools prepared at a cheaper rate, which seems impossible if the work is properly prepared, as take the case of an alteration, say three class-rooms or caretaker's house, and three or four w.c.'s, costing in all about £2,000. Any surveyor of experience must know that such a job would cost him more than £20 to do.

It would be better for the Board to turn its alterations to the architectural department, in which each school costs more than if carried out by a first-class outside architect. Buildings with so much repetition (many details are lithographed) should not cost the Board more than 1½ per cent. on the amount of the contract for the preparation of the drawings and specifications complete.

It would be interesting for the ratepayers to know the cost per annum of the architectural department, and the amount expended in buildings.—I am, &c., A Ratepayer.

NOTES ON TERRACOTTA.

Sir,—I have read with very great interest the articles in your paper entitled as above. The writer of them is quite correct in saying that the brush and water is used to remove scum from the blocks before going into the kilns. It is practised by many makers, and though your correspondent Mr. Lloyd Edwards may be an exception, he is not the only one who does not use the brush and water.

I have no doubt he finds equal difficulty with the rest of manufacturers from scum. There are so many methods for this purpose that he cannot fail to use some of them, particularly as the Ruabon clay is very subject to this evil.

I quite agree with him that the brush and water on the unburnt block is destructive of its quality, and any clay which cannot be kept free from scum, except by this process, is utterly unfit for the manufacture of terracotta.

The causes of it, and why it varies in one class of work as compared with another, are well known to those who have made a study of the subject.

Fearing to trespass too much on your valuable space, I would suggest to all manufacturers to look to their c'ay.—I am, &c.,

Edwin S. Clark.

The Wilderness Terracotta Works,
near Wrexham, March 28.

PICKFORD AND CO.'S NEW STABLES.

Sir,—I see in your issue of March 4 that you refer to Mr. Stansby as being the architect of the new buildings recently erected for Messrs. Pickford and Co. in Queen-street, E.C. As a matter of fact, I am the architect, and shall feel obliged if you will correct this error in your next issue.—I am, &c., Robert J. Worley.

Wellington Chambers, 46, Cannon-street,
London, E.C., March 24.

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The dissolution of partnership is announced as between Messrs. Pope and Paul, of Bristol, architects and surveyors.

It is announced that the Worshipful Company of Carpenters and the Worshipful Company of Joiners will hold an exhibition of works in wood and wood-carving in May next. All particulars as to prizes, &c., may be obtained at Carpenters' Hall, in London-wall, where the exhibition will be held.

The London County Council decided, on Tuesday, to instruct the Corporate Property Committee to report whether there was any land on the Thames Embankment or elsewhere belonging to the Council which would be suitable to offer to the Government as a free gift for the purpose of building the picture gallery offered by Mr. Tate. It was reported at the same meeting that the requirements of the Council in order to make Toole's theatre safe could not be carried out, and the Theatres Committee had resolved to forego their demands, on the undertaking that the existing lease, which has but three-and-a-half years to run, should not be renewed. Some objection was made to this arrangement; but ultimately the action of the Committee was confirmed.

Intercommunication.

QUESTIONS.

[10748.]—**Flat Arch.**—Having under consideration the construction of a flat arch or lintel of stone, with a span of 16ft. between its supports, over the portico of a public building, would any kind reader of experience or knowledge of similar structures state what is considered the best construction of such? It has been proposed to put in a wrought-iron girder above, and secure the stone to same in lengths by Lewis tailed bolts; but if we could soundly construct a horizontal or slightly cambered and joggled arch of accurately-worked stone, there would be no mischievous action of expansion and contraction of iron to fear. It has not a great load to carry, and there is ample abutment. Could anyone state how Sir C. Wren constructed the lintels over the portico of St. Paul's? I recollect being informed some years ago that there is a lintel or arch in a somewhat similar position over the portico of a Classic church in Glasgow, in the neighbourhood of the Cross, and if my memory is not at fault, St. Andrew's is the name of the church. Would some Glasgow reader of your valuable journal kindly state how that portico arch or lintel is constructed?—Petro.

[10749.]—**Deaf and Dumb Institutes.**—Will any reader please inform me if there are any rules or other particulars with regard to the planning of a deaf and dumb institute? If so, where they are to be obtained? Have any illustrations been published showing the arrangements?—Deaf.

[10750.]—**Lodging-Houses.**—Have any rules been published with regard to the planning of lodging-houses? Have any been illustrated showing plans, besides those published in this paper on Feb. 6th, 1891?—Municipal.

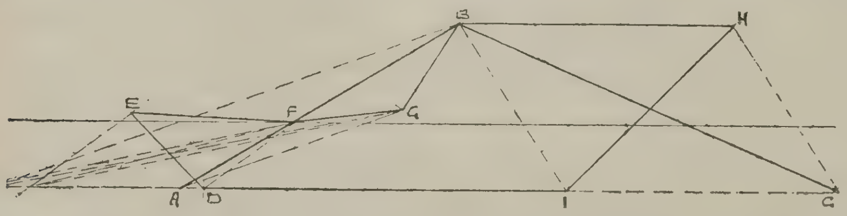
[10751.]—**Bond Timber.**—4½in. by 3in. bond timber under joists is specified for a building. I am informed that wedging and packing is better, as the 4½in. by 3in. timber would shrink and so loosen the joists. Will some of your readers kindly give me their opinions on this matter?—Pupil.

[10752.]—**Blackness of Yellow Pine.**—What is the reason of yellow pine going black in certain places, and is there any remedy for it?—C. P.

[10753.]—**Albert Hall.**—Can anyone tell me the number of seats in the Albert Hall?—F. C.

REPLIES.

[10746.]—**Reducing Cross Section to Triangle.**—Triangle A B C = in area that of irregular polygon, D E F G B H I.—Anon.



[10747.]—**Road.**—"Surveyor's Pupil's" question is a very simple one if the weight per foot cube of the gravel to be used is known. This can only be ascertained by weighing; but Hurst gives the weight of Thames gravel to be 100lb. per foot cube, which will approximately give the required information. The superficial area of the road is 36,720ft., and the cubic contents of the 3in. coating would be 9,180c.ft. This at 100lb. per foot, would give 409 tons 16cwt. 1qr. 20lb., or, say, 410 tons.—H. C. Reid.

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PARLIAMENTARY NOTES.

Subways and the London County Council.—The Select Committee of the House of Commons resumed, on Monday, the consideration of the Bill promoted by the London County Council for increased powers with reference to existing and future subways for the reception of pipes and wires. The opponents having failed to agree with the Council during the adjournment, a long discussion took place, resulting in the formal passing of the preamble upon the understanding that the opposition should be raised on clauses.

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The next meeting of the Society of Architects will be held on Tuesday week, the 12th inst., when the President, Mr. W. H. Seth-Smith, F.R.I.B.A., will read a paper on "Pastels."

The Branch National Provincial Bank of England, Barry Dock, is being warmed and ventilated by means of Shorland's patent Manchester stoves, with descending smoke-flues, the same being supplied by Mr. E. H. Shorland, of Manchester.

The Duke of Devonshire has, a London correspondent states, decided to sell his town house in Piccadilly, and the site will be turned to more profitable account. The price to be given for the house and land adjoining is stated to be £750,000, which represents an enormous addition to the value of land since 1854, when Burlington House and its gardens, about 3½ acres, were bought by the late Duke of Devonshire for £140,000. The actual cost of Devonshire House, which was built about the middle of the last century, was £20,000, including the sum of £1,000 paid to William Kent, the architect.

Legal.

COMPENSATION FOR ACCIDENTS.

Cases under the Employers' Liability Act of 1880 are constantly coming before our courts, and very nice points are frequently taken upon appeal from one court to another with varying fortunes. The result is a good thing for lawyers, but not at all so for either employers or employed. The Act of 1880 was, of course, a compromise between the hard rule of the common law in its application to the doctrine of a common employment, and the proposal of workmen that masters should be made liable for all injuries arising from accidents, however caused. It has long been known that some satisfactory consolidation and amendment of the law was desired by all parties, and several Bills have been brought in by the present Government, though they were ultimately abandoned. It is now probable that a very strong measure will shortly be passed, either by the existing or the coming Parliament. The labour members are, of course, in favour of a Bill under which employers should be held legally responsible for all accidents causing injury or death to their workmen, quite independent of any questions as to how those accidents were in fact brought about.

As matters now stand, the broad rule is that an employer is liable to make compensation when the injury can be shown to have arisen from the negligence of some other man in his service, who was, at all events at the time, acting as a kind of foreman, and so with the employer's delegated authority, or to have been caused by some negligent defect in the plant, &c., of the employer. But these two plain principles are so cut about by the various clauses of the Act, and so encrusted with cases that have arisen around them, that it is hard for anyone, lawyer or layman, to advise upon the matter. For these reasons it may be doubted whether a short Act such as the labour members want would make things much worse for the masters. Accidents there must always be, especially in the building trades, and the only safe way to provide against them is by the system of insurance, now so common. Of course, whatever Act is passed, it will be necessary for a plaintiff to prove some negligence in someone else than himself causing the accident, and there will always be the defence that it was his own fault, or, in legal phrase, that there was contributory negligence.

Fred Wetherfield, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer for same week.

Scio.—Competition.—This appears to be a local dispute into which I cannot usefully enter here, as there is really no legal question involved. But I might suggest that the papers could be sent to the secretary of the R I.B.A. for his opinion.

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LEGAL INTELLIGENCE.

The Cleckheaton Disaster.—The inquest was concluded on Friday on the bodies of the fourteen persons who were killed by the falling of a mill chimney at Cleckheaton on the 24th Feb. The jury returned a verdict that the deceased were accidentally killed by the fall of a chimney whilst under repair. They considered that Messrs. Thornton, the owners, were to blame, but not criminally, for having failed to attend to the repair of the chimney on an earlier date. Mr. W. Moulson, the contractor for the repairs, was also to blame, but not criminally, for not having more carefully considered the state of the chimney when consulted. Mr. John Waugh, acting under instructions from the Home Office, in his report stated that the chimney fell on the calmest day in the whole month, from a combination of causes—viz., bad bricks, weak construction, deterioration by moisture, and the attempted repairs. Apart from the last head, the chimney would have fallen sooner or later, it being a doomed structure.

Sanitary Inspector's Action for False Imprisonment.—Strutt v. Kellaway.—The plaintiff in this case, heard by Mr. Justice Lawrance and a Jury in Queen's Bench Division on Tuesday, was sanitary inspector to the Strand Board of Works, and the defendant was a builder in the neighbourhood of Theobald's-road. On the night of the 19th September last, the plaintiff and two friends, after drinking at the White Horse in Theobald's-road, got involved in a dispute outside with defendant and some friends, and the plaintiff and the defendant went down. The defendant gave the plaintiff into custody for stealing his scarf-pin. He was locked up, but on the Monday the police magistrate dismissed the charge. The plaintiff now claimed damages for false imprisonment, with malicious prosecution; and the defendant, whilst not admitting liability, paid £5 into court, and as to the malicious prosecution pleaded that he had reasonable cause for suspecting the plaintiff. Evidence was given on both sides. The Jury gave a verdict for the plaintiff for £75 beyond the £5 paid into court, and there was judgment in accordance with the finding.

A Warning to Builders.—At the North London Police-court on the 25th ult., Messrs. Parsons and Co. were summoned for executing work at the Lead Works, Southgate-road, Islington, without having previously given notice to the district surveyor. Mr. Henry Lovegrove, district surveyor of South Islington, proved the case, and Mr. Haden Corser fined the defendants 20s. with 12s. costs.

Dust-Shoots in Peabody Dwellings.—At Westminster, recently, the Peabody Trustees were summoned by the vestry for failing to comply with a requisition to remove existing inlets to a dust-shoot in the south-west block of Peabody Buildings, James-street, Westminster. In August last the authorities served notices requiring that the inlets to the dust-shoot should open out into the air. At present a dust-shoot ran right through the building from top to basement, with inlets on each landing, covered by a trap-door. The openings were within a few feet of dwelling-rooms, and when the traps were raised for use objectionable particles and effluvia were blown about the place. A letter was read from the trustees offering to make substantial alterations to meet the objections, and pointing out that they could not do all the vestry wanted, as it would mean a loss of space equal to one room on each landing. Mr. De Rutzen said the difficulty was evidently due to an inherent defect in building. He adjourned the case to see if an arrangement could be made.

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WATER SUPPLY AND SANITARY MATTERS.

Birmingham and Swansea Water Bills.—The Board of Trade, in their report upon the Birmingham Corporation Water Bill, express the opinion that insufficient provision is made in the measure for the protection of the fishery interests of the river Wye and its watershed. Among the amendments which the Board proposes is that the compensation water be largely increased, and that no water be impounded before the discharge of the compensation water begins. In their report upon the Swansea Corporation Water Bill the Board show themselves equally hostile to the works proposed in that measure, on the ground that they will injure the salmon fisheries of the river Usk. The Bill proposes the construction of a storage reservoir on the river Cray, a tributary of the Usk, and the collection, impounding, and use of the Cray and its tributaries, the primary object being to obtain a supply of water for Swansea.

Hemsworth Waterworks.—A Local Government inquiry has been held at Wakefield before General Crozier as to an application of the Hemsworth rural sanitary authority for a provisional order to acquire lands and easements otherwise than by agreement, the project being to supply water to nine townships. The scheme is to supply an ultimate population estimated at 25,000 with 350,000 gallons of water, to be purchased from the joint boards of Dewsbury and Heckmondwike. The water is derived from the moorlands at the head waters of the river Don. The works are estimated to cost £28,000, and consist of a meter-house, line of pipes 15 miles long, and break-tank, and an open service reservoir to hold 1,050,000 gallons on top of Ringstone Hill, and the distributing mains. The supply will be by gravitation. Mr. M. Paterson, M.Inst.C.E., the engineer, and others gave evidence.

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The funeral took place at Plymouth Cemetery on Saturday of Mr. George Rowe, who carried on a builder's business in Claremont-street. A few years since he made over the business to his sons and retired to Beerferris, where he died on Wednesday week at the age of 63 years.

Mr. A. Doyle's statue of Horace Greeley, the American journalist, will be unveiled this month in one of the New York Parks. It has cost £3,000.

An international congress of architects and engineers is to be held at Palermo from the 10th to the 20th inst., when excursions will be organised to the most celebrated ancient cities of Sicily.

Our Office Table.

The movement for the registration of architects is making steady progress throughout the English-speaking world. The *American Architect* just to hand announces that the architects of the District of Columbia have prepared a Bill, to be submitted to Congress, providing that after a certain date no person shall practise the profession of architecture in the District without being furnished with a diploma, which shall be issued without examination to all architects actually practising in the district at the time of the passage of the Act, but shall be issued to others only on condition that they shall pass a satisfactory examination before a Board of Examiners, consisting of three members, at least two of whom shall be Fellows of the American Institute of Architects. An exception is made in favour of architects not resident in the District, who are to be permitted to compete for and superintend special buildings in the District without examination or diploma. Besides this, draughtsmen or assistants of legally qualified architects are permitted to do professional work under the authority of their employers, and any person may design his own building. As our Transatlantic contemporary adds, "The projected law is a very sensible and fair one."

At a general assembly of the Royal Scottish Academy, held in the Galleries at Edinburgh, on Wednesday, Sir George Reid, president, in the chair, the following were elected Associates :—John Rhind, sculptor, Edinburgh ; A. D. Reid, painter, Aberdeen ; John Lavery, painter, Glasgow ; William Leiper, architect, Glasgow : George Washington Browne, architect, Edinburgh ; Pollock S. Nisbet, painter, Edinburgh ; A. K. Brown, painter, Glasgow ; Hippolyte J. Blanc, architect, Edinburgh ; George Henry, painter, Glasgow ; Robert Noble, painter, Edinburgh ; Pittendrigh Macgillivary, sculptor, Glasgow ; John Honeyman, architect, Glasgow. This is the first election of Associates which has taken place since the new charter of the Academy was received. There were 70 candidates nominated. Portraits of all four of the architect-Associates just elected appeared in our pages during 1890, that of Mr. Hippolyte J. Blanc on May 23, Mr. G. Washington Browne on Sept. 19, Mr. John Honeyman on July 18, and Mr. William Leiper on June 6.

The sensation of the week at Exeter has been the sudden and mysterious disappearance of Mr. William A. Sanders, architect and auctioneer in that city. He succeeded a few years since to the practice of his uncle, the late Mr. Best, and was clerk and surveyor to the Trustees of the General Charities. The annual income of the trusts is between £3,000 and £4,000, chiefly devoted to the maintenance of almshouses and weekly payments to the occupants. Mr. Sanders gave his clerk a holiday and left the city, sending a letter to the chairman of trustees, intimating that he should not continue his duties as clerk. The trustees were called together, and an examination of the accounts showed a deficiency of not less than £1,200. It is said that Mr. Sanders had sustained losses on betting and Stock Exchange transactions, the inference being that these were partly covered by withdrawals from trust funds.

The Corporation of Manchester will open on Monday next in the City Art Galleries in Mosley-street a free spring exhibition limited to water-colours. From the Museum at South Kensington has been sent an historical series of 170 water-colours, embracing the work of the best known men who have wrought in that medium, and the exhibition as a whole is believed to be one of the most complete representations of modern water-colour art yet brought together.

The Guildford Rural Sanitary Authority had to settle last week a moot point in connection with the passing of plans for reconstructed premises. Plans were submitted for their approval by Messrs. Peak, Lunn, and Peak, architects, of Guildford, of the new premises for the Capital and Counties Bank. Two old shops had been purchased by the banking company, whose intention was to turn these premises into a bank. The front walls had been taken down, but the two side walls had been left, although the rafters and ceiling had been taken off. The side walls which were left standing were not of the thickness required by the by-laws, and the question was whether the proposed bank was a new building or not. If it was not a new building within the meaning of the Public Health Act the authority had no jurisdiction. Mr. Lunn attended before the Board, and explained that the shops were erected 25 years ago, and he contended that under the Public Health Act the mere pulling down of a front wall and rebuilding another did not constitute a new building. The meeting ultimately decided that the authority had no *locus standi* in the matter.

Cardinal Parocchi submitted to the Pope on Saturday a scheme for erecting on the Monte Vanicule, near Rome, a church with a cupola equal in size and effect to that of St. Peter's, the cost of which is to be defrayed by the contribution of Catholics throughout the world. Round this edifice it is proposed to group the ecclesiastical colleges of the different countries now situated in Rome. The proposal has been submitted to a commission of cardinals for consideration. The estimated cost of carrying out the scheme is about £4,000,000 sterling, and its construction would give employment to 14,000 workmen for six years.

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MEETINGS FOR THE ENSUING WEEK

Monday.—Royal Institute of British Architects. "Construction of the Central Pillars of Milan Cathedral," by Signor Luca Beltrami; and "Wrought Ironwork of the Renaissance Period," by J. Starkie Gardner. 8 p.m.

Tuesday.—Institution of Civil Engineers. "The Sewage Farms of Berlin," by H. A. Roechling. 8 p.m.

Society of Arts. "The Red and White Races in Manitoba," by the Rev. John McLean, DD. 8 p.m.

Glasgow Architectural Association. "The Parish Churches of Scotland," by C. E. Whitelaw. 8 p m.

Wednesday.—Society of Arts. "The Future Trade Relations of Great Britain and the United States," by Robert S. McCormic. 8 p.m.

St. Paul's Ecclesiological Society. "The Round Towers and Romanesque Architecture of Ireland," Part III , by F. J. Beckley, B.A. 7.30 p.m.

Thursday.—Royal Archæological Institute. "The Stone Circles of Britain," by A. L. Lewis; and "Widows and Vowesses," by J. L. André. 4 p.m.

Society of Arts. "The Agricultural Needs of India," by Dr. J. A. Voelcker. 4.30 p m.

Edinburgh Architectural Association. "The Hie Gait and Saut Mercat of Old Glasgow," by A. H. Millar, of Dundee. 8 p m.

Friday.—Royal Institution. "Electric Meters, Motors, and Money Matters," by Professor W. E. Ayrton, F.R.S. 9 p.m.

Dundee Institute of Architecture. "The Art of the Low Countries," by W. D. McKay, R.S.A., Edinburgh. 8 p.m.

◆

CHIPS.

Sir Edmund Lechmere has given notice to move the rejection of the Architects Registration Bill.

The Earl of Moray has promised to give a statue of his distinguished ancestor, the Earl of Moray, to be placed in one of the niches of the National Scottish Portrait Gallery at Edinburgh.

Mr. Clement S. Colvin has been appointed secretary in the Public Works Department of the Indian Office, in succession to Sir Julian Danvers, K.C.S.I., who retires on the completion of 50 years' public service.

Sydney Cooper, R.A., who is now nearly 90 years of age, will be unable to act as one of the hangers at the forthcoming Academy Exhibition, but he will send a picture of the same scene as that of the first canvas by which he was represented in the Royal Academy 70 years ago.

In the case of Thomas Davies, of Llanstephan, Carmarthenshire, builder and contractor, the registrar in bankruptcy, on an application for discharge, has ordered it to be suspended for twelve months ending Feb. 12, 1893.

The chimney-stack at Port Dundas, near Glasgow, said to be the highest in the world, is now being pointed and overhauled. The chimney, which was built in 1857-9, is of brick, and is 468ft. in height exclusive of the iron crown, which rises another 20ft.; the diameter is 50ft. at the base, and 12ft. 8in. at the coping. The present repairs are being carried out by Mr. Ralph Hall, who erected the crown.

Trade News.

WAGES MOVEMENTS.

Birmingham.—The notices given by the bricklayers and labourers engaged in the building trade in this city, for an advance in their wages, expired yesterday (Thursday), and the efforts that have been made to bring about a conciliation have failed. Therefore, as the men persist in their demands, a strike will commence to-day (Friday). At the present time the standard rate of wages is 8½d. per hour for bricklayers, and 5½d. per hour for labourers, and the demand made is for another halfpenny per hour each. The contention of the masters is that just now the applications of the men are inopportune, inasmuch as the trade generally tends towards a decline. The men, whilst admitting that the trade is not in an over-flourishing condition, say that there is little difficulty in skilled labour finding employment. Housebuilding is being carried on briskly in the suburbs, and the execution of contracts for the new General Hospital and the Central Police Offices will shortly be commenced. The cessation of work by a majority of the bricklayers in Birmingham and the district will necessarily affect those engaged in the other branches of the trade, such as carpenters, plasterers, plumbers, and painters—altogether numbering between 5,000 and 6,000; and on behalf of the employers it is said that the operatives in the other branches of the trade are against a strike at the present juncture. The Birmingham Master Builders' Association have given notice that the existing rules between them and the Bricklayers' and Labourers' Societies will expire on the 31st March (yesterday), owing to the operatives having failed to appoint an arbitrator under Rule X.

Cardiff.—A conference has been held between representatives of the masters and of the men engaged in the building trade at the Angel Hotel, Cardiff, when the various questions as to wages, hours of labour, and other matters at present in dispute were discussed at length. Alderman David Jones presided, and there was a large attendance. The conference was conducted with closed doors. The men ask for an advance for carpenters, masons, and plasterers from 8½d. to 9d. per hour, and a reduction in time from 54 to 52, while they seek to prohibit hewn stone from being imported into the town. No agreement was arrived at, and the conference terminated with the understanding that both masters and men would think over the arguments adduced with a view of modifying the claims on either side, arrangements having been entered into for holding another conference at a date not yet fixed. It is believed that concessions will have to be made on each side before any settlement of the dispute can be looked for.

Nelson, Lancs.—At a meeting held on Tuesday night of the operative joiners and carpenters of Nelson, Brierfield, Borrowford, and neighbourhood, it was reported that employers had granted an advance of ½d. per hour in the men's wages, advancing the remuneration from 7d. to 7½d., the number of working hours in the week being 54. The operatives had given notice to come out on strike to-day (Friday) if the advance were not conceded.

* * *

A House of Commons committee has passed the Omnibus Bill of the Midland Railway Company, which empowers the company to make new railways to the extent of 17 miles 28 chains, including the Chapeltown branch extension in the West Riding, the Heysham branches in Lancashire, branch railways at Bristol, and various alterations and deviations.

At Lambeth Police-court, on Tuesday, James Barrow, of 164, Peckham-rye, was summoned at the instance of the vestry of St. Giles, Camberwell, for allowing to exist foul, defective drains and defective water supply to drains; also for leaving the roof over a back room defective, a ceiling dilapidated, and a back yard insufficiently paved and drained, at a house in Friern-road, East Dulwich. The defendant (who did not appear) was fined £5 and £1 3s. costs.

Mr. W. W. Ouless, R.A., the well-known portrait painter, has been elected a member of the Prussian Royal Academy. This honour was conferred on six foreign painters, Mr. Ouless being the only English artist who received it.

At the Plymouth police-court on the 24th March, Thomas S. Martin was summoned by the corporation for having contravened the by-laws by not having given notice of his intention to erect a skating rink on the Hoe Field Estate, nor deposited plans, nor specified the date on which he intended to begin its erection. The defence was that the structure was not a "building"; but the magistrates, after hearing the evidence of Mr. George D. Bellamy, borough surveyor, and Mr. Charles J. Reed, building inspector, decided that it was, and inflicted a fine of 40s. and costs.

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TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

Ashford, Kent.—For the erection of wool warehouse, &c., East Hill, for Messrs. John Watson and Son, Ashford and Faversham. Mr. Henry J. Jeffery, M.S.A., Ashford, architect and surveyor:—

Giles and Dryland	£810	0	0
Howland, C.	718	0	0
Steddy and Co.	694	0	0
Wood, J. (accepted)	647	0	0

All of Ashford.

Beauly, N.B.—For the erection of a service bridge at Beauly Ferry (on the site of Telford's stone structure destroyed by the recent floods), for the Inverness County Council:—

Mackay, of Inverness (accepted).

Beddgelert.—For additions to chalet for Sir Edward Watkin, Bart. Mr. M. P. Thomas Roberts, Portmadoc, architect:—

Jones, W., Portmadoc (accepted) ... £155 10 0

Broad Clyst, near Exeter.—For alterations at Shermoor. Mr C. Cole, 50, High-street, Exeter, architect:—

Pratt, N., Clyst St. Mary (accepted).
(Lowest of four tenders received.)

Broad Clyst.—For general repairs at Bluehayes Farmhouse. Mr. C. Cole, 50, High-street, Exeter, architect:—

Willey, J., Exeter (accepted).
(Lowest of seven tenders received.)

Bromley, Kent.—For making-up Waldo-road, for the Bromley local board. Mr. Hugh S. Cregeen, surveyor:—

Hudson, T.	£410	8	0
Woodham and Fry	395	0	2
Mayo and Co.	372	0	0
Lansbury, T.	355	0	0
Peill, E., and Sons	347	6	5
Mowlem, J., and Co. (accepted)	327	0	0

Blackburn.—For alterations and additions to Stanley Grange, Samlesbury, near Blackburn, for Mr T. M. Crook. Mr. T. C. M. Crook, Old Cross Chambers, King William-street, Blackburn, architect:—

Knowles, J., Bolton-road, Darwen (accepted).

Cardiff.—For the foundations of the infectious diseases hospital, for the town council:—

Three lowest tenders:—

Allan, J.	£2,956	7	6
Turner, E., and Sons	2,883	0	0
Smallbridge, G., & Son (accepted)	2,311	0	0

[At the last meeting of town council the health committee brought up a report recommending the adoption of Allan's tender; but after a warm discussion it was by 14 votes to 13 decided to accept the lowest. The borough engineer's estimate was £3,000.]

Cirencester.—For alterations and additions at the Coxwell-street Baptist Chapel, Cirencester. Mr. W. H. Read, M.S.A., Corn Exchange, Swindon, architect:—

Chambers, W., Swindon (accepted) ... £438 10 0

Cirencester.—For alterations and additions at Coxwell-street Baptist Chapel, Cirencester. Mr. W. H. Read, M.S.A., Corn Exchange, Swindon, architect:—

Chambers, W., Swindon (accepted) ... £438 10 0

Crediton.—For additions to Shirley Corner Infants' School, Copplestone, for the Crediton School Board. Mr. C. Cole, 50, High-street, Exeter, architect:—

Berry, W. B., Crediton	£60	0	0
Jones, T., Crediton	525	0	0
Brooks, J., Crediton (accepted)	519	0	0

Dartford.—For erecting villa residence at East Hill, Dartford. Messrs. Rayner and Bridgland, Gravesend and Leyton, architects:—

Multon and Wallis, Gravesend	£549	0	0
Archer, W. H., Gravesend	505	0	0
Tuffee, W., Gravesend	490	0	0
Kemp, G., Dartford	470	0	0
Knight, T., Sidcup (accepted)	429	0	0

Dunstable.—For erection of organ-loft to Edward-street Congregational Chapel. Mr. A. E. Smith, Luton, architect:—

White	£73	0	0
Farmer	49	10	0
Wood (accepted)	43	0	0

Exeter.—For the erection of a house and stabling near Exeter. Mr. C. Cole, 50, High-street, Exeter, architect:

Pratt, N., Clyst St. Mary (accepted) ... £2,289
(Lowest of 18 tenders received.)

Exeter.—For sanitary alterations at 21, Cathedral-yard. Mr. C. Cole, 50, High-street, Exeter, architect:—

Woodman, W., Exeter.

Finsbury Park.—For three steel Cornish boilers for ink factory, Finsbury Park, N., for Mr. Henry C. Stephens, M.P.:—

Foster, J., and Sons, Preston	£1,000	0	0
Oldham Boiler Works Co., Ltd.	1,000	0	0
Fraser & Fraser, Bromley-by-Bow	942	0	0
Heaton E., and Son, Holt Town, Manchester (accepted)	846	0	0

Forton.—For the erection of a new church of St. John at Forton. Sir Arthur W. Blomfield, A.R.A., architect:—

Barton, of Ryde (accepted), £4,000.

Hornsey.—For improvements, Colney Hatch-lane. Mr. T. de Courcy Meade, M.Inst.C.E., engineer:—

Cooke, B., and Co., Battersea (accepted) ... £798 0 0

Hornsey.—For improvement, Muswell Hill-road, near Wood-lane. Mr. T. de Courcy Meade, M.Inst.C.E., engineer:—

Hudson, S., West Dulwich	£705	17	6
Adams, T., Wood Green	670	1	2
Mowlem, J., and Co., Westminster	610	0	0
Cooke, B., and Co., Battersea*	514	0	0

* Accepted.

Hornsey.—For improvement, Park House-road. Mr. T. de Courcy Meade, M.Inst.C.E., engineer:—

Hudson, S., West Dulwich	£636	7	6
Adams, T., Wood Green	607	6	10
Mowlem, J., and Co., Westminster	599	0	0
Cooke, B., and Co., Battersea*	477	0	0

* Accepted.

Hornsey.—For park-keeper's cottage, Barrington-road. Mr. T. de Courcy Meade, M.Inst.C.E., engineer:—

Willmott, J., and Sons, Hitchin	£761	0	0
Marchant and Hirst, Highgate-road	670	0	0
Pearce and Co., Highbury	650	0	0
Kerry and Son, Highgate	650	0	0
Hosking, G. J., Forest Gate	627	0	0
Seath & Harris, Bartholomew-close	617	15	8
Groves, J., Tottenham	605	7	0
Gardner and Hazell, Islington	595	0	0
Faulkner, H., Jun., Jermyn-street	589	0	0
Hughes, E., Stroud Green (accepted)	504	17	0

Hornsey.—For gardener's cottage, Middle-lane. Mr. T. de Courcy Meade, M.Inst.C.E., engineer:—

Wilmott, J., and Sons, Hitchin	£906	0	0
Marchant and Hirst, Highgate-road	719	0	0
Kerry and Son, Highgate	700	0	0
Pearce and Co., Highbury	700	0	0
Seath & Harris, Bartholomew Close	680	17	11
Hosking, G. J., Forest Gate	666	0	0
Groves, J., Tottenham	631	5	0
Gardener and Hazell, Islington	631	0	0
Faulkner, H., jun., Jermyn-street	625	0	0
Hughes, E., Stroud Green (accepted)	518	0	0

Hornsey.—For new sewers on the Crouch Hill Estate. Mr. T. de Courcy Meade, M.Inst.C.E., engineer:—

Neave, J., Forest Hill	£898	0	0
Adams, T., Wood Green	767	11	4
Foster, L., New Barnet	767	0	0
Dickson, J., St. Alban's	752	0	0
Bentley, J., Leicester	602	0	0
Cooke, B., and Co., Battersea	602	0	0
Dunmore, T. G., Crouch End*	497	0	0

* Accepted.

Hornsey.—For improvement, Crouch Hill. Mr. T. de Courcy Meade, M.Inst.C.E., engineer:—

Cooke, B., and Co., Battersea (accepted) ... £658

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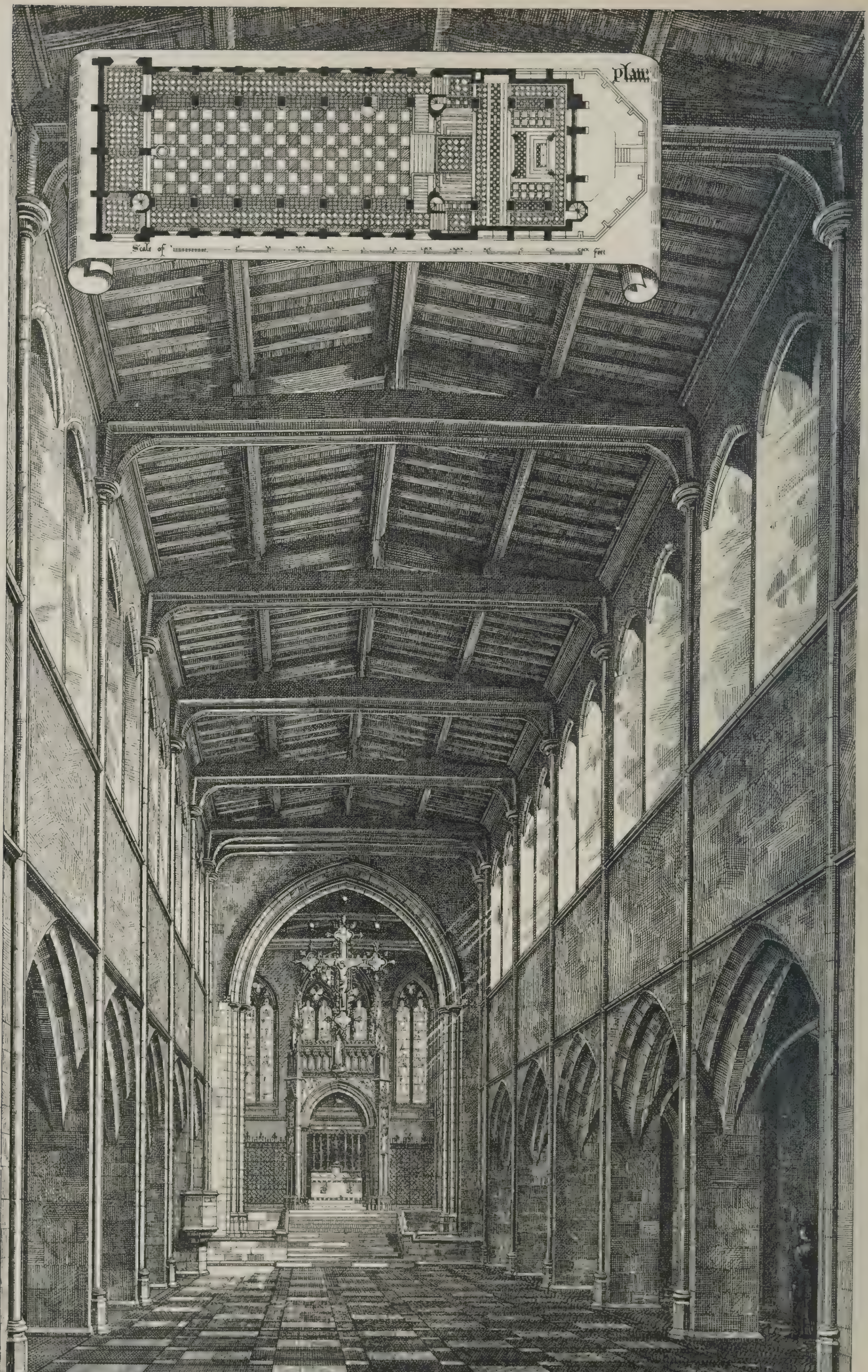

Design for the Church of St. Alban South Norwood W. Bucknall and J. N. Comper Archts

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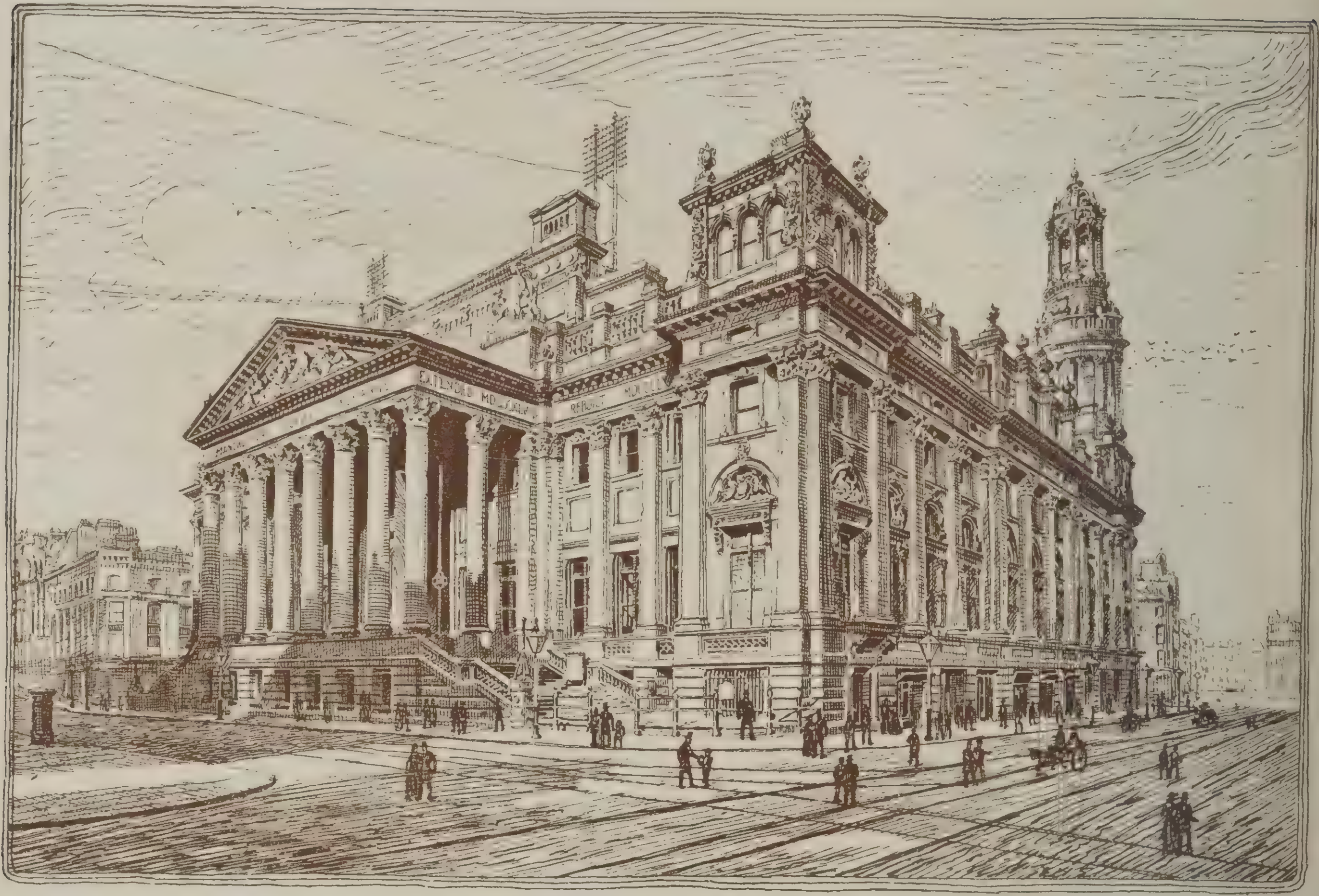

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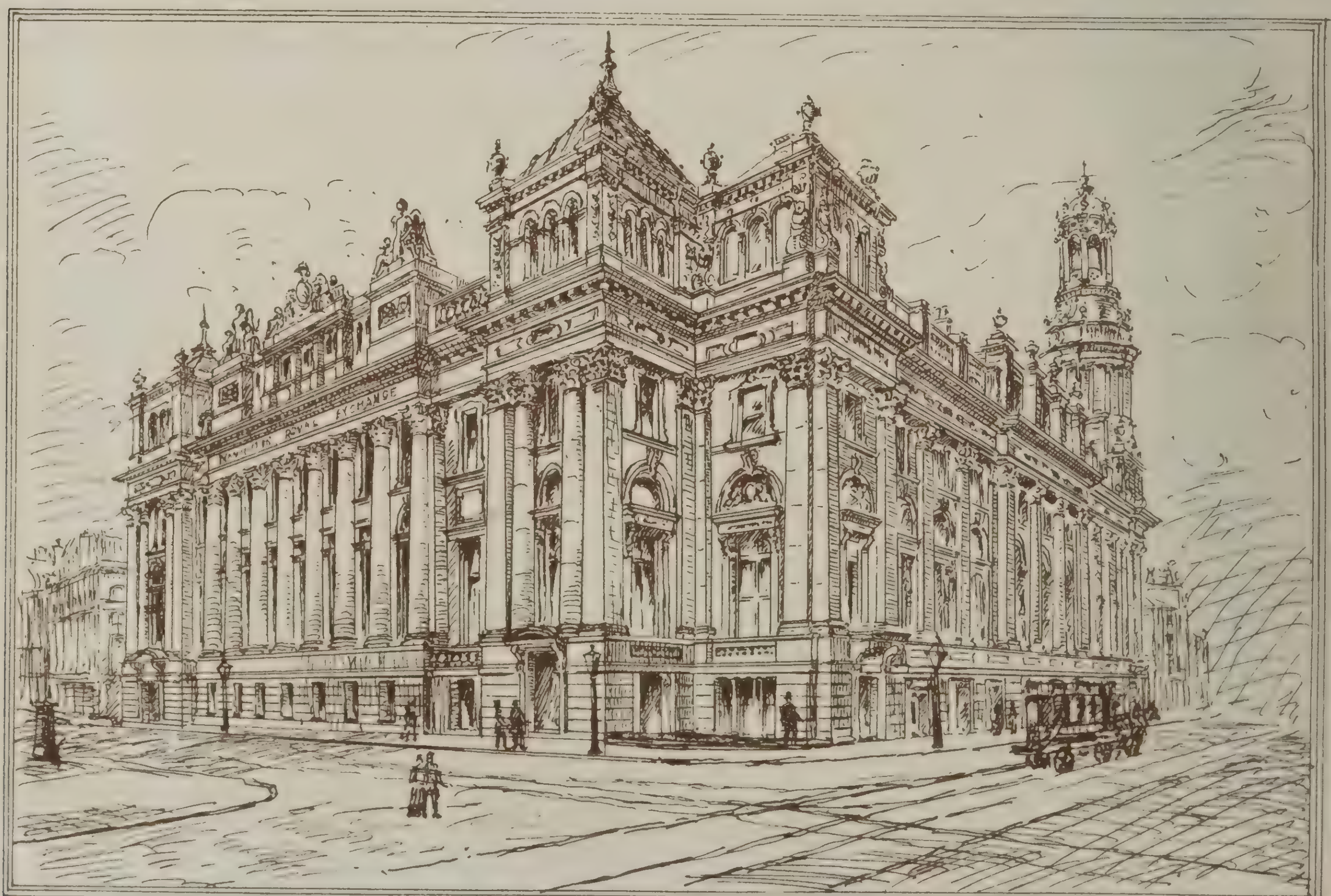

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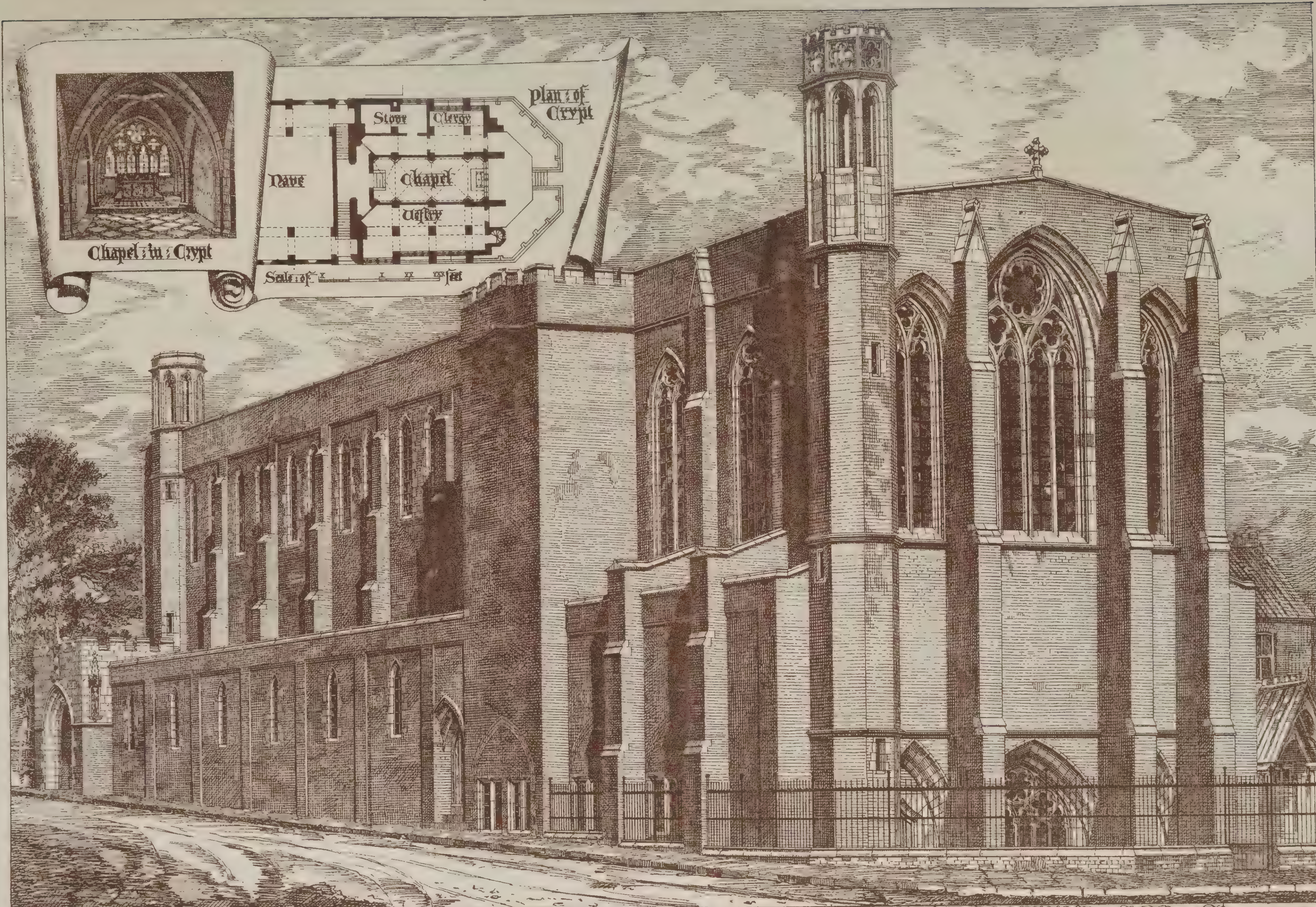

Design for the Church of St Alban South Norwood

W. Bucknall and J. N. Comper Architects
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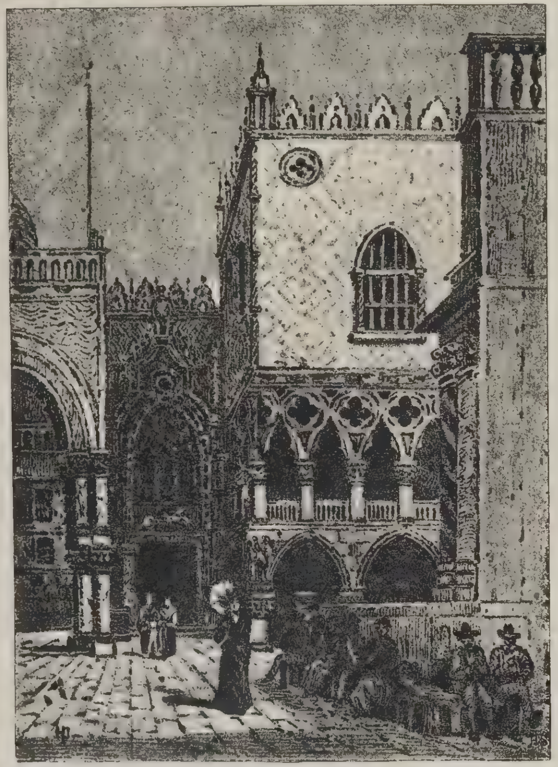
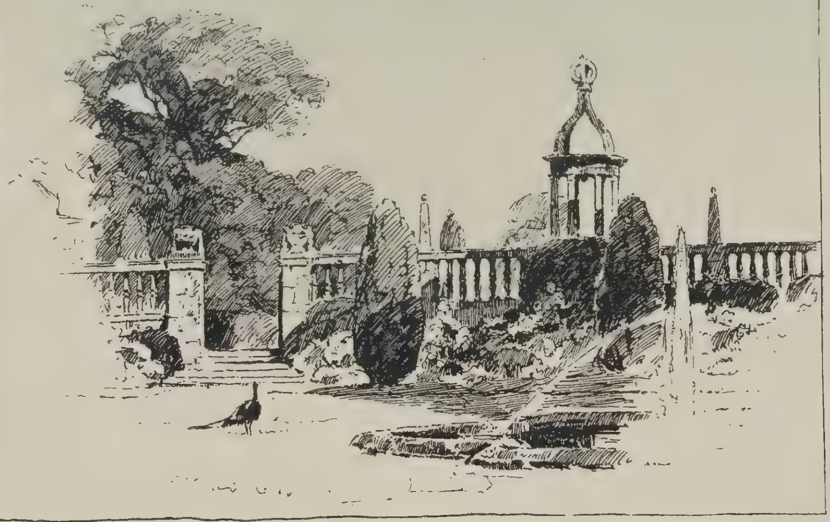
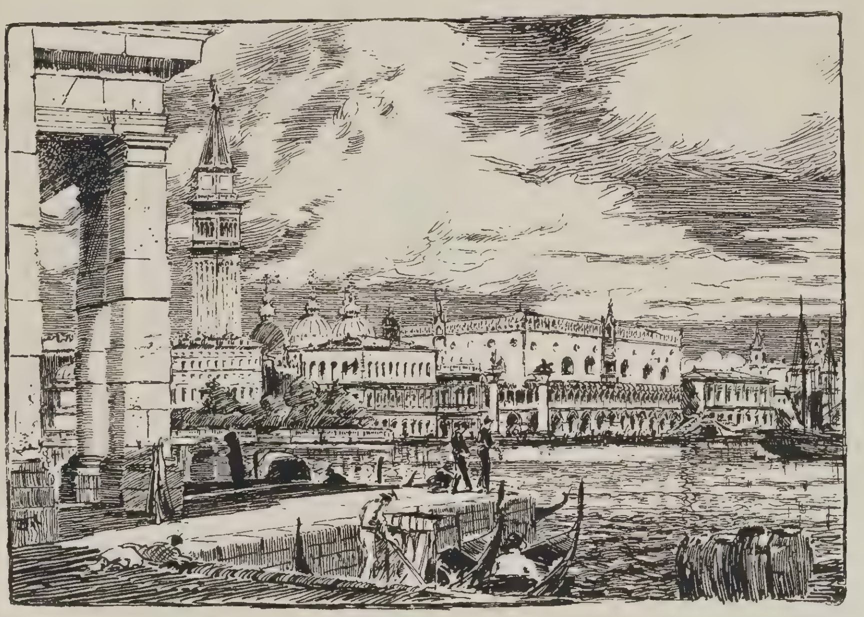


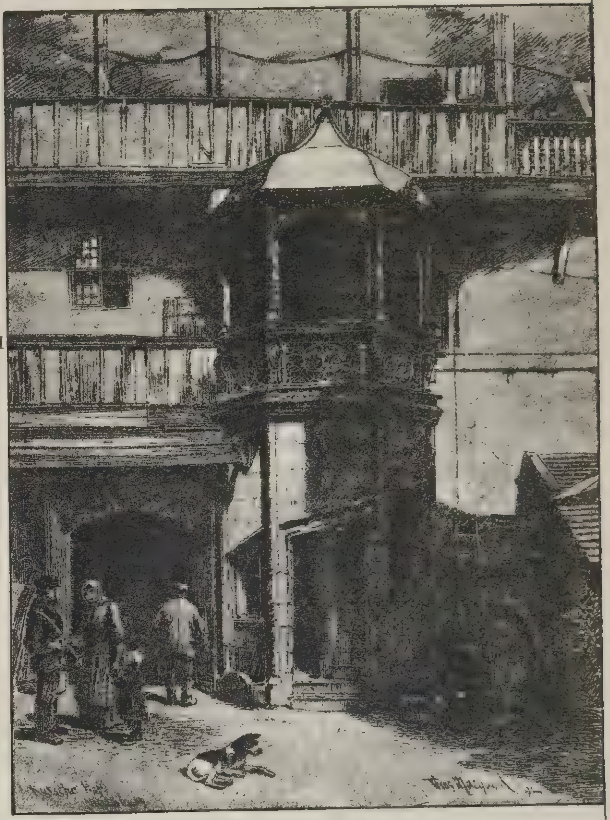
ENTRANCE TO THE DUCAL PALACE, VENICE. *H. Pilleau*, R.I.



MONTACUTE. *Geo. S. Elgood*, R.I.



VENICE. *John Fulleylove*, R.I.



THE KUTSCHER HOF, NUREMBURG. *Thomas R. Macquoid*, R.I.

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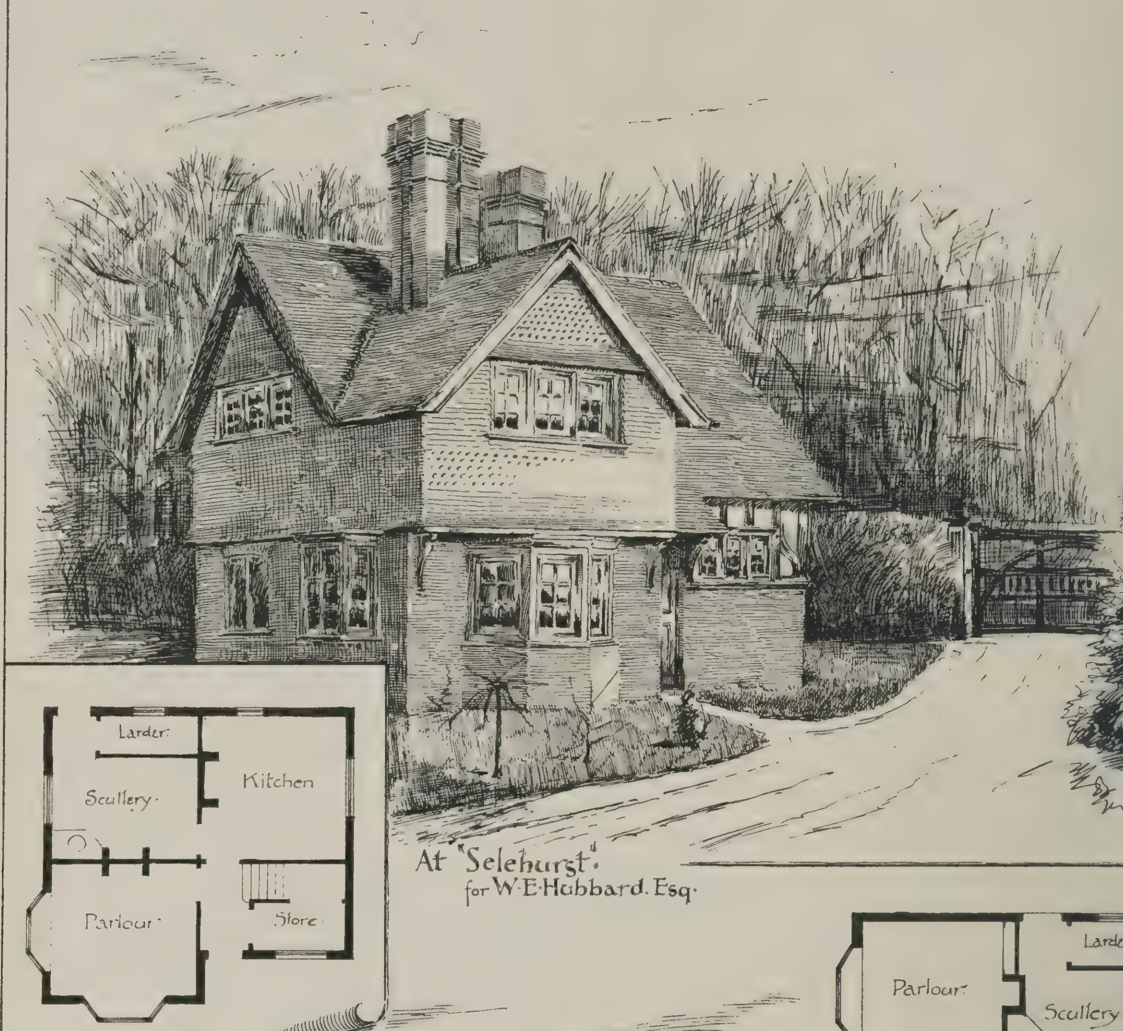

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At
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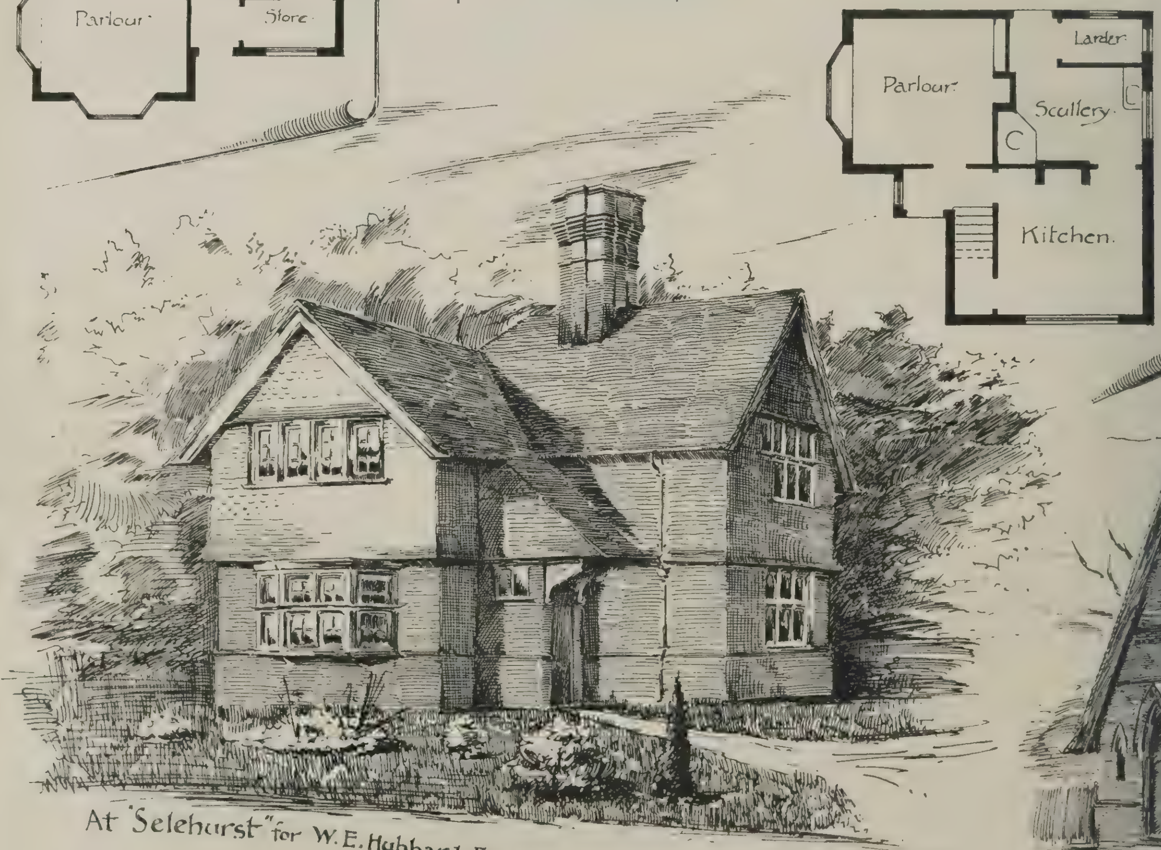

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for Lady Ogle.

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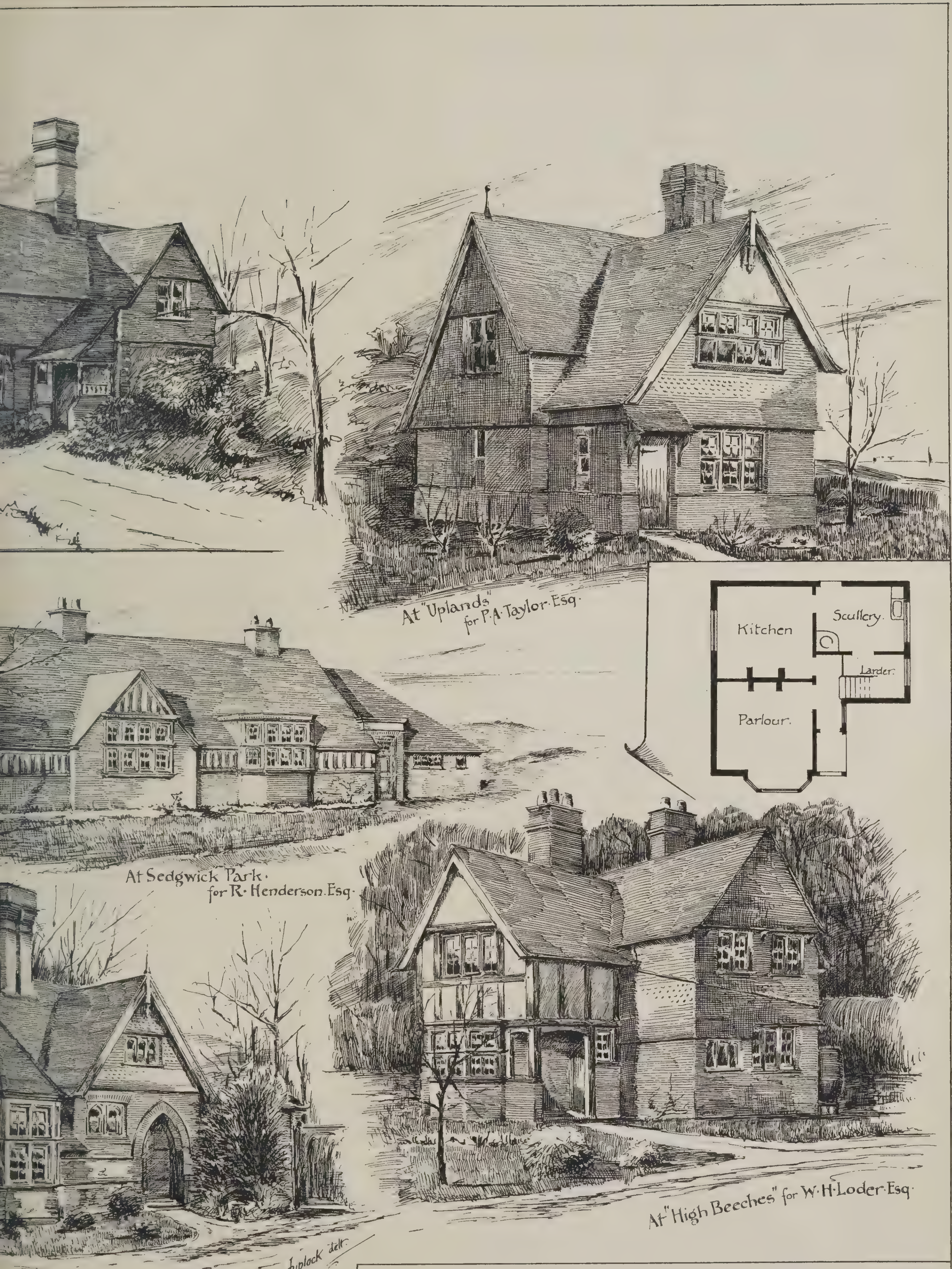
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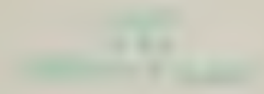

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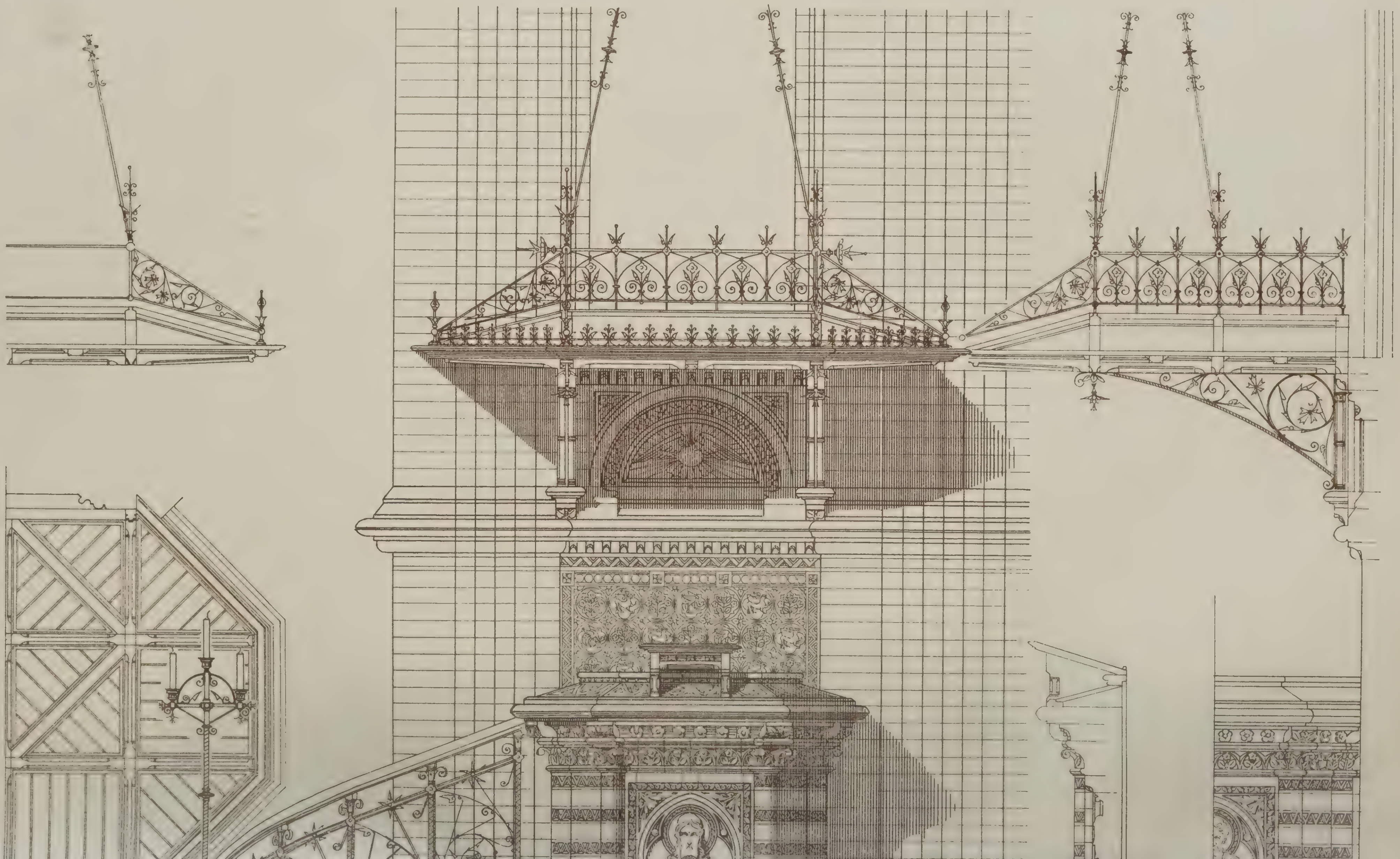

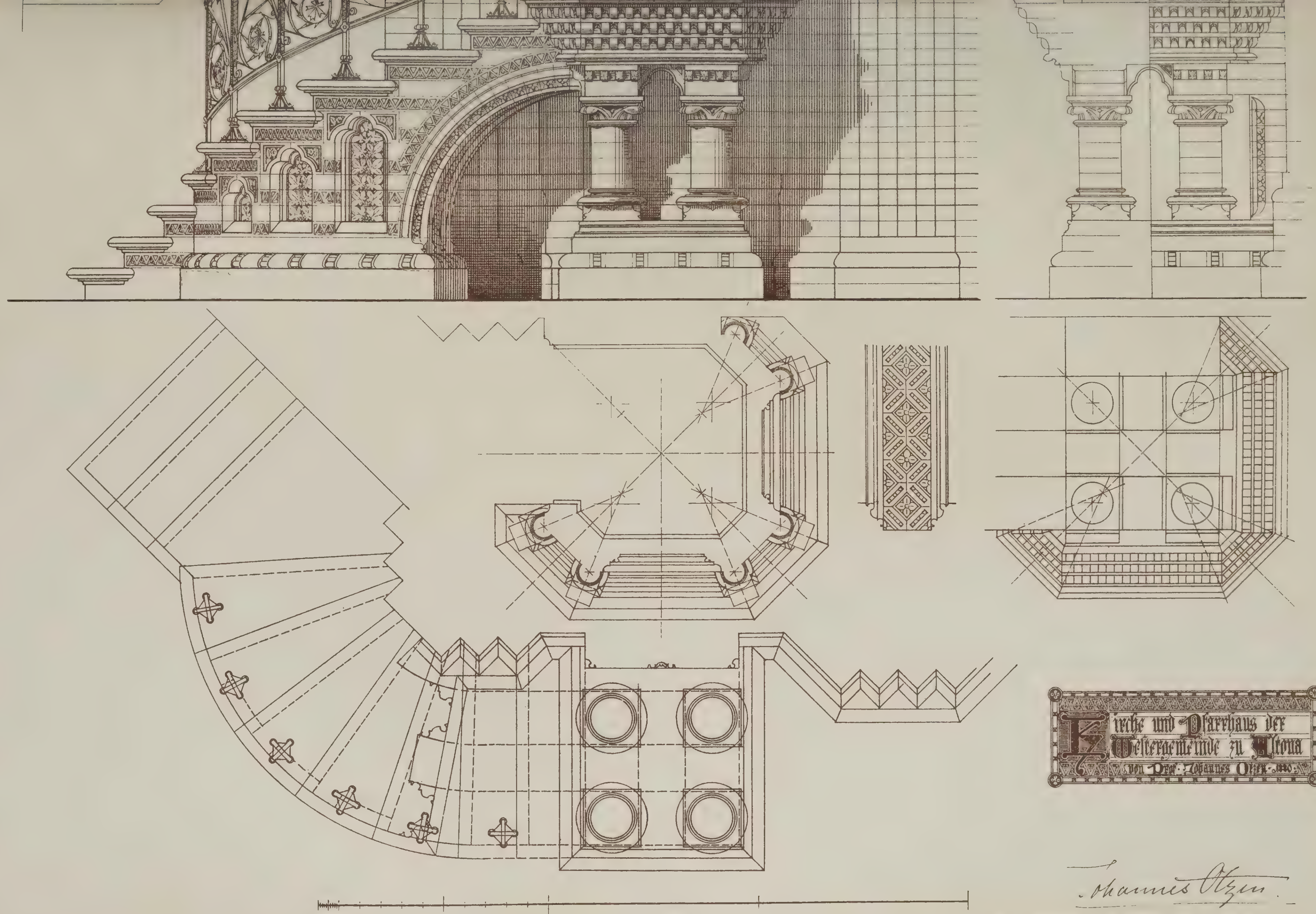

Kirche und Pfarrhaus der Westergemeinde zu Altona

von Prof. Johannes Otzen. 1880.

Johannes Otzen

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THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXII.—No. 1944.

FRIDAY, APRIL 8, 1892.

BUILDING COMMITTEES AND ARCHITECTS.

THE decision of a judge and jury in a case tried at the Manchester Assizes has a few points of interest and warning to builders, building committees, and architects. The main facts we summarised last week, and they merely illustrate in a new form the importance of a properly-prepared specification and contract, and the importance of making it clear what building materials are to be used. A church-building committee advertised for tenders for the erection of a tower and spire. These were found to be in excess of the sum they could afford to expend, and none of the tenders were accepted; but the committee subsequently communicated with the lowest tenderer, whose offer was £972; and ultimately, with the aid of their architect, the builders sent in a new bill of quantities, in which they agreed to carry out the work subject to certain alterations in the materials to be used at a reduced estimate. One alteration consisted in the substitution of a less expensive stone. The committee accepted the amended tender, but without a contract. The work was commenced, and the contractors began to use the substituted stone, the Blackstone Edge stone, with the architect's approval, when a member of the committee interfered, and the general body decided that the stone was not to be used. The work was thereupon suspended. It was agreed, after an inspection of the Greetland quarries in Yorkshire, to select another stone, which was 8d. per cube foot more than that agreed upon, arranging to pay the extra cost. A formal contract was then prepared and signed, having the usual provision that the payments due to the contractors were to be made only on the certificate of the architect. The architect refused to certify; a stoppage of the work ensued, and the contractors brought an action charging fraud and collusion against the defendants on the ground that the architect refused to certify, because Blackstone Edge stone was used, although he had, it was alleged, superintended the use of that stone. The question that should have determined this point was, What did the specification say about stone? It appears Healey Hall or other approved stone was mentioned, though it was afterwards agreed that the stone from Greetland should be substituted. But the contractors demurred to substitute a stone that would cost them more per foot cube than that they had first used—the Blackstone Edge—without being guaranteed the extra cost. The architect had indeed, it was alleged, guaranteed the extra cost; but had acted under the orders of the committee, and refused to give the builders certificates, and the committee, it was said, now refused to pay unless they had their architect's certificate. In short, the quarrel turned on the use of a particular material which the committee wanted to substitute for that which the plaintiffs had based their tender on, but which was afterwards rejected. It was argued that a large sum on certificates was due, which the committee would not allow the architect to give; and that the committee had rescinded an original contract by their collusion with the architect. After evidence in favour of the plaintiffs were given, the Judge said there was no evidence of fraud, and gave judgment for the defendants.

The statements between the parties are conflicting. There are at least certain points which show some irregularity. According to the builder's account Healey Hall stone was specified, but the bill of quantities substituted Blackstone Edge stone. This statement was contradicted by the other side, and it is difficult to find out on which stone the amended tender was based. From what we can gather, it appears that the plaintiffs were using the last-mentioned stone, as no guarantee had been given them for the extra cost of the stone the committee had selected at Greetland.

From the facts as reported, a few lessons of value may be drawn. In the first place, the committee must have had a very imperfect idea of the cost of the erection of a stone tower and spire, as three of the tenders received were considerably in excess of the tender ultimately accepted. The cost of the stone first selected could hardly have been taken into account. The tender submitted by the plaintiffs was a particularly low one, yet the committee asked whether they could not undertake the work at a less amount—a proceeding hardly calculated to improve the position between the contracting parties. The builders assented, and submitted another estimate, preparing a new bill of quantities, subject to the committee agreeing to a certain alteration in the quality of the material. This new bill ought to have been in the possession of the architect, but it was not forthcoming, both sides declaring they had not got it; it ought also to have stated clearly the stone intended to be used and the alterations made to bring the tender to the reduced amount. When a building committee or owners desire a reduction, and the builder is willing to negotiate with them for a reduction, a new specification and quantities are absolutely necessary. Again, if any alteration is afterwards made, if a new or better stone is selected by the employers, for which they agree to pay the extra cost, the usual mode is to give an express order in writing through the architect, and to arrange terms. We do not hear of anything of this sort being done.

The interference of a committee with a contractor is often a cause of disagreement. When a contract is duly executed and an architect engaged to superintend the work, a dispute as to certificates ought to be impossible. The architect ought to have the confidence of his employers in the superintendence of the work, the interpretation of the specification, and the selection of materials. When we hear, as in this case, of the architect being called the "tool of the committee," and under their orders withholding the certificates due to builder, we at once conclude that there is an undue influence over him, or that the architect has too many masters. If the architect is satisfied with a certain material, such as a stone, his employers ought to have no right to interfere without sufficient reason. When once the right to interfere is permitted, the architect becomes a mere cipher, and we cannot wonder at what follows—the committee declining to honour the certificates. Once the architect's power as arbitrator in matters about which he is supposed to be competent to judge is questioned, the power to certify becomes imperilled. Of what use, indeed, in such a case, is an architect?—for the function of mere superintendence would be performed better by a clerk of works. We have nothing to say about the charge of fraudulent collusion, and the judge's ruling on this question appears to have been right, as a yielding of the architect to the committee was no evidence of fraud or of an intention to defraud. Proving negligence or incompetence would also be of no use in establishing the charge. The only part of the ruling that concerns us here is that in which the judge said that the architect might have paid too much attention to the suggestions of the committee. There can be little doubt on this point, and the instructive lesson in the case is that any architect's position may be jeopardised by a too ready compliance with the wishes or whims of a committee. A too loyal adherence to the employer may be dearly purchased for his reputation and peace of mind.

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TALL CHIMNEYS.

IN every manufacturing town the tall mill chimney is a notable circumstance in the aspect of the place. Though not generally an architectural feature in the smoky landscape, it is one that may become so by breaking the horizontal lines of house and factory roofs, and by an additional care being bestowed on its design. When these chimneys or stacks of brickwork become dangerous as well as ugly they are objects of painful apprehension. In the neighbourhood of Birmingham, Bradford, Manchester, Newcastle, and other great centres of industry their number and height are almost distracting, and destructive to all ideas of repose; but if, in addition to this feeling, we entertained a sense of their instability as well, we should regard lofty constructions of this kind with much concern.

The inquiry into the cause of the fatal disaster at Cleckheaton has at length been brought to a close, and the jury returned a verdict that those who were killed by the fall of the mill chimney accidentally came by their death whilst the chimney was under repair; they also blamed the owners for having failed to attend to the repairs of the structure earlier. A very unsatisfactory verdict it will be said for the friends of those who have been sacrificed, and such a one as will be repeated, if some active measures are not taken to treat as dangerous structures all chimneys that show any signs of weakness or any declension from the vertical. We are informed by the expert instructed to examine this chimney by the Home Office, that, apart from the attempted repairs, one of the causes assigned for the fall, "the chimney would have fallen sooner or later," as it was a "doomed structure before the builder or his man saw it." How many other chimneys are in a like condition it would be difficult to say till after a careful examination of them. We may indeed ask how many there are equally doomed to fall which no repairs could avert, but rather hasten. The history of the Cleckheaton chimney, as given by Mr. John Waugh in his report on behalf of the Crown, shows that no regular architect was employed by the firm when the structure was built, about 1859, but that Mr. Brook, "a joiner and architect," was consulted; but whether plans or specifications were made does not appear. When it was 40 yards in height, it was found that the chimney was out of the perpendicular some 7in. in a south-easterly direction; the work was suspended some months, when an operation of straightening was performed, and the chimney was completed by 20 yards addition to its height. In February last signs of weakness appeared, and the owners applied to Messrs. Moulson and Sons, builders, who examined the chimney. Their man gave his opinion, and advised certain measures to be taken, such as bricking up of holes found in the inner shell, the renewal of brickwork about several diagonal cracks on the northerly side, and a bulge on the eastern side of the outer shell. In carrying out these suggestions it was found that in the chimney a run of water existed near the main flue, that the bricks of the flue were decayed by damp, that the inner shell was only 14in. thick, the outer shell the same, with a cavity between of 2ft. 2in., and that the cavity was partly filled with flue dust. Messrs. Moulson's representative condemned the chimney, and said that a new foundation and chimney were necessary. The repairs of the outer shell were commenced, though in what manner and to what extent the old brickwork was removed and made good with new, is not very clear. Witnesses were called who said that large openings were made, but not through to the cavity. It was whilst the loose brickwork was being propped the chimney settled down, and fell in an easterly direction, killing 15 persons.

Mr. Waugh, in his report, says the bricks were unfit for the purpose of chimney-building. They were of various sizes, materials, and degree of burning, and they suffered deterioration from moisture, also the lime. He says he had never seen such a crushing to powder of the materials as in this case. The stone cap was of good ashlar; but the clamping with lead was not used. All that remained of the stump was little more than that below the ground, the solid brickwork base resting upon a good rag foundation. There was a cast iron water-tank next the chimney, supported on an iron beam inserted into the chimney just above the bulge; the chimney was crushed down for 60ft. or 70ft. before falling on the mill, which would show a giving way of the base. Its total weight was about 500 tons, that of the outer shell alone being 325 tons, and the distressed area, including bulge and cracks on the east and north sides, was equal to half the circumference. Therefore the report says, "If the chimney had been vertical, the weight above the half-circumference would equal 162 tons, or 6·33 tons per square foot; but the chimney leaned over on this side, and it is impossible to say how much the weight was increased by this fact without a knowledge of the amount of departure from the vertical." The structure fell on the calmest day of the month, and it is therefore assumed that a combination of causes operated—bad bricks, weak construction, deterioration by moisture, and attempted repairs. The plan of the chimney consisted of an outer circular shell battered, 15ft. diameter at the base outside, and 14in. thick, with an inside shell of 6ft. internal diameter and of the same thickness, united across the cavity to the outer shell by six mid-feathers or radiating cross-walls of 9in. brickwork, and this inside shell was vertical, and was lined for about 12ft. high with 4½in. of good firebrick; it reached a height within the outer shell till the walls met the latter, which was battered. Practically the shells were distinct structures, one within the other, the mid-feathers giving little strength, but the weakness of the structure was mainly, we should say, attributable to the inferior nature of the materials used. The result ought to be a sufficient incentive to the Government authorities to make periodical inspections of all factory chimneys, both inside and out, as we have before recommended, and to certify any dangerous condition, so that precautions may be at once taken, and we hope Mr. Waugh's recommendations on this point will receive attention.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE eleventh ordinary meeting for the present session was held on Monday evening, the president, Mr. J. MacVicar Anderson, in the chair. The deaths were announced of Thomas Henry Eagles, M.A., of the Indian College of Engineering, Cooper's-hill (Fellow), and of John Murray, F.S.A., of Albemarle-street (Hon. Associate). Mr. **John Slater** added a few appreciative words of regret to the intimation of Mr. Eagles's death, remarking that he had been taken away at a comparatively early age. Mr. Eagles had recently occupied a seat on the Board of Examiners, where he had rendered very valuable services, his knowledge and attainments being unusual in an architect.

The **President** read a full report as to the preliminary and qualifying examinations recently held in London, Liverpool, and Manchester, under the supervision of the Institute Board of Examiners. In the preliminary examination, eighty candidates were enrolled, but three failed to appear; twenty-nine were exempted under the rules, and thirty-five passed, the other sixteen being relegated to their studies. In the qualifying examination, out of ninety-two candidates, eleven were exempted, forty-nine passed, and the other thirty-two were relegated to their studies.

THE CONSTRUCTION OF THE PILLARS OF MILAN CATHEDRAL.

The Secretary read a paper on this subject written (in excellent English) for the Institute by Signor **Luca Beltrami**, architect, member of the Italian Parliament, who has, as superintendent under the Government of the Ancient Buildings in Lombardy, charge of the Duomo of Milan. Signor Beltrami said he wished to supplement the recent paper by Mr. Somers Clarke on *"The Fall of one of the Central Pillars of Seville Cathedral," with the result of investigations carried on at Milan Cathedral. The Italian Ministry of Public Instruction authorised a committee of architects and builders to carry out investigations at Milan with the object of ascertaining how the central pillars had been built, the causes of their decay, and the most satisfactory remedies to keep them in repair. The south-eastern central pillar was drilled to the depth of 97 centimètres, boring two blocks of marble, after which was a core of common stone (*sarizzo*). The same pillar was drilled through the course below, and the *sarizzo* was found at a depth of 35 centimètres. In the north-eastern pillars the *sarizzo* was met with at depths of 66 and 94 centimètres in one course, of 58 centimètres in the course under, and of 28 centimètres in the course above. Thus proof was obtained that the thickness of the facing of marble varied at least from 28 to 97 centimètres; that the builders of the Cathedral had meant to erect the pillars as solid shafts; and that they considered the resistance to pressure of the white marble equal to that of the *sarizzo* stone. From a 14th-century list of building materials preserved in the archives of Milan, it was found *sarizzo* cost a quarter of the price of the marble, and the author thought that the use of small pieces of marble in the core of the pillars might be accounted for on the supposition that they were too small for decorative purposes. Experiments to test the actual resistance of the two materials were made by the Building Construction Department of the Technical Institute of Milan, which proved that the average resistance of the stone was about $\frac{54}{55}$ of that of the marble. The further investigations showed that the weight supported by each central pillar was one-ninth of its resistance to pressure and one-twelfth of its resistance to crushing. Signor Beltrami turned next to the nature and causes of the decay of these pillars. The white marble comes from the quarries of Gandoglia; and its saccharoid texture varies, the general structure being spathic. The *sarizzo* is a stone extracted from the glacial sediments in the northern side of the valley of the Po. Its structure is granitic, much varied in texture. Of these two materials in Milan Cathedral the marble only showed signs of decay, which consisted in fractures or fissures, perpendicular or tangential to the surface of the pillars. The former were to be attributed to the inequality, or occasional imperfection, of the surfaces of horizontal contact, or to the oxidation of the iron clamps originally used to bind together with the central mass the moulded blocks forming the surface of the pillars. Such fractures and splits are not, however, to be considered as dangerous, especially when limited to one course of masonry, and ought not, therefore, to be made a pretext to tamper with the original surface of the stonework. The tangential fractures and chipping off of the edges of the facing courses were caused by the fact that in many cases the pressure was transmitted from course to course along the edge, or else by a concentration of the pressure around the periphery of the pillars consequent upon the condensation of the mortar. The peculiar nature of the fissures is due to the spathic structure of the marble, and this defect should be considered as a natural consequence of the care taken by the Mediæval builders to obtain a perfect surface in the pillars they erected, and to prevent damp from penetrating into the cores of the pillars. Only the larger fractures are to be repaired, such as are dangerous or as alter the architectural appearance of the masonry, leaving untouched the minor ones as testimony of its peculiar structure, its form of decay, and of its age. Signor Beltrami concluded his paper with a reference to the opinion of Mr. Somers Clarke, that Seville Cathedral "stands far above Milan Cathedral as a specimen of Mediæval art"—an opinion Signor Beltrami thought not easy to discuss, as the two buildings were not erected contemporaneously, and are not of the same size. In any case he believes Mr. Somers Clarke would change his opinion were he to verify on the spot that the vaults of Milan Cathedral are *not* "domes with ribs on their faces"; that its columns are *not* "quite cut off from the members above them," and that the windows are *not* "in many cases half-sham."

At the close of the paper, after a few remarks from Mr. **Herbert Carpenter**, endorsing Mr. Somers-Clarke's conclusions, a vote of thanks was passed to the author on the motion of Mr. **Alexander Payne**, seconded by Professor **George Aitchison**, A.R.A. The latter speaker called attention to the fact that Signor Beltrami had presented the Institute with 26 of his books and pamphlets on architectural subjects, and suggested that it would be a graceful act on the part of the members to elect him as an honorary corresponding member.

WROUGHT IRONWORK OF THE RENAISSANCE PERIOD.

Mr. J. **Starkie Gardner** read a paper on this subject, illustrated by numerous photographs shown by the limelight. He urged that the industry of ironworking, like every other art, was subject to fixed laws which had regulated its growth, development, and decay. Its signs of youth were seen in a robust and playful vigour when the smith manipulated the hot iron with his hammer without any adventitious aid, the forms thus obtained being unsophisticated and without refinement. The next stage is, he showed, in introducing organic forms, in a decorative, not a superstitious, sense, by the use of smiths' tools alone. Its maturity is reached when such crude results are no longer deemed satisfactory, and the file, saw, chisel, drill, and punch are called in; the introduction of mouldings, tracery, and other architectural features necessitating more cultivation in both designer and executant. Next, greater finish still is required, and the iron has to be turned on the lathe, polished, carved, chased, &c., in fact, treated as a precious metal—wholly apart from painting in colour or gilding. This, as the last step, denotes old age, and approaching death. After this may come a Renaissance, when the processes will begin again, the phases of development following, however, with greater rapidity, and even concurrently. In Italy the smith's art had made considerable progress during the period of Gothic architecture. Church grilles, its principal expression, were almost always based on the quatrefoil, which was merely a development of the circle, and that itself was probably suggested by the effect of the leaded roundels with which St. Mark's and other churches were glazed. The quatrefoil became the traditional form, and grilles of this design were often surmounted by very deep friezes and crestings of the richest work. From scrolling up the ends of the scales to window grilles of C scrolls placed vertically and in all possible directions was a natural and inevitable development. Under Sansovino the style was at its zenith, and spread far beyond the limits of Venice. Italian smithing reached maturity about the close of the 15th century, and was ripened, perhaps, almost to decay when Vitruvius and its overwheming influence, leading to an entire suppression of decorative ironwork in buildings, gave architectural smithing its *coup de grâce*. A renaissance took place when Palladian architecture degenerated, and, though smithing was feeble, it marched onwards to the Italian version of the French rococo. In Germany it was otherwise: the laws of Vitruvius were not current over the border, at least as far as concerned ironwork; the smith had a free hand, and his art had for once an opportunity of showing of what magnificent developments it is intrinsically capable. Considering the advantages, however captivating the work may seem, the result was disappointing; the designs were the same for a palace or a church, the guest-chamber or the grave, and all changes were rung on three leading themes: the thistle, the passion-flower, and the threaded work. The thistle in the Renaissance has its curving leaves fashioned into rich grilles formed entirely of intertwining scrolls, a grand example of which, from Lubeck, was as late as 1784. The passion-flower, the origin of which seems to have been the 12th-century iris, was a favourite as far as the German language was current. There was at first no intentional reproduction, but as the work became richer the resemblance became strikingly apparent, and must have been purposely heightened. The flower is invariably combined with the typical threaded work traceable to the Early French lattice grilles; and, after relatively simple stages, became elaborated with bewildering complications. Examples in the cathedrals and churches extend from 1550 to 1672, and an off-shoot of the style showed the sheathing leaves growing in the reverse direction—a variety much used in grave crosses, and taken originally from an attempt to introduce the snail. In the Baroque style broken scrolls and acanthus leaves were introduced, and following that was the German Louis XV. work. The remarkable fact about Flemish ironwork is the rapidity with which it developed; but under the Renaissance little was made beyond wall anchors, kitchen utensils, finials, and door furniture, all of which, especially shutter hinges and fastenings, have a quite peculiar style. The guild and shop signs are remarkable, preserving an altogether Flemish rotundity of curve, though French in details. The Flemish art was most noteworthy, however, for being the parent stock of the magnificent school of Spanish ironwork. Spain seems to have realised with a rush the great capabilities of iron. First, the Flemish grille was imported into the churches; next—a bold step—crestings were added to them directly borrowed from liliaceous plants; next, the grilles were carried three stories in height; and, finally, the details were translated into their fine new Plateresque, and the freest play given to the imagination, with the most astounding results. The colossal *rejas*, produced between 1500 and 1600, which screen the *coros*, high altars, and chapels, are the most magnificent specimens of the smith's art extant, not unfrequently reaching a height of 30ft., and being divided into several tiers of long balusters, often enriched with leaf-work forged and carved out of solid iron. These piers are separated by deep bands of the richest scroll and arabesque-work. The extraordinary perfection to which Spanish ironwork had reached is even more apparent in the arms and armour, where, too, the Moorish influence is decided. It declined rapidly with the Baroque, but no country so abounds with it. In France, the Renaissance found the art deeply rooted, and affected its traditions but little; the most beautiful and refined ironwork ever executed is the French Late Gothic and Early Renaissance work. The pierced steel locks had reached a point beyond which real progress was impossible, and the transition simply meant that such sumptuous works slowly lost Mediæval features and followed Classic models. Under François I., due to Italian influence, an abrupt change is seen in the locks; and the lock covers, instead of being chiselled and formed of layers of pierced work, are embossed in high relief out of single sheets of iron. Bolt cases and knockers were treated in a similar manner. But far more beautiful and satisfactory are the exquisite keys, purse-mounts, and flambeaux; for beauty of design and for refinement they, as a rule, far surpass Italian work, although usually mistaken for it. During the perfecting of the locksmith's and armourer's work, there appears to have been little demand for ordinary blacksmith's work. The germs of the new school were first discerned under Henry IV., and under Louis XIII. a fully-developed style was found, which rapidly developed until it reached its culminating point under Louis XV. During this period nearly every cathedral in France and Belgium had new choirs and chapel grilles. Mr. Gardner then turned to the art in England. Unfortunately, the art sank so low that during the Renaissance it practically is a missing chapter in the development of the native arts. From the practice of fencing-in church monuments with iron rails, one may best judge of the state of iron-working. The series in the cathedrals are most valuable. During the Renaissance they were no longer made of massive bars, and the traceried cornices and buttressed angles also disappear towards the 16th century—only the closely-set lighter bars with small spear points, or sometimes ending with fleurs-de-lis, remain. The finest series must have been in Westminster Abbey. Good examples of a late style exist at Old Chelsea and other churches. Among the rarer objects is the valuable hearse or canopy in Tanfield Church, and that in South Kensington Museum from Snarford Church. English lock-plates, although not rivalling those to be found in France, Belgium, or Germany, begin to show during the Renaissance design of a higher order. Rich locks, especially of James I. and Charles I. periods, are more often of brass, but the keys are of iron and of the most exquisite finish. The author next considered flat work, forged bands cut into arabesques, scrolls, and other figures, of which the so-called cradle of Henry VI. in the Ashmolean Museum is a good example. The chapel gates in Farley Castle show the work on a larger scale, while the staircase at Holyrood seems to show what an Elizabethan iron stair might have been. Though rude and uncared for, the English smithing was full of character, quaintness, and individuality; and, had architects shown any disposition to make use of it, it might have blossomed into a fine industry.

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* See report in the Building News for March 6, 1891, p. 359, Vol. LX.

A vote of thanks was accorded Mr. Gardner on the motion of Mr. Statham, seconded by Professor Aitchison, and supported by Mr. Donaldson.

THE ARCHITECTURAL ASSOCIATION.

An ordinary meeting of the Association was held on Friday evening, the President, Mr. Frank T. Baggallay, F.R.I.B.A., in the chair. Mr. Gale, hon. sec., announced many donations, including a gift of ten guineas to the general fund from Mr. J. A. Gotch; a set of working drawings and models for the studio, presented by Mr. E. Graham Simpson; and a prize of five guineas offered by Mr. Jas. Brooks to any member of the discussion section who shall, in the judgment of the president, produce the best set of measured drawings of Christ Church, Oxford. Mr. Gale read the "house-list" for next session, 1892-3, Mr. H. O. Crosswell being nominated for the office of president, and Messrs. Edmund Woodthorpe and Paul Waterhouse as vice-presidents.

LITERATURE AND ARCHITECTURE.

A paper on this subject was read by Mr. Horace Townsend. The author observed: It will not be unprofitable, in the first place, to indicate such points of comparison as offer themselves between literature on the one hand and architecture on the other. At first you will say that no two arts could be more dissimilar or have fewer features in common, save, perhaps, such abstract and underlying æsthetical principles as are common to art in general. A little reflection, however, will convince you that certain special artistic faculties nurtured by the follower of one need but the merest differentiation to be of service to the other. Thus the basis of artistic literary form, whether displayed in the guise of poetry, fiction, or the drama, is undoubtedly construction, and the constructive faculty is after all but a specialised and somewhat theorised sense of planning, such as finds its place among the most important and necessary tools of an architect's mental workshop. I remember discussing, not many years ago, the subject of stage-craft with a dramatist who stands at the head of his profession in America. "If," said he, "I were to come across an architect who also had taste and talent for literature, I should look to see a better play from him than from ten out of a dozen of our masters in fiction. Constructing a play," he added, "demands, I am convinced, a cognate mental faculty to that required for the planning of a house." One has only to apply this same rule to other branches of literature, in which, though construction may not be of such vital importance as it is to the playwright, it is yet by no means to be slighted, to see that the two arts touch at this point somewhat closely. Again, somewhat similar limitations are imposed upon both author and architect as regards the medium in which they work. There are a language and grammar of architecture quite as complex and quite as conformable to tradition and general usage as the language and grammar by which the literary artist is, not so much fettered, as strengthened and sustained. The genius of the one, as of the other, is to be found in the skill and aptitude with which old and conventional symbols, some of them by force of association representing concrete or abstract ideas, others serving but as the means whereby these ideas are linked together, are disposed in so novel and original a manner as to convey to us a new thought or a novel impression. And as the dream of a new and arbitrarily formed language to usurp the places of those diverse tongues which are a bar and a hindrance to the universal exchange of thought has proved itself to be but the fallacious confusing of the desirable with the possible, so that similar vision which, like a misleading but fair-appearing mirage, has mocked so many otherwise far-seeing and clear-thinking men, that will-o'-the-wisp of a "new architectural style," is destined to a corresponding dissipation under the mist-dispersing rays of reason. "Volapük," the latest of the universal language crazes, is no more ludicrous and abortive an attempt to override deep-seated traditions and conventions than is the essay to provide us with an entirely new order or style of architecture. But there are other matters of technique wherein the two crafts closely approach one another, though they may, after all, be chiefly classed as subordinate rules of construction. One of the most perfect literary artists of our generation, considered simply as an artist, always declared that she owed much of her education in those matters of construction which have helped to render her masterpiece a perfectly cut and polished gem of literary art to the latter part of the third letter in Ruskin's "Elements of Drawing," a treatise which is, perhaps, more familiar to you than Mrs. Ewing's "Jackanapes," to which I refer. She saw that the principles there laid down with regard to music, poetry, and painting applied to prose with at least as equal force as to architecture. In this story of "Jackanapes" the law of principle is clearly demonstrated, and it is, too, a good example of the values of the law of repetition and the law of contrast. The question of principality is apt to assume a new meaning to us in our own art, when we see how it applies to and the effect it produces in one apparently alien to us. This trick is one that has been learnt to perfection by some few architects, who are but exceptions to the general rule; though, if we journey acrcss the Atlantic, we shall find that it is the dominant note in the scheme of the American school, the formation of the impressionism of much of what is best in Transatlantic architecture, by which I mean that quality or characteristic of a building which leads the spectator to carry away from it when he departs a more or less vivid impression of some one feature which so dominates the rest as to be thereafter primarily called into imaginative existence by the reminiscent faculties. The value of repetition, too, is one which is but dimly and sub-consciously recognised by the great mass of architects, though in literature it has proved a veritable gold-mine of artistic effect. The Houses of Parliament are a striking example of the power of a countless repetition of details to produce, when employed by the hand of a true artist, an effect of reposeful and dignified quietude. Nor are these the only means whereby a study of a sister art may prove of indirect advantage to the architect. I have hinted already that the search for a new style of architecture is closely akin to the quest for a new language in literature. But, on the other hand, it must not be forgotten that those architects who are content to slavishly reproduce the models of the past, adapting them as little as may be to the requirements of the present, carry with them no message at all, save that of archæological investigation. They put themselves into the position of a poet who would convince us that not only is the language of Chaucer capable of neither extension nor improvement, but that it would be but truckling to the pervasive utilitarian and materialistic spirit of the age to endeavour to alter the exact sequence of ideas which the father of English poetry used the linguistic symbols of his time to convey. It is in the underlying sentiment, in the creative thought, clothed though they may be in conventional forms of speech, that true literary and poetic originality consists, and so it must always be with architecture. To be too conservative is as grave a fault as to be too iconoclastic. A 19th-century building, whose chief title to favour is that a ghost of the 13th stumbling upon it by accident, between midnight and cock-crow, might be led to think the hand of time had somehow been turned back, and that he was in his own newly-built parish church, may be archæology, but it is not architecture. I do not decry that patient study, that sympathetic assimilation of the records of the past, which is one of the watch-words of our English architectural generation; but I protest against the confusion of the means with the end, against the slavish worship of the word, accompanied by a blind indifference to the spirit which should inform the word; and here it is, in my estimation, that even the casual study of an art outside our own is likely to have a beneficial effect, for, once admitting that the premises are the same in both, the *reductio ad absurdum* is more apparent in the one than in the other, and, therefore, more salutary. But literature has another relation to architecture, or, perhaps I should say, to architects. It is nearly a score of years now since I first entered an architect's office, and, doubtless, things are not what they used to be in regard to what I am about to touch upon. In my day, however, it was the exception rather than the rule to find an architect's pupil or assistant who was also well read in his own literature. There was much, doubtless, to excuse this in him. He worked at his office all day, and if he was earnest and industrious he spent a majority of his evenings over his drawing-board or his books of professional reference. Nowadays his leisure time is even more fully occupied with studies having direct bearing upon his profession, for examinations appear to be the chief end of an architectural man, and we are fast rivalling, as devotees of the Competitive Cult, our almond-eyed friends the Chinese. Let the cause have been what it might, the effect was one to be deplored, and unless things have altered very much for the better in this respect, one to be deplored fully as much in the 'nineties as in the 'seventies. Of all artists an architect is the better craftsman in direct ratio to the width and extent of his general knowledge. One can just barely conceive that a great painter may be ignorant of everything save of a technical knowledge of his craft and of an intuitive knowledge of human nature, but there is hardly a fragment of general information to be acquired which may not at one time or another be of inestimable service to the architect in the direct line of his profession. The great genius, perhaps, who appears in a decade of centuries is, of course, superior to all rules and regulations, and is, to a certain extent, complete within himself, unless we adopt the meretricious diagnosis of genius as the gift of taking infinite pains. I am, however, not speaking to a roomfull of geniuses, but rather to a body of men of talent and artistic taste. To such I would say that it is at least as necessary in my opinion for an architect to have an appreciation of the higher forms of literature as it is for him to be able to properly calculate the strain of an iron girder. Our contemporary architecture suffers, more than from any other cause, from want of imaginative faculty, and I maintain that this want arises from that widespread indifference to imaginative literature, which is characteristic, not of the architect alone, but of the majority of our nominally well-educated and refined upper classes. Though the benefit may not be objectively apparent, you may quicken your capacity for original designing quite as successfully by reading and enjoying an act of "Hamlet," or one of "The Idylls of the King," as by committing to memory a chapter of Fergusson or a page or two of Gwilt. Nor, again, should it be forgotten that narrowness of mind is of all intellectual faults most to be avoided by the architect. Without culture you can hardly hope for refinement, a lack of which quality in your work is one of the most detestable of faults. And now I have endeavoured to make clear to you to what degree literature is the creditor of architecture. But is there not a counter-claim? Is the balance all on one side? I hardly think so, though if the debt *per contra* has not been expressly repudiated, it has at least been but grudgingly acknowledged. If it had not been for the inherent poetry and mystic imagination of Notre Dame de Paris, we should have never enjoyed the masterpiece of that literary demigod Victor Hugo, and Quasimodo and Esmeralda would for us have never been. To the same cause, though in a somewhat more indirect manner, those Wizardries of the North, the "Waverley Novels," owe their very existence, while how much of William Morris, and of Rossetti, as we know them, is due to the influence of the late Gothic revival I leave you to judge for yourselves. Much that is characteristic in Browning's later volumes is due to the subtle influence of the sun-kissed, weather-stained marbles of the Italian Renaissance with which his poet's life was surrounded. Finally, literature has to thank architecture far more than architecture has to be grateful to literature for the gift of that master of melodious phrase, that great prose poet of the century, John Ruskin. It is architecture itself that the "Stones of Venice" and the "Seven Lamps" have to thank for their existence, and it grows with each year more clear to our eyes that, despite his marvellous rhetoric, despite his riotous wealth of eloquence, Ruskin has impressed the literature of his generation with a seal more enduring than that with which he has stamped its architecture. Ruskin apart, has any literature of an ennobling eloquence been devoted to the service of architecture? To my knowledge, none. We have our Fergussons, our Parkers, our Gwilts, but how little else? Trustworthy educational treatises, encyclopædic in style, even if absolutely reliable in fact, are but a poor return for literature to pay you for all she owes to your art. It is surely somewhat humiliating for us to consider that the majority of such architectural works as can claim to be really literature, and not mere samples of book-making, are, as the phrase goes, "made in France" or "in Germany," as the case may be, for we have also no Viollet-le-Duc to adorn his subject with grace of manner and charm of diction, as well as to bring to it the treasured results of a lifetime of patient and laborious investigation. Even the books of that intermediary rank which act as a sort of link between the professional man and the layman are much fewer and farther between than should be the case. Nor are the reasons for this difficult of recognition; the fault is not wholly upon one side or the other. It is only within the memory of the last generation that the great majority of architects have caused their own profession to be estimated by the outside world as worthy of that dignified position now universally accorded to it, while, on the other hand, outsiders have never felt interest in architectural technique comparable to that with which they regard the technical aspects of painting and sculpture. This indifferent, well-nigh contemptuous, attitude towards the art itself on the part of the public has reacted naturally enough upon its professors, and is curiously reflected in the attitude towards architects assumed by the practitioners of the art of fiction. An essay upon the appearance of the architect in fiction would be almost as brief as the celebrated chapter on "The Snakes in Ireland," and for the same reason. Dickens, however, has not forgotten the architect, and painfully suggestive, too, is his method of treating our honoured profession. Mr. Pecksniff is perhaps the most offensive of the amazingly offensive personages by whom the action of "Martin Chuzzlewit" is carried on; so offensive indeed is he, that he has been declared to be an altogether impossible personage. Certainly he is an absolutely impossible architect, and the ignorance displayed by the author of those details which would have helped to give *vraisemblance* and local colour, as it were, to his creation is little short of surprising. In introducing him to us, the author remarks that "of his architectural doings, nothing was clearly known, except that he had never designed or built anything, but it was generally understood that his knowledge of the science was almost awful in its profundity," and further that "Mr. Pecksniff's professional engagements, indeed, were almost, if not entirely, confined to the reception of pupils; for the collection of rents, with which pursuit he occasionally varied and relieved his graver toils, can hardly be said to be a strictly architectural employment." And yet but a few pages farther on we find Mr. Pecksniff has evidently been invited to send in a set of competitive drawings for a new grammar-school. Not only does he do this, but he uses for that purpose a set of plans which had been drawn in the course of a very few days by young Martin Chuzzlewit, who, whatever his other valuable qualities may have been, was clearly as ignorant of the practice of architecture or of the principles of design as a new-born babe. And yet these plans are successful, and win the competition. More than this, Mr. Pecksniff, though bereft of the services of his only assistant, and himself engaged in non-professional affairs which take him here, there, and everywhere, somehow manages to prepare the working drawings, and to be present at the laying of the foundation stone by, as you will remember, "the member for the gentlemanly interest." After this, as far as the book is concerned, he ceases even to be nominally an architect, and (for no apparent reason), after he has finished his triumphant career as a hypocrite, becomes a mere begging-letter writer. The one redeeming quality which I can find in the character of this libel on an honourable profession, to whom I have already, perhaps, devoted too much of your time, is that he recognised the importance of literature to architecture. "Various books," he is reported to have observed upon one occasion, waving his hand towards the wall, "connected with our pursuit! I have scribbled myself, but I have not published." That Thomas Hardy, the only other novelist of distinction who to my knowledge has made of an architect a seriously-considered character, should have displayed a more intimate knowledge of the subject is not so surprising as, at first glance, would appear, for, before he was a novelist, Mr. Hardy was himself an architect. Finally, a word must be given to the periodical literature of architecture, and here I am treading upon somewhat delicate ground. Ideal provision has not, however, yet been made for us in that respect. Year by year the architectural profession is counting upon its rolls fewer who look upon it as a mere business, and more who regard it as a sacred art. The paths of the contractor and the architect daily diverge more and more, and, though I have no words save of praise for those organs which, at present, represent so worthily the entire community which depends upon the art of building, I do not think that the ideal architectural paper is yet in existence. It will, when, if ever, it does arise, concern itself not with architecture alone, but with all those subsidiary arts which she has enlisted in her service, and with those artistic crafts which are subordinate only because they differ in degree and not in kind. It will be, from its inherent interest, the medium which shall bridge over the chasm which now seems to cut off so effectually the architect from the general community, a chasm the existence of which is due only to hereditary ignorance of the latter, and the hesitation of the former to assume that position which, in the empire of art, is his inalienable right. It will be a model of all that the representative of artists should be, in regard to its printing and its illustration, while in its pages will be found that perfection of literature which is only possible when the men who write concerning an art of whose principles they are thoroughly cognisant are also thoroughly informed with the principles of the literary art itself, and have recognised that the two are one and indivisible. Let me, in conclusion, urge on you once more the consideration of what I have dimly recognised as the text from which I have been preaching—that art, namely, is one and indivisible, and that he who would be pre-eminent in one must not be absolutely without rank or recognition in the others; that from the architect, as from no other artist, there is required a catholicity of sympathy with all that is great and ennobling in human life; that, with Terence, you ought each one of you to declare that "I am a man"—or, rather, we may phrase it, "an architect"—"and nothing that belongs to man do I regard as insignificant to me."

At the close of the paper a short discussion followed, in which the President, Messrs. W. Burrell, A. H. Clark, E. H. Sim, J. C. Stockdale, F. T. W. Goldsmith, and Houston took part, and a vote of thanks was heartily accorded the lecturer.

SOMETHING ABOUT CHIMNEYS.—VI.

We can now speak of the question of downdraught. To treat this particular subject in its relation to chimneys alone (for it applies to ventilating-shafts, &c., in a like degree) at all fully would be an enormous task, and whatever care might be used in compiling the information, it would be an unsatisfactory one. In the first place, there are many causes of this phenomenon; then, although the trouble is known to proceed from a certain cause, a remedy in the form of some patent chimney-top may answer in one case, but it may fail in half a dozen others, although the circumstances from ordinary examination appear to be exactly alike in each one. It will be seen what a great task would be involved if any attempt were made to show what styles of chimney-tops were suited for certain indications of trouble; in fact, it would be impossible, as everyone interested in these works will admit. There is one real cure that can be adopted by everyone—viz., raising the chimney sufficiently; but without resorting to this method it is impossible, in quite the majority of cases, to decide what is suited without some experiments. This is usually necessary even when the work has been inspected and everything, one would think, should be clear to the mind. Smoky chimneys are problems. To those with wide experience—i.e., practical experience, the solutions are commonly discovered with a certain degree of ease; but not always, by any means.

Now, to give what useful information is possible, it must first be explained that down-draught is of two characters. First, a down-blow in the chimney of a gusty character, which at one moment is sending smoke, and possibly flame, directly into the room; then the next moment the chimney is calm, and possibly working normally. Intermittent in its action, in an irregular way. Secondly, a down-draught of a very regular kind, one that acts for all the world as if the chimney wanted to show how permanent and steady its draught was; but, unfortunately, the draught takes a descending instead of an ascending direction.

The first of these manifestations is invariably noticeable at certain times when the wind is in particular quarters, blowing from what may be termed objectionable directions; but, of course, there is no one direction from which the wind blows more objectionable to chimneys than another, and in some of these troublesome cases it may be the west wind that causes the down-draught, and in others it is when the wind is from the east or some other quarter. Now, in practically all these cases the trouble is brought about by the chimney being of insufficient height. Not perhaps insufficiently high to act successfully if other conditions were favourable, but of such a height that some adjacent building or object (or it may be a tree) is higher, and deflects the wind so that it interferes with the ordinary up-draught of the chimney in question.

To insure any real reliance in the effective working of a chimney, it must not only be as high as its surroundings, but in nearly every case it should be higher by at least 6ft. Take, for example, the shape of the roofs on most of our suburban properties—they are ridge-shaped. If a chimney terminates level with this ridge, or even a foot above it, there is the probability of its being troublesome, notwithstanding the chimney itself is several feet from the ridge in question. With this particular class of roof, it is not always the case that chimneys terminating less than 6ft. above the roof have been a source of annoyance, as many other things govern the results; but many instances have come to the writer's notice, and been remedied by being heightened either with brickwork or a tall pot, In these cases the trouble has arisen chiefly when the wind has blown so that it passed over the roof before reaching the chimney, and as it passed the ridge, it had necessarily to pursue a downward direction more or less abrupt, and its force was thus directed into the open chimney-top, as Fig. 14. With an example of this kind it will be seen that any variation in the direction of the wind would bring about a varied degree of annoyance; and so, also, as the wind was strong or the reverse, the results would be greater or less accordingly.

A state of things which, it will be understood, brings about this down-draught, but which is more difficult to deal with, is when the chimney is part of an addition or wing to a house, and which is considerably lower than the main building. There are thousands of such cases amongst the large residences in the west of London, and a really great number of suburban houses are planned with what is termed a back addition. These additions are almost always lower than the general building, and the chimney tops often terminate from 20ft. to 40ft. below the roof of the main structure which is near beside them. With these the action is much more pronounced than with the ridge-roof example just given, for when the wind beats against a wall and has no ready or free means of escaping, it produces a very violent motion, swirling about, and, it would seem, blowing in ever so many directions at once; and where money is not a great object, there have been instances of people trying every description of cowl and windguard they could purchase to try and make such chimneys effective, but without avail, or with a very limited sort of success at the best.

In cases such as this a cure could be certainly effected by carrying and continuing the chimney up to above the main building, terminating it level with the other and effective chimneys that are up there, and which work the different fires in that part of the house without the trouble in question. This, however, is where the bother arises. The chimney to be cured may be 30ft. or more from the wall, and supposing it were carried across to this point, it would, perhaps, have to go up a considerable distance, and although quite possible, it would be an expensive matter, and this leads people to trust to the statements that appear in the circulars of windguard-makers. If any readers want to make interesting little experiments respecting this subject, let them just get a short length of glass tube, and put very small pieces of cotton wool in it. The wool should be little loose, fluffy pieces that will move with a little daught like smoke. It will be found in the very first place that a current of air across the top of the tube will induce a rapid updraught in it without the assistance of fire or heated gases, and directly air passes sharply across the upper end, the cotton wool will fly up and out at a speed too quick for the eye to follow. By placing different objects around the tube, many peculiar results can be noted. Enough will be learnt to show that a chimney top should be clear above everything, and nothing ought to project above it anywhere, not even the chimney-pot next to it: they should be level. When chimneys are terminated in brickwork at the extreme top, a brick out of place, or even irregularly laid, may very possibly give pronounced ill results.

The other form of downdraught—viz., that which is more constant or steady than the last, proceeds from an entirely different cause, and many are the strange ideas workmen entertain in regard to it. To those who know the cause, the efforts to cure it on the part of those who are ignorant are always entertaining. This is a form of down-draught that no cowl and no raising of the chimney will cure; the latter, however, might possibly alter the effect.

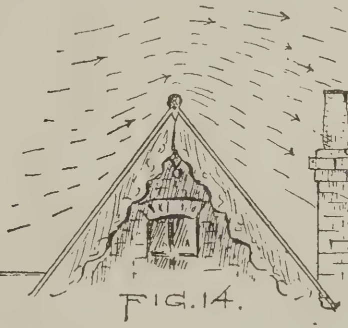
FIG. 14.

The cause of this trouble has been christened "siphonage"; but this is scarcely a correct term. The real action is that of air descending one chimney to provide that which is needed to maintain the up-current in another. In other words, there are two chimneys, either in one room, or they may be in two adjacent rooms. Air is needed to make the up-draught in these, but it cannot be obtained; consequently one chimney, the stronger we may assume, by its up-draught, causes the necessary inflow of air to come down the other. To some extent it is similar to the action explained in Article IV., when it was tried to work one stove with two chimneys.

Everyone knows that the up-draught in a chimney is nothing more or less than a current of air, and a moment's thought is sufficient to show that this unceasing up-flow represents a considerable volume. Now, where does this air proceed from? From the room in which the stove is, of course; but where does it proceed from to get into the room? The chimney does not exhaust the room of air. In fact, the chimney would not act unless air entered the room just as fast as the chimney withdrew it. It will be found that the primary entrance for air into a house is the outer doors, front and back, and through the crevices of these (when they are not open) comes all the air for respiration, combustion, and draughts for chimneys. This is supposing some special system or mode of inlet ventilation is not provided, and it quite usually is not. The crevices round windows provide a little, but it is a very small quantity, as these are usually well fitting, especially in good houses.

Having explained this much, an explanation of an instance where this trouble occurred will make the rest easily understood. A complaint came from a house in the suburbs of London that a room had a fireplace in it that could not be used owing to the persistent down-draught in the chimney, and the room itself and the one adjoining were rendered almost unbearable by the very strong odour of soot. Upon examination it was found that these two rooms that were adjacent were only divided by folding doors, and the doors were kept open. There was a fireplace and chimney in each, but while one was effective (there was a fire burning in it at the time) the other was quite the reverse, and it caused the odour complained of. The air seemed to issue from this chimney into the room instead of being the other way about. Further examination showed that with the view of making the rooms very cosy and free from draughts, the crevices all round the doors, and also the windows had been neatly and well fitted with draught tubing, and the rooms were practically air-tight when the doors and windows were closed. These were kept closed as a matter of course in the severe weather when fires were needed. Now where was the air needed for the chimney draught to come from? The first thought would be that both chimneys would fail to act, there would and could not be any up-draught in them. This, however, can rarely be the case, as the power of the chimneys would not be so exactly balanced. Furthermore, whichever had the fire lighted first would be rendered more effective than the other, and once there is that which goes to make the chimney act in the way it should, the air will rush in from somewhere, and in this instance it came down the other chimney, for there was no other way. The occupants had tried to stop it by closing the folding doors; but these did not fit at all closely: if they had, then there would have been every chance of both chimneys being failures. Of course, the down-draught in this particular chimney was instantly stopped when a door or window was opened to let a supply of air in; but to have a door or window constantly open could not be thought of, so the trouble was overcome with an inlet ventilator placed in each room. The cause of the trouble was merely want of air. It had happened in this very instance that a local tradesman had been called in, and he volunteered the information that his cures of down-draught were very numerous, as he had a patent pot of his own that was irresistible. Of course, he put one of these pots on, and equally of course it did no good whatever. He then attributed the trouble to a supposed defective state of the chimney, and from first to last he never went into the room where the trouble was noticeable—he had no need, he said. It is a too common practice for people to think that application must be had to the top of every troublesome chimney; certainly with quite the majority of instances of down-draught; the top is the part to be attacked; but otherwise it is as often the bottom where the cure will be effected.

In case it should have been gathered from what was just said, that short or low chimneys are not effective, it must be clearly explained that their non-effectiveness when it occurs is entirely due to their surroundings. A short chimney will work well if there is nothing higher adjacent to it, and, in fact, when working stoves and cooking ranges in open fields, military camps, &c., it is astonishing how effective a very short chimney will be found. As this is being written there is a gas-fire near by, and this has a pipe-chimney to it, which is only 4ft. in its extreme height. Although this is so short, the passage of hot gases up it make quite a loud and hoarse humming noise; in fact, it is too effective, for it lessens the effectiveness of the stove a little. A cooking range at Aldershot in a low building has 8ft. of pipe to act as a chimney, and remarkable though it may seem, this induces sufficient draught to draw the flame and smoke from the fire round the oven, to all appearances as well as a tall brick chimney would do. At any rate, the range works most successfully, and shows no need for improvement.

F. Dye.

THE END.

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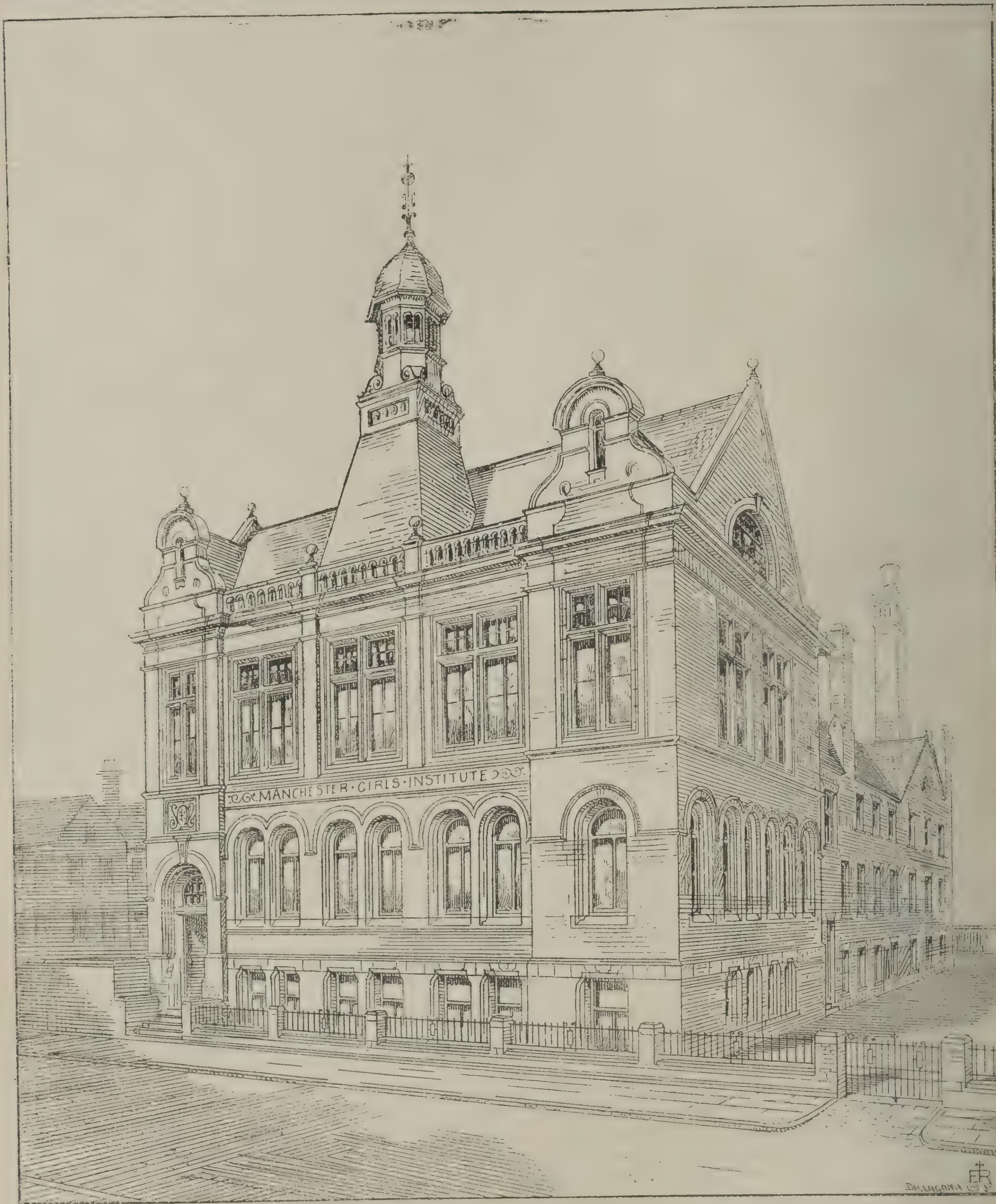
ROBERT BOYLE AND SON, LIMITED.

THE directors of Robert Boyle and Son, Limited, ventilating engineers, London and Glasgow, have resolved to pay an instalment on account of dividend at the rate of 12 per cent. per annum, free of income tax, for the half-year ending March 31st last. Considerable improvements have been effected in the self-acting air-pump ventilator, rendering it more powerful as an exhaust, and absolutely waterproof and free from downdraught. It is made of rolled steel plates, galvanised, and is now sold at 50 per cent



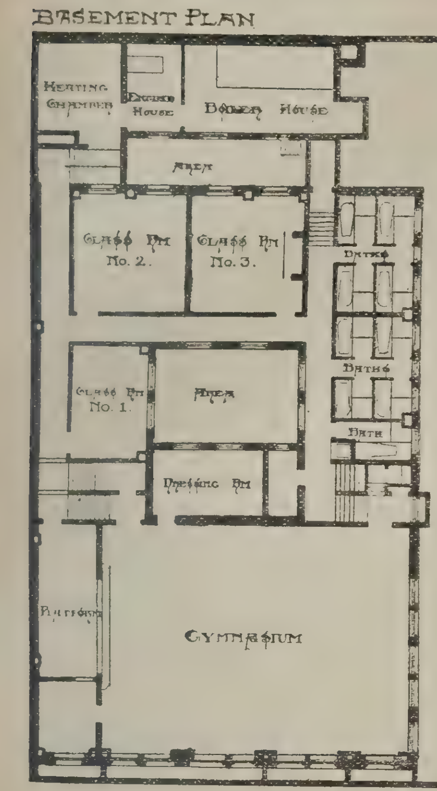
less in price than previous and inferior forms, constituting it not only one of the most efficient, but cheapest, ventilators in the market.

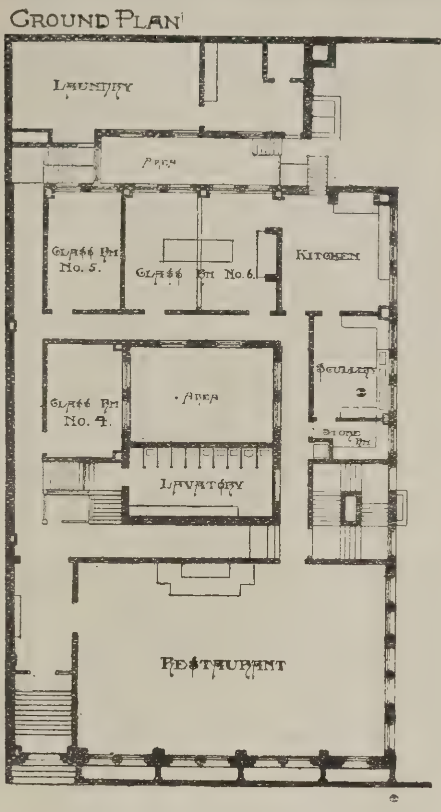
* * *

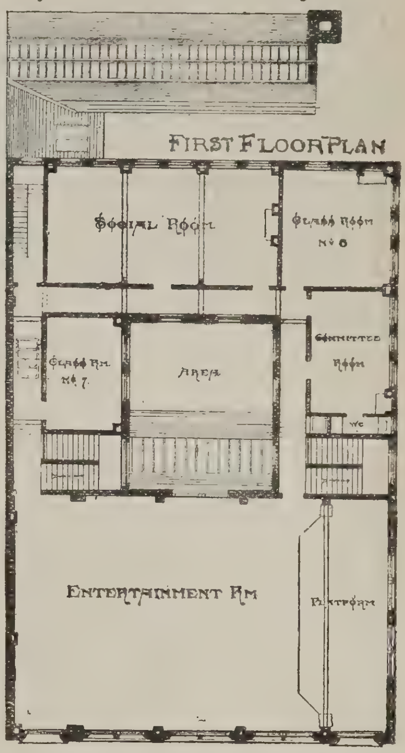
THE MANCHESTER GIRLS' INSTITUTE.

[with lithographic illustrations]

THIS building, which is to be formally opened by Lady Aberdeen to-morrow (Saturday), has been erected in the densely populated district of Ancoats, Manchester, and adjoining the Ancoats Hospital. The site contains about 1,260 super. yards, the greater portion of which is covered by buildings. The main frontage to Mill-street is 30yds. The ground floor, which is raised some 8 or 9 feet above the level of the street, contains a large restaurant, 52ft. by 32ft. 6in., to accommodate several hundred girls, a cooking kitchen, scullery, and pantry, and cooking and other class-rooms. The lavatories are arranged on one side of an open central court or area, and are well lighted and ventilated. The basement contains a gymnasium and gallery for the use of the public, a dressing room, private wash-baths, and class-rooms. On the first floor is an entertainment room capable of seating 700 to 800 persons; there is also a committee room, social and class-room on this floor. A caretaker's house is provided on the second floor. The staircases and corridors are of ample width, and are fireproof, and a hoist is provided for easy access to all parts of the building. The laundry and washhouse are placed over the boiler house and heating chamber, which form a separate block of buildings at the rear of the institute, but which are connected therewith by a covered corridor and staircase. The corridors, staircase walls, and walls of baths are lined with glazed brick dados. The whole of the rooms are well lighted and ventilated. Our view shows the institute as seen from Mill-street. The dressings of the exterior, viz., strings, heads, sills, cornices, and copings are executed in red terracotta supplied by the Accrington Brick and Tile Company. The front portion of the roof is covered with Buttermere Green slates. Messrs







Strode and Co., London, have supplied the ventilating sunburner. The cost of the works, which will exceed £8,000, is being defrayed by voluntary contributions. Mr. W. H. Johnson is the chairman, and Mr. County Alderman Forrest the hon. sec., who, together with Miss Browne, and other philanthropic ladies and gentlemen, have been instrumental in providing the Institute, which was greatly needed in the district. The whole of the works have been carried out by Messrs. R. Neill and Sons, contractors, from the designs of the architects, Messrs. Darbyshire and Smith, of Manchester, and Mr. T. Kelly, of Bradford, has acted as clerk of works.

ROYAL SOUTH LONDON OPHTHALMIC HOSPITAL.

THIS commodious building, which has been erected on the northern side of St. George's-circus between Blackfriars and Waterloo roads, is nearly completed, and last Saturday was visited by a large number of the Architectural Association, who were conducted over the building by Professor McHardy, in the absence of the architect, Mr. Keith D. Young, F.R.I.B.A. The hospital, which is a very complete one, comprises many features, and the visitors were interested in the arrangement and appliances of the several floors. A spacious and well-lighted waiting-room is provided in the basement for out-patients. From this staircases ascend to two consulting-rooms on the ground-floor, these being divided for the two classes of patients; each room has a bandage-rooms, two ophthalmoscopic rooms, and a consulting-room attached. The arrangement of the operating-room, and the positions of entrance and exit for the medical staff and patients, are clever. The secretary and official rooms are well placed on this floor, which has a wide entrance for officers only. There is also an isolated room, a dispensary at the west end, with attached waiting-room and spectacles room. The first floor provides for the surgeon's apartments at the west end, a laboratory and matron's apartment at the east end; the second and third floors are devoted to large end wards and private bedrooms, between these latter being lighted by the windows in front, with corridor in the rear. The end wards form the extreme wings, and are lighted on both sides, and will be devoted to the poorer patients. Each ward has a floor of oak parquet, laid by Messrs. Turpin and Co., of Queen's-road, Bayswater, W. The walls are of light glazed bricks with brown dado of the same material; it is warmed by hot-water coils on a plan devised by Professor McHardy, which permits any separate coil to be disconnected from the system without interfering with the circulation. There are four private rooms, and an operating-room in the centre, on each floor, also two closets, combined sink and shower-bath, which are cut off by isolating lobbies, and these have also a horizontal intercepting air space between each set of closets. Professor McHardy's bed-pan, sink, and slop-sink is an excellent and cleanly apparatus, which enables bed-pans to be placed over the sink and cleansed. Each floor has a hot- and cold-water supply from one tap, a letter lift, a medicine lift, a passenger lift, and fire-escape, cut off by an outer lobby from the main building, and constructed of wrought-iron framework. The top floor has the kitchen and stores, bedrooms for in-patients, a refuse shoot, &c. The main staircase, of circular shape in the back wall, has a large circular shaft of glazed bricks, with a concrete double flight of stairs, ascending and descending, from basement to roof-flat. The concrete slabs and stairs have been executed by Messrs. Lascelles and Son, of Bunhill-row, and are very excellent features. The brick newel or shaft in the centre forms a smoke and ventilating shaft. Each bedroom ward has a distinct corner ventilating flue. The corridor floors are of red cement; all angles to walls and floors and ceilings are rounded. All the inner walls are lined with glazed bricks of various colours and of special character, made to suit the various corners so as to avoid any square angle, and supplied by Messrs. Joseph Cliff and Sons. Externally the elevation is of plain design. The moulded red bricks in the dressings of the windows, cornices, and balustrading were specially made to the architect's designs by Mr. Jas. Brown, of Cannon-street; the red facing bricks of the façade are of good colour and make, and were supplied by Messrs. Lawrence, Bracknell; the stocks are by Messrs. Smead and Dean, Sittingbourne. We must also notice in commendation the terracotta specially modelled to the architect's designs by Messrs. Edwards, of Ruabon. The roof is flat, and will afford a useful promenade. It has been laid with the excellent asphalte supplied and executed by Claridge's Asphalte Co., Victoria Embankment. This asphalte roof forms a weather-proof as well as fire-proof covering, the gutters and flashings being all of this material, finished by fillets against the brickwork. As a surface for walking upon nothing can be better. The internal ceilings, &c., have been finished in Parian cement, supplied by Messrs. Francis and Co., Ltd., of Nine Elms, S.E. The passenger and luggage and other lifts are the work of Messrs. Archibald Smith and Stevens, of Queen's-road, Battersea, S.W., while the electric bells, telephones, speaking tubes have been fitted up by Messrs. Sax and Co., of Soho. The constructional ironwork, which is of a very substantial character, the floors being all fireproof, has been executed by Messrs. Lindsay and Co., of the Paddington Ironworks, W. The pavement-lights in front and on the roofs are those of Hayward Bros. and Eckstein, of Union-street, Borough. The general ironmongery has been done by Messrs. Hart, Peard, and Son, of Wych-street, and Messrs. Richardson and Ellison, of Brownlow-street, Holborn, have furnished the tradesmen's entrance and other wrought-iron grills. The sanitary work has been executed with much skill, and we may mention the terracotta air-flue pipes and tested drain-pipes have been supplied by Henry Doulton and Co., Lambeth Potteries. The carved foundation stone with Royal arms in the Waterloo-road front was presented by Mr. Brindley, of the firm of Farmer and Brindley. We may add that the general contractor is Mr. W. Downs, of Hampton-street, S.E. Mr. Wilkinson is the general foreman of contractors, who have well carried out the work, while the whole has been personally superintended by Mr. H. J. Heathe, under the architect. Mr. Heathe superintended also the demolition of the old hospital and adjoining property, and has had the entire charge of the work to the present time.

NOTES ON TERRACOTTA.*—IX.

BEFORE GOING INTO KILN.

THE blocks, when turned out of their respective moulds, are sometimes allowed to stand as long as two or three weeks in the moulding and finishing-room before removal to the drying-shed, during which time they are "fettled"—that is, finished—as soon as the blocks have, by the partial evaporation of excessive moisture, acquired a sufficient degree of stiffness to admit of that operation, the favourite tool being a table-knife, which is drawn over the plain faces to close the pores, and leave a smooth polished surface, all sharp edges being slightly, though inappreciably, rounded in the same way. The "cold" spots in the drying-shed, described in the previous article, may often with advantage be used for the reception of the blocks during the first few days of drying. The heat in some sheds is allowed to range from 90° to 100°; porous clays of a sandy nature are said to be capable of standing 120° of heat without developing cracks. In one particular drying-shed which the writer has in mind, warmed by nine 2in. steam-pipes—three running down the centre of the shed, and three down each side—from 60° to 65° of steady heat is considered to be enough to sufficiently and safely dry the large blocks, and 70° the small blocks, each remaining in the drying-shed one week before going into kiln. The two methods above described are practised in the same immediate district by two different manufacturers—one believing in placing the goods in kiln anything but dried, the other believing in well-dried goods. The writer believes that a concensus of practical opinion, if taken, would be against the practice of putting imperfectly-dried blocks—especially in large quantities—in the kiln, considering it a source of danger to the form and colour of the goods. Blocks so put in are known to often "blow"—that is, break into two or more pieces.

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Recent correspondence and criticism, provoked by the publication of these Notes, have shown that scum is the chief bane of the manufacturer of terracotta, even in the best clays. The scum, as a rule, makes its appearance during the process of drying; hence the advantage claimed for slow drying to that degree known as white dry—that is, to the degree in which there is little *mechanical* moisture present in the clay—the slow and more effectual drying giving the free salts time to be thrown off and the scum to be detected. In one of the clays whose analysis was given in the first of these articles, the scum appears as a brown dust on the face of the blocks, having the appearance of being forced through the body of the clay, and which can be scraped off with a sharp knife before placing the blocks in kiln. It is remarkable that out of one batch, or even one barrowful of clay, several blocks may be made, produced from the same mould, some of which will scum, while others remain perfectly free of scum. The writer believes that scum might be much reduced by devoting more time and care to the breaking up and weathering of the clay, instead of, as in some cases, working it direct from the clayhole, devoid of all breaking up and weathering, except that which it receives in the process of passing through the rollers and the pug. It has been already stated that it is only the very best clays that can be treated in this careless way. In some instances the clays when dug or blasted, whichever it may be, are cut or broken into pieces in size of 3in. or 4in., and in this condition are set apart to be watered and weathered during a period varying from one to four weeks, after which it is passed through the rollers, and thence into the pug. The scum is not always easily detected, and where the washing process is in vogue, it is frequently the practice to subject all the blocks to the same treatment. The white surface stains produced in the kiln can often be removed by a vigorous application of sand and water and a hard scrubbing brush. One of the latest methods practised for the removal of scum produced in the drying-shed, is to rub the exposed faces with a piece of emery cloth, afterwards removing the dust occasioned by this by means of a soft hair brush and water. Dipping, washing, scraping, and rubbing have all been tried as a means to overcome the plague of scum. Evidence of this rough treatment may be seen on the crazed and weather-worn faces of individual blocks in some of our best terracotta-faced buildings, which a due sense of propriety prevents the writer from naming. It now remains for manufacturers to seek an antidote, and to attack the cause of the evil in the incipient stages of manufacture, rather than the effect appearing in the form of scum. The writer is not to be understood as advocating any of the methods given above, but rather as giving a *résumé* of the methods practised.

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NEW PREMISES, CORNER OF NEW BOND STREET.

[WITH LITHOGRAPHIC ILLUSTRATIONS.]

THE building shown in the illustration is at the N.E. corner of New Bond-street, and has frontages both in New Bond-street and Oxford-street, and stands on the site of the premises occupied for many years by the well-known chemists, Messrs. Corbyn and Co., together with the adjoining houses on either side thereof. The design is of plain and substantial character, of the Renaissance period, and trusts to proportion rather than elaboration for effect. The street frontages are entirely of stone, the ground floor of red Mansfield, and the upper portion of Portland stone, the Mansard roofs being covered with grey slates from the Sedan quarries. The shop-doors, sashes, and fittings are of Italian walnut wood. The corner entrance is surmounted by an oriel window, and the frontages have also bay windows introduced, to break the monotony of the fronts. The upper story has stone dormers, with semi-pediments, having enriched tympanums. The peculiar contour of the site, added to its narrow depth at the east end, made the planning to meet the requirements a problem of some difficulty. The building comprises the corner shop, with private office attached and basement under, having living apartments for the assistants over the adjoining shop in Oxford-street, and is occupied by Messrs. Corbyn and Co. The shop in Oxford-street, with basement and show-room on first floor, is occupied by Messrs. Briols, art furniture manufacturers, of Berlin. The other shop, with basement, in New Bond-street, is occupied by Mr. Crouch, jeweller and diamond merchant. Over that and the corner shop is a complete and separate set of residential apartments. The builders were Messrs. Hatfield and Son, of King-street, W., the special work being executed for them by Messrs. Burke and Co., Homan and Rodgers, Richardson and Ellson, and Campbell and Smith. The works were carried out under the superintendence and from the design of Mr. T. Harris, F.R.I.B.A., of No. 6, Southampton-street, Bloomsbury, W.C., Mr. Constantine acting as clerk of the works.

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PARLIAMENTARY NOTES.

Westminster Abbey.—Mr. Shaw-Lefevre asked the First Commissioner of Works on Tuesday whether he could state what action the Government proposed to take with respect to the report of the Royal Commission on Westminster Abbey, and especially with reference to the recommendation as to the demolition of the houses in Old Palace-yard, which it was alleged would be the cause of danger to the Abbey in the event of fire. Mr. Plunket: The Government have not yet arrived at any decision either as to the alternative sites for a memorial chapel or with reference to the houses at Poets' Corner and in Old Palace-yard. I have communicated with the Ecclesiastical Commissioners, who are the ground landlords of the houses in question on the subject; and I am now in communication with the Dean and Chapter of the Abbey. The leases of those houses will expire at periods varying from one to 12 years from the present time; and it is obvious that, whatever plan is ultimately adopted, the leases should not be renewed.

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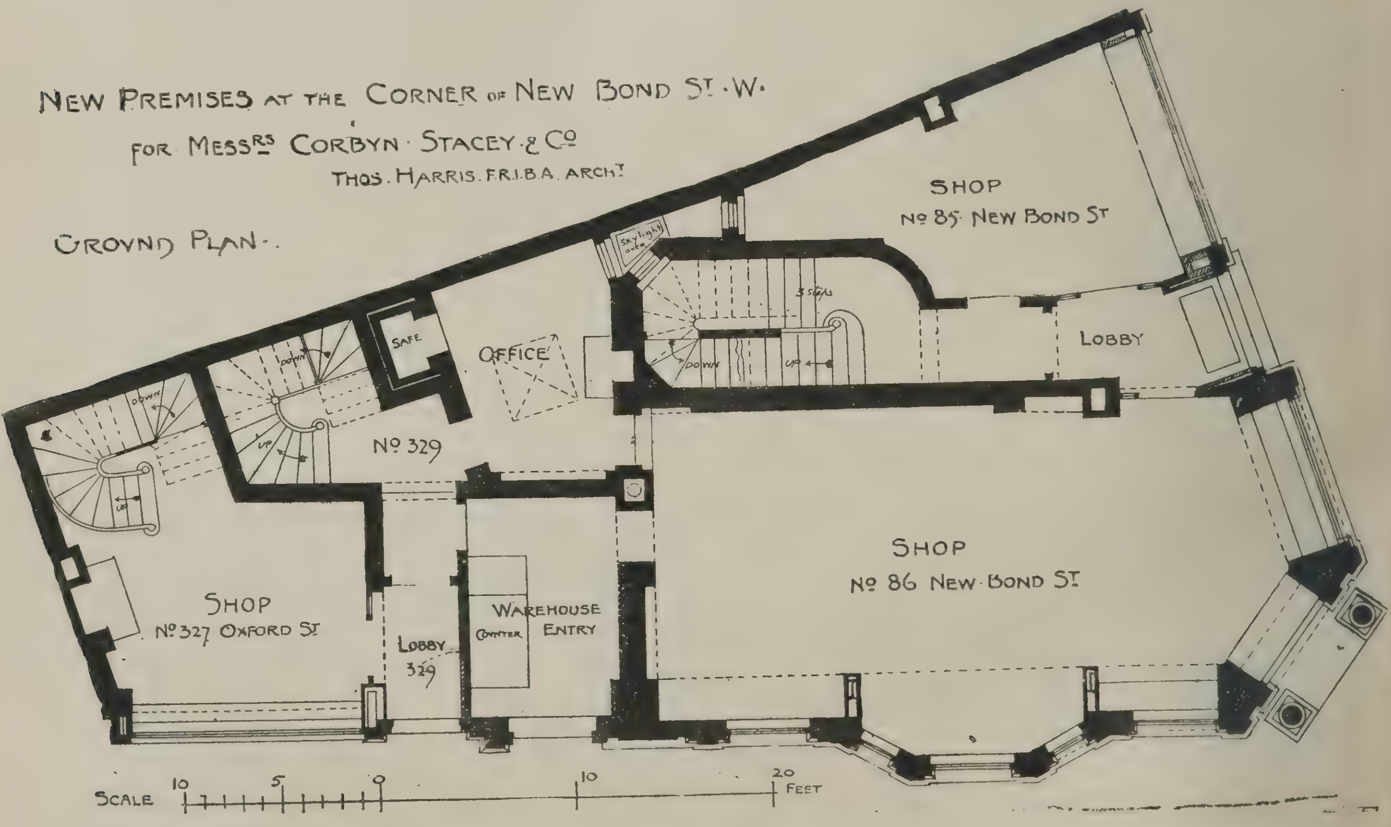
After several days' hearing, the Committee of the House of Lords, presided over by Lord Kensington, passed, on Monday, two Bills authorising the North-Eastern Railway Company to acquire the undertaking of the Hull Docks, and to construct a new dock and railways connected therewith at Hull.

At a general meeting of the Royal Institute of Painters in Water Colours, held on Monday evening, Messrs. R. B. Nisbet, G. Sheridan Knowles, C. MacIver Grierson, and St. George Hare were elected members.



CONTENTS.

Building Committees and Architects 491
Tall Chimneys... 491
Royal Institute of British Architects 492
The Architectural Association 493
Something about Chimneys.—VI. 494
Robert Boyle and Son, Limited 495
The Manchester Girls' Institute 496
Royal South London Ophthalmic Hospital 497
Notes on Terracotta.—IX.... 497
New Premises, Corner of New Bond-street 498
Parliamentary Notes 498
The BUILDING NEWS Directory XIII
Our Illustrations 499
Wayside Notes 518
Architectural and Archæological Societies 518
Building Intelligence 519
Competitions 519
Engineering Notes... 519
Correspondence 520
Intercommunication 520
Legal 521
Legal Intelligence 521
Water Supply and Sanitary Matters 521
Our Office Table 522
Meetings for the Ensuing Week 522
Trade News 523
Tenders 524

ILLUSTRATIONS.

BRESLAU RATHHAUS.—LAVENDER HILL SCHOOLS.—MARKET CROSS AND CATHEDRAL, CHICHESTER.—NEW PREMISES, CORNER OF NEW BOND-STREET.—CHURCH OF ST. AIDAN, WEST HARTLEPOOL.—RESIDENCE, IGHTHAM PARK, NEAR SEVENOAKS.—CONSTRUCTIONAL DETAILS OF WROUGHT-IRON FOOT-BRIDGE (SECOND SHEET).—NEW GIRLS' INSTITUTE, MANCHESTER.

Our Illustrations.

THE RATHHAUS, BRESLAU, GERMANY.

BRESLAU on the Oder is a prosperous city of considerable consequence, and the picturesque Town Hall, which forms so conspicuous an object in the Grosse Ring, is one of the glories of Mediæval Prussia, built by King John of Bohemia in the 14th century. Inside much later work enriches the fabric in a florid style, characteristic of two hundred years after its foundation. The ancient assembly-hall of the Princes of Silesia was used for their councils, and here in the Furstensaal, Frederick the Great received, in common with other crowned heads, the sworn allegiance of the Silesian states. The grotesque and extravagant carvings of this building are remarkable, extending to such a subject, for instance, as "the Devil wheeling his grandmamma in a barrow." Ancient justice was executed in front of the Rathhaus against the Staupsäule or "scourging-post," put up in 1492. On the top of this column stands a figure holding a sword and rod, emblematic of the riches of reward for evil-doers. Under the town hall is a vaulted hall now used for storing beers so dear to Germans. The picturesque outline and varied detail of the building is shown well in by Herr Mannfield's admirable etching, which we herewith reproduce. We printed his plate of Erfurt's Cathedral a few weeks ago, when we drew attention to some others by the same hand, such as that of Albrechtsburg, and of the "Artus Hof" at Danzig. Herr Mannfeld was born at Dresden in 1848, his grandfather, Karl Scheinert, the glass painter, being director of the drawing school connected with the porcelain manufactory at Weissen. From him and from Georgi, a Dresden painter of Oriental scenes, he received his first artistic impulses, though he is mainly self-taught. He has worked in a stained-glass manufactory, and as an illustrator and painter in water-colours. He travelled all over Silesia making drawings of old tombstones for Count Hoverden—a work which occupied him five years. We are indebted to Herr Raimund Mitscher, of Berlin, for the permit to illustrate the present work.

LAVENDER-HILL SCHOOLS.

THIS group of buildings is now in course of erection by the School Board for London, from the designs of their architect, Mr. Thos. J. Bailey, and, as will be seen from our illustration, comprises a graded school for 360 boys, 360 girls, and 480 infants, with a central hall, cloakrooms, &c., for each department, and a large drawing classroom in the roof over the upper hall, approached from the staircases at each end of the school. Also a pupil teachers' centre, consisting of three classrooms on each floor, with a hall on the ground floor, a commodious chemical laboratory on the first-floor, and on the upper floor an art-room, open and closed gymnasia, &c. The schoolkeeper's apartments are provided in a separate building over the cookery school. The playgrounds are ample in extent, and are provided with shelters. The contract is being executed by Messrs. S. Betham and Co., of Buckingham Palace-road, S.W., at the sum of £23,701.

CHICHESTER MARKET CROSS AND CATHEDRAL.

OUR illustration of this beautiful specimen of early 16th-century work is taken from the pen-and-ink drawing by Albert G. Thompson, which was exhibited in the St. James's Gallery last winter. The cross is said to have been erected by Bishop Storey in the sixteenth year of the reign of Henry VII., which would make the date of the building about the year 1500. It is situated at the junction of four roads, the site having been obtained from the mayor and corporation for the sum of £10, and under its shelter the poorer people of the locality were allowed to sell their butter, eggs, and other produce free of toll. The structure is about 50ft. in height, and is octagonal on plan. The length of each side from centre to centre of and outside the buttresses being about 11ft. 6in. The roof is supported by the massive central pillar, which is about 4ft. 9in. in diameter, and from which spring the ribs of the groining. The internal angles of the octagon are occupied by slender attached shafts, which also serve to support the ribs. The niches above the arches on each side formerly contained statues of the founder, St. George the patron saint of the city guild, and others; but these were destroyed during the Civil War. The elliptical niche on the east face is now occupied by a bust of Charles I. The niches on the W. and S. sides are filled by inscribed tablets, the western inscription, with the exception of two or three words, is now illegible; but that on the south side states that the clock was presented by Dame Elizabeth Farrington in the year 1724, "as an hourly memento of her good will to the city." The clock has four dials facing E. W. N. and S., and at the time of its erection the topmost finial of the cross was removed to admit of the construction of the existing lantern, which contains two bells, upon which the quarters and hours are struck, space being economised by the smaller bell being hung within the larger. The bosses and other ornaments in the space above the second tier of panelling, as well as those in the centres of the quatrefoils of the uppermost panels were, probably, originally all of different design, representing the conventional Tudor flowers and foliage, birds, and animals; but time has reduced the details of many of them to the dead level of obliteration. The whole of the S., S.W., and W. sides have suffered very severely from decay, but a movement is now on foot having for its object the repair of the whole structure. We published a water-colour by Mr. T. M. Baynes, showing a supposed restoration of the structure, in the BUILDING NEWS, Jan. 4, 1889.

NEW PREMISES, CORNER OF NEW BOND-STREET.

(FOR description see p. 498.)

CHURCH OF ST. AIDAN, WEST HARTLEPOOL.

THIS church has been erected for the rapidly-growing district of Belle Vue, West Hartlepool. The general architectural character of the church is Early English, and on plan comprises nave, aisles, and chancel, with organ chamber on the north, and choir and clergy vestries on the south side of the chancel. The chancel fittings, including organ case, canopied choir and priests' stalls, dossal hangings, side wings, and altar frontal have been designed on a very complete scale. The internal dimensions of the church are 118ft. long by 52ft. wide. Messrs. Walter Scott and Son, of Sunderland, were the contractors for the mason and bricklayer's work, and Messrs. S. Clark and Co., of West Hartlepool, for the carpenter and joiners' work. The whole of the work has been designed and carried out under the superintendence of Mr. J. N. Morton, F.R.I.B.A., architect, South Shields.

RESIDENCE, IGHTHAM PARK.

THIS house has been recently erected on the Warren Estate, near Sevenoaks, Kent, on the site of the old farmhouse, a considerable portion of the original building being retained and utilised for kitchen, offices, and servants' bedrooms. The sketch illustrates the new front and side, which provides two large reception-rooms, conservatory, billiard-room, six extra bedrooms, bath-room, cloak-room, and improved sanitary arrangements. The materials used in the construction are Kent ragstone (from a local quarry) with Bath-stone dressing, the roof is covered with slates, and the dormer windows executed in oak. The works have been carried out by Mr. R. Avard, builder, of Maidstone, under the superintendence of Mr. H. Percy Monckton, F.R.I.B.A., of 32, Walbrook, E.C.

CONSTRUCTIONAL DRAWINGS—II.: DETAILS OF AN IRON FOOT-BRIDGE.

WE gave the first two-page illustration of this subject last week, together with the specification and other diagrams.

THE MANCHESTER GIRLS' INSTITUTE.

(FOR description and plans see page 496.)

CHIPS.

The third annual *soirée* and concert in connection with the Edinburgh operative plumbers was held on Friday night in the Literary Institute in that city, when there was a large attendance. Lord Provost Russell, who presided, said he was glad to think that the United Operative Plumbers' Association of Scotland, with which they were connected, was likely soon to be the only one in Scotland. Formerly there were at least two societies; but there had been a disruption in the other one, and the result would be that a mutual arrangement would be made by which the society represented in the hall that night would become the sole society.

At the Manchester Consistory Court on Friday a citation was decreed on an application for power to make alterations to the parish church of Over Wyresdale, comprising the addition of a spire to the existing tower, a south porch and new window, and also the enlargement of the east end for the reception of the altar, a new pulpit, and the reseating of the chancel. The cost of the alterations will be defrayed by the Earl of Sefton.

The Bishop of Winchester laid the foundation-stone of a new church at Lake, near Sandown, Isle of Wight, on Monday afternoon.

Mr. W. Adams Murphy, a member of the Camberwell Vestry, was fined, on Friday, at the Lambeth Police-court, three guineas and costs for neglecting to comply with an order under the Public Health Act to put his house in proper sanitary condition.

"An old-established firm of architects and brick and tile manufacturers"—a curious and, we trust, unusual combination of occupations—advertised in Monday's *Times* for one or two pupils, "to gain a thoroughly practical and theoretical knowledge of the business." Although "the business" is thus emphasised, no mention was made of the "art or profession"; but it was added that land surveying and levelling would also be taught.

The French Salon will open on May 2, and on the same date the Spring Exhibitions of Nottingham, Birmingham, and Brighton will be opened. The Artists' Benevolent dinner will take place on May 7, and the Beaux Arts Exhibition at Paris opens on May 9.

Colonel Hasted, R.E., held an inquiry at the town hall, Morley, on Wednesday week, into the application of the Corporation for sanction to borrow £25,000 for providing a new town hall.

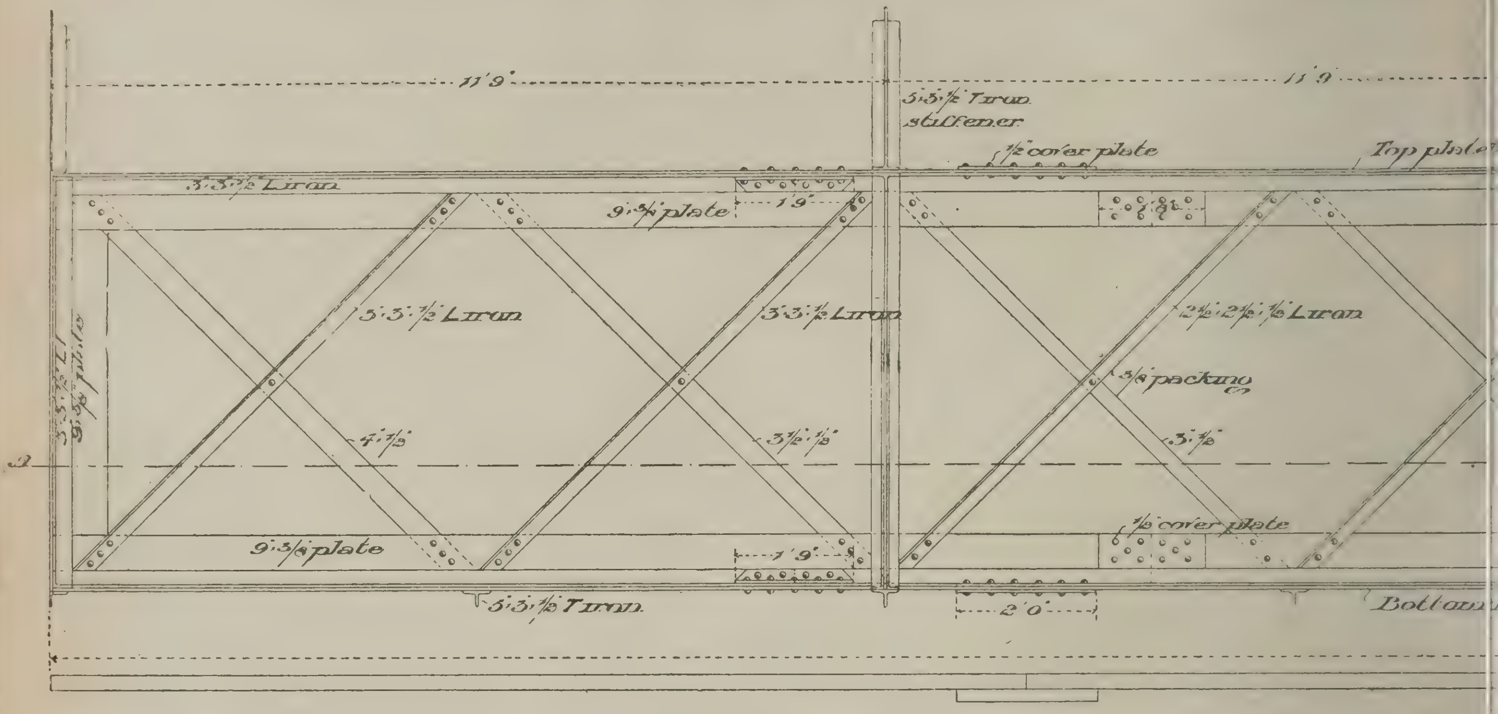
An arbitration case has been heard before Mr. A. E. Bull, F.S.I., in which Mr. Prebble, a builder, claimed compensation from Messrs. Robinson and Fisher, of Bond-street, for breach of a building agreement in respect of land at Hammersmith belonging to them, and on which claimant was building. The award has been reserved.

Mr. G. P. Finch, builder, of Grenville-terrace, Plymouth, has been the recipient of a marble timepiece, presented to him on the occasion of his marriage. To mark the occasion, Mr. Finch gave a dinner at the Masonic Hall to his workmen, numbering between forty and fifty, and it was at this gathering that the presentation was made to him.

Wyken Baptist Chapel, Coventry, was reopened on Friday, after undergoing important alterations. The principal improvement carried out was the substitution of pews and pulpit of modern style for those which have served since the erection of the edifice in 1845. The work was carried out by Mr. W. R. Topp, of Bedworth.

On Saturday Mr. Richard Cadbury formally handed over to the Mayor of Birmingham his late residence, Moseley Hall, which he has partially endowed as a convalescent home for children. The institution has accommodation for 150 beds, and, with the donor's endowment, is estimated to be worth £30,000.

CONSTRUCTIONAL DRAWINGS - Nº 2 - DETAILS OF AN IRON FOO



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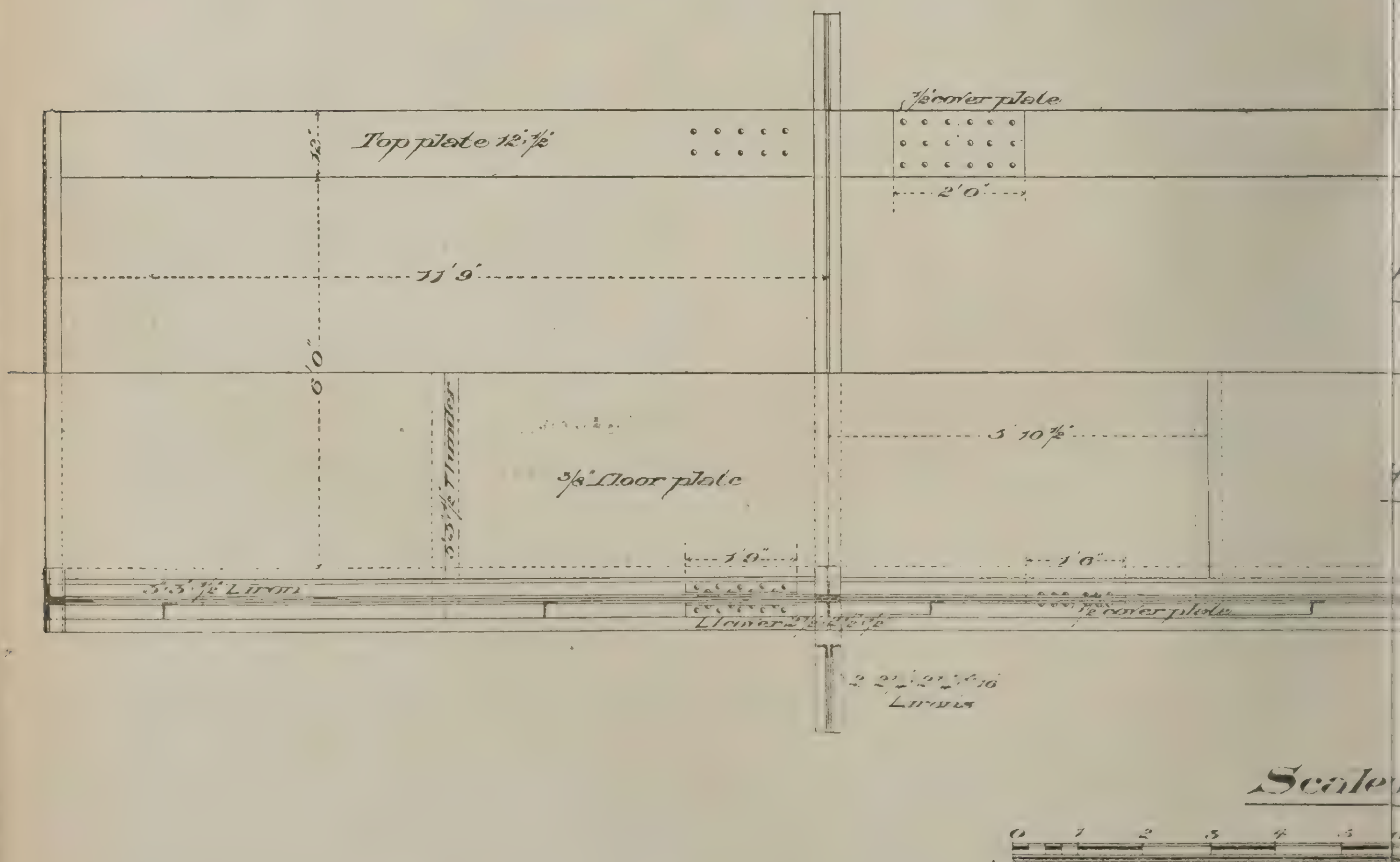
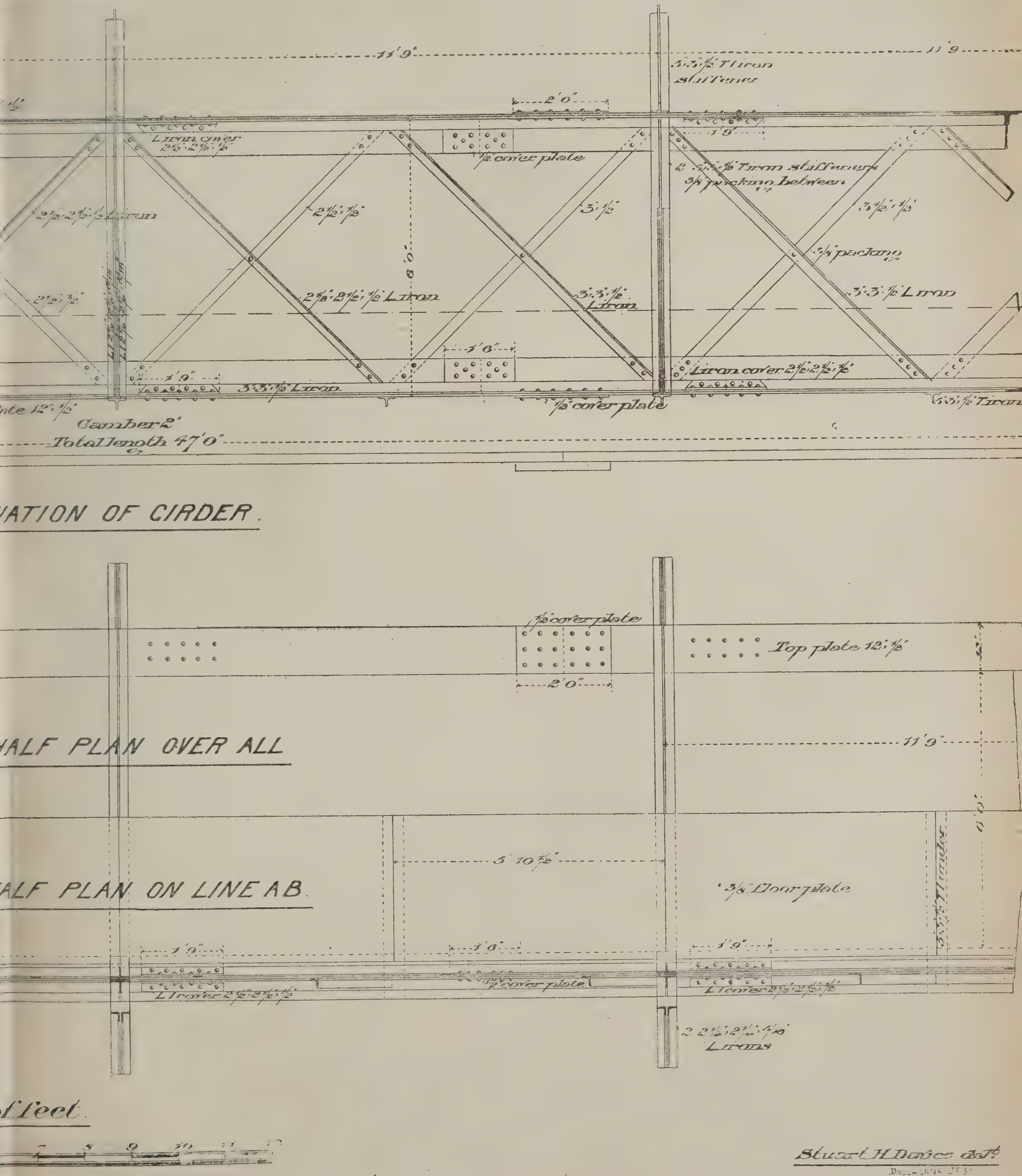


BRIDGE IN 47'0" SPANS.



Stuart H. Davies del.

WAYSIDE NOTES.

JUDGING from the evidence of Mr. Henry Irving before the Select Committee now inquiring into the regulation of theatres and music halls, the condition of many provincial theatres, even of a higher order, is wofully insanitary. Mr. Irving said that many lives had been lost in such places owing to the bad condition of the drainage and sanitation. From which we may gather that in the country dramatic sanitation is behind the age, for even the suburban jerry-builder now disconnects his house-drains, and makes, at least, some outward show of ventilation.

The Theatres and Music-Halls Committee of the L.C.C. have issued a report in view of the above-mentioned Select Committee, which report was discussed at Tuesday's meeting of the Council. The suggestion made therein seems to me most legitimate. Mr. Emden, it is true, contended that the Council ought not to take upon itself the regulation of amusements, which required quite as much technical knowledge as did the regulations with reference to mines, shipping, or education. If some of the councillors would carefully peruse Mr. Woodrow's most excellent paper on "Some Recent Developments in Theatre Planning," they might hold counsel to some purpose.

I expect that some day we shall find all the talk about "craftsmen and crafts"—as touching the training of an architect—to be pure cant, and where not cant, self-deception of well-meaning authors and orators. Some day we may awaken to the belief that, after all, an architect is an architect, and should be an architect. The present idea of many persons seems to be to try and prove that an architect is anything but an architect. He is an "artist," a craftsman, a cross between a builder and a clerk of works put into broadcloth, an engineer put through an artistic mill, or a builder's foreman with a soft tongue and a pair of kid gloves, &c., &c., to taste. Quite likely we may one day discover that an architect is, and should be, an architect. As said above, all this is often well and honestly meant. On reflection, therefore, I will leave an apparently disjointed paragraph, and not say what led me to this strain of thought; for that I might appear to criticise my betters, and write slightingly of those we know to be good men and true.

Look out for something quite "too-too." Some essays on architecture are to be published. They will be edited by Mr. R. Norman Shaw, R.A., and Mr. T. G. Jackson, A.R.A. The essays will expose "the delusive character of a diploma obtained by examination" and "the evil effect on the architectural student of leading him to make examination the motive of his studies." The main object of the publication will be to "put before the public more clearly and completely than was possible in the compass of the memorial itself [the renowned "Architecture: a Profession or an Art" memorial] the views of those who signed it, and the reasons by which they are guided." Besides the editors, contributions have been made to this work—now almost ready for press, and to be published by Mr. Murray—by Mr. Bodley, A.R.A., Mr. Champneys, Mr. W. B. Richmond, A.R.A., Mr. Micklethwaite, Mr. Reginald Blomfield, Mr. Newton, Mr. Macartney, Mr. Prior, Mr. Clayton, Mr. Lethaby, and Mr. G. C. Horsley.

Considering the sudden warmth of the weather, it was rather injudicious of Mr. Jackson, in his letter to this month's *A.A. Notes*, to group such an imposing array of names together. One is really not in a condition to receive shocks to the system; but I trust readers will bravely battle with the overpowering sensation that will come upon them at the sight of the names as here reproduced. It is hard on "A.R.I.B.A.'s by exam.," because evidently they are to be proved to have gained nothing, or something considerably less, by their examination. But we must all look over any drawbacks of this nature; for are we not now, at last, to learn what is architecture—what, in fact, is architecture? O happy and glorious age! O fortunate architects of the dawn of the twentieth century! Hasten Mr. Murray; hasten the wheels of the honoured printing-press destined to reveal the truth to the eyes and understanding of the British public! O golden era, when architecture, so long wrapt in the mists of uncertainty, shall at last rise clearly before us, at the bidding of her chosen handmaids! How long have we suffered in silence the thirstings for true architectural knowledge! Hail, great day, when architecture shall stand forth confessedly an art of arts; when professors and baselings shall be confounded to the dust. Nature herself anticipates you. The summer's sun shines in the vernal heavens, leaves and flowers struggle earlier to break the bonds of winter, and the young lambs skip betimes by the hedgerows.

In *A.A. Notes* is much worth reading. Let me be the last to say that Mr. Jackson's letter is not worthy of every consideration. An editorial "preparing for next session" anticipates the future work of the Association students. Mr. Edward F. C. Clarke tackles a problem that puzzles most grey-heads—"The Future of Architecture in England"—but we are bidden to be cheerful. Mr. William Stirling says, "would you know the new, you must search the old," and favourably reviews W. R. Letheby's new work on "Architecture, Mysticism, and Myth." It is the intention of the editor to publish from time to time designs done in the studio, and commences this month with a design by Mr. C. C. Winmill for a village church, which one can admire in part, while at the same time wondering what an average Englishman would think of the building. Allusion is made to the visit to the Tower Bridge, which just now presents a curious appearance as the lattice girders are being projected from the top of the tower. I am told the work has proceeded more rapidly of late, so that soon the girder should be made whole, and the unsightly and dangerous effect disappear. A really important piece of information to the average member is the date of the annual *soirée*, which is fixed for May 6, in place of April 22, as stated in the calendar.

The approaching disestablishment of the small newsagents' shop where I have bought my morning paper many years past, under the Holborn gateway of Gray's Inn, recalls, says the *Echo*, an eminently peaceful memory of old London. The porch itself was erected in the early part of the 17th century, and its genesis is slightly indicated by an old author who, in the last year of Elizabeth's reign, wrote: "In this present age there hath been great cost bestowed therein upon fair buildings, and very lately the gentleman of this house purchased a messuage and a curtilage situate upon the south side of this house, and thereupon have erected a fair gate and a gatehouse for a more convenient and more honourable passage into the High-street of Holborn, whereof the house stood in much need, for the other former gates were rather posterns than gates."

Those curious about the proposed Campo Santo at Westminster will have been interested in Mr. Plunket's reply to a question in Parliament. The Government has not yet arrived at any decision with reference to the alternative sites. Since, however, Mr. Plunket alluded to the leases of the houses in Poet's Corner and Old Palace-yard, and the communications passing between the Dean and Chapter and the Ecclesiastical Commissioners as owners of this property, it would appear that one of the schemes is most favoured.

A writer of some note, and an architect withal, has discovered that Wren's western towers at Westminster Abbey are "far better than those of Canterbury, York, or, perhaps, any of our ancient ones, except Lincoln."

If Wren's library at Lincoln goes the way of much good old architecture, it will not be from want of protest from many quarters. What the Society of Antiquaries think, we most of us think. It is probable that there will be many other protests from different quarters, the feeling against the proposed demolition and imaginary restoration being very pronounced. The scheme is certainly the most offensive put forward for many days.

It is curious to find a village church planted a mile and a half, or so, from the village itself. Yet such is the case at Horsemonden, just south of the flat part of the Kentish Weald. The church is nearer Goudhurst than Horsemonden, and the inhabitants of the village might as well trudge to Brenchley as their own church. The consequences seem bad for attendance and offertories—on Sunday there was a notice posted up that the collection the Sunday before was some three or four shillings only—but good for the picturesque. I quite regard Horsemonden church and surroundings as one of the choicest spots in Kent. Being far away from the railway, though unfortunately close by the new Cranbrook line now in course of construction, it remains quiet and secluded, with its curious old propped-up tree facing the entrance, and a homely orchard growing right under the shadow of its massive and beautifully-proportioned tower, to the north an open, common-like park, and away to the south-east a peep of the elevated village of Goudhurst. It must look very beautiful in the early summer, when the orchard-trees are in blossom. Goth.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

Edinburgh Architectural Association.—Mr. John James Burnet, of Glasgow, read a paper on "The Relative Position of the Architect and the Craftsman," before the members of this Association on the 24th ult. Mr. Burnet thought there never had been an age when the life of the individual was more governed by the practical necessities of the day, nor the demand upon him more clearly defined; and therefore never before was the architect's problem, if varied, more easy of enunciation. Defining what an architect of the present day was, he said he was first a master builder, having a thorough knowledge of the science of building and of the crafts engaged in building, keenly appreciative of the possibilities of each, and ingenious in their application to the needs of his fellow men, and he was also the poet of modern necessity. If they accepted that definition then they might easily permit, or even recommend, the registration of master builders, as, while all of them could not be architects, all architects worthy of the name would be proud to call themselves master builders, and would be pleased that while on the one hand the public might be protected against the device of incompetent professional men, the profession would also be protected against the degrading results of their incompetency. The most important factor in an architect was that he should have the confidence of his clients, and that harmonious working with the craftsmen without which it was impossible that the work could be satisfactorily accomplished. The modern architect must be prepared to act, if his work was to have any of the grandeur and nobler qualities of master-building, with the keenest and most detailed appreciation of the crafts, his particular work being in their co-relation and the co-relation of the contributory arts. If the work was to be true architecture, it must be the work of one man executed by craftsmen and artists each free to the development of his own art or craft, with that individual liberty of thought and action without which art in any form was impossible, leaving it only to the hand that guided him to his work to restrain him in its execution. They would agree with him that the handing of schedules to tradesmen or advertising for tenders indiscriminately was one of the greatest weaknesses of the present contract system; and he concluded by throwing out a few suggestions, in which, addressing himself first to the architects, he said that they should dread no advance in science, whether in economic production or in form of demand, and that they should persuade their clients against an indiscriminate issue of schedules, which made the skilled craftsman's work appear costly by contrast with that of his less skilled brother. He advised the craftsmen to study their craft and the theories which underlie its practice, so that they might not fail to see its application to the work to be executed.

Her Majesty has conferred the honour of knighthood upon Dr. George Buchanan, on his retirement from the post of Medical Officer to the Local Government Board.

Building Intelligence.

Brompton.—The chapel of the Brompton Iospital for Consumption is undergoing coniderable enlargement from designs by Mr. Wm. Vhite, F.S.A., and on Thursday was relaid, in he centre of the east wall of the extended hancel, the foundation-stone which originally occupied a similar position. The chancel will e extended in length and in breadth to about louble its former area, a new aisle is added on he north side, and the organ aisle is rebuilt to similar extent. The dressed stonework of he old chapel is much decayed, but as much as ossible of the old work is retained or reused, ncorporated into the new work. The stained glass, given by various benefactors, had got into a bad state, much of the painting having peeled off and the leadwork decayed. This is being carefully repaired and made good for replacement in the removed windows.

Edinburgh.—In accordance with plans prepared by Dr. Rowand Anderson, of Edinburgh, it has been resolved to spend something like £20,000 on the reconstruction of the County Buildings—a sum divided between internal and external alterations. The new west front to the George IV. bridge will be English Renaissance in style. The whole of the police department will be concentrated on the first and basement floors, and a new entrance to the building will be opened in the bridge front. It is intended to convert the County Hall into committee rooms, and to construct a County Council Chamber. There will be better accommodation provided for the officials ; the medical officer of health will also have a suite of rooms, and space will be left for future development of the business of the county.

Portsmouth.—The Roman Catholic Cathedral for Portsmouth, situated in Edinburgh-road, Landport, was reopened on March 30, after extension eastward, from plans by its original architect, Mr. Joseph S. Hansom, F.R.I.B.A., of South Kensington, at a cost of £10,000. The building is cruciform, and Decorated in character ; it now needs for completion a tower and spire at the western end. The present addition consists of the transepts, the sanctuary (terminating in an apse), a Lady-chapel, a chapel dedicated to St. Edmund, four confessionals, sacristies, a tribune, and a guardians' room. Like the original portion of the cathedral, the extension is faced with Fareham red bricks, relieved with dressings of Portland stone, and the roofing is of red tiles. The transepts are each 24ft. wide by 20ft. deep, and the height from floor to ridge is 69ft., and to the ceiling line 53ft. The sanctuary is 52ft. long from the eastern arch of the nave by 26ft. in width, and is of the same height as the transepts. The Lady-chapel, which is on the south side of the sanctuary, measures 30ft. long by 12ft. wide ; and St. Edmund's Chapel, on the north side, is 22ft. by 12ft. A porch and entrance lobby have been added on the south side of the Lady-chapel. The sanctuary is pierced by thirteen two-light windows. The orth transept has a five-light window 32ft. igh and 18ft. across, and in the gable of the south transept there is a rose window of floriated design 18ft. 6in. in diameter. Below is a recessed arcade in stone, destined to contain a peal of ten bells. A lofty rood-screen of wrought iron divides the sanctuary from the nave. The internal walls are faced with Beer stone, relieved in the apse by columns of dark marble extending to the ribs of the roof. In the sanctuary and transepts alike the ceilings are of stained and varnished wood, groined and perforated. The chapel ceilings, of stained and varnished deal, have ribbed mouldings. The flooring is throughout composed of wooden blocks, pink Jarrah wood and polished oak alternating in the sanctuary. The extension has been carried out by Messrs. Light, contractors, of Landport. Mr. J. W. Randle has acted as clerk of the works.

At the quarterly meeting of the Portsmouth Master Builders' Association held on Wednesday night at the Sussex Hotel, a paper was read by the chairman (Mr. C. Dye) on the "Progress of Portsmouth and the Corporation," and a discussion took place upon the "Plumbers' Registration Bill," at present before Parliament.

COMPETITIONS.

Alloa.—At the last meeting of the Alloa School Board a long discussion took place as to the recent competition in which the designs of Mr. J. B. Wilson, of Glasgow, submitted under the motto, "L'Ecole," were adopted. The chairman emphatically denied the strictures of a local journalist, referred to on p. 388, in our issue of the 11th ult., and the subject of a letter from Mr. Wilson, which appeared in our issue of the 25th ult., p. 454. The chairman added that when he considered the plans he did not know who was the author of the plans ; he originally chose that under motto "Ruby," but after further investigation he coincided in a committee's recommendation that "L'Ecole" be selected, as both worked out according to Mr. Dinsmore, the measurer, at £8 10s. per head. The board decided not to publish the report of the assessor, Mr. Selmond, and eventually proceeded to the next business without passing any resolution on the subject.

Glasgow Art Galleries.—The committee appointed in connection with the erection of galleries for art and music in Kelvingrove Park met on Tuesday. The assessor, Mr. Alfred Waterhouse, R.A., spent Monday, and the early hours of Tuesday, in the examination of the six plans forming the reduced leet. These were as follows, in the order of the numbers appearing on the plans :—No. 9, Messrs. Malcolm, Stark, and Rowantree, St. Vincent-street ; No. 17, Mr. T. M. Deane, of Sir Thomas N. Deane and Son, Dublin ; No. 25, Messrs. Treadwell and Martin, London ; No. 30, Mr. John W. Simpson, London ; No. 40, Messrs. John Honeyman and Keppie, Bath-street ; and No. 48, Messrs. Honeyman and Keppie. The plans were displayed in the City Chambers. The competition seems to have been very close, for the committee, after sitting from 3 till 9 p.m. on Tuesday, decided to delay the final decision till another meeting, subject to a further report by Mr. Waterhouse. The next meeting of the committee will probably be held in the course of the ensuing week. From the above paragraph, which appeared in the *Glasgow Herald*, it will be seen that the confirmation of Mr. Waterhouse's award will be made early next week ; but we are disposed to believe that the selection is actually determined upon, and the plan No. 30, by Mr. J. W. Simpson and Mr. E. J. Milner Allen, of New Inn, London, acting as joint architects, is chosen. We can sincerely congratulate Glasgow on having secured so admirable a design. It is conceived in a Renaissance style, boldly and picturesquely treated, with much dignity and refinement. The competition was, no doubt, a strong one ; but of all the designs which we have seen this is certainly the most striking.

Victoria, British Columbia.—The designs submitted last December in competition for the new cathedral of Christ Church, Victoria, British Columbia, by the local architects in America, are on their way to London just as they were received, unopened, and, in accordance with the terms of the contest, the drawings are to be submitted to Mr. B. Edmund Ferrey, F.S.A., F.R.I.B.A., who is to select ten designs out of the whole series of English and foreign plans sent in. These ten plans will be then brought before Sir Arthur Blomfield, M.A., A.R.A., who will make choice of three. The selected three premiated designs will then be laid before the committee of the cathedral authorities, who will determine which plan shall be carried out. We understand by information sent us from Victoria that many architects in British Columbia have held aloof, not altogether liking the conditions of the competition. The plans were expected in London last January, but have not yet come to hand.

Some alarm has been excited in Lincoln during the past week by the fall of a considerable piece of stone from the north-western tower of the cathedral. Falling from a height of about 150ft., the stone shattered a flagstone of the pavement beneath. The dean and chapter immediately ordered an examination of the stonework of the tower, the result of which caused them to stop the thoroughfare in front of the cathedral, and to take measures for the temporary security of the masonry, pending the issue of a survey, which they have desired their consulting architect (Mr. J. L. Pearson, R.A.), to make without delay.

Engineering Notes.

Bonar Bridge, N.B.—Messrs. George Cowie and Son, Buckie, who have taken the contract for the removal of the ruins of the bridge, commenced work last week. Diving operations are carried on under difficulties on account of the dangerous nature of the bed of the Kyle, where the fallen bridge lies at a depth varying from 15ft. to 30ft. Wallace, of Peterhead, who has had great experience in diving at various places, including the Forth Bridge, declares the bottom of the Kyle of Sutherland to be the worst he has ever seen, being not only rocky, but honeycombed with fissures and chasms of unknown depth. The iron arch of 150ft. span is found to be broken in several pieces, and is massed with trees and other wreckage which have got fixed therein.

Glasgow.—The new Glasgow bridge, which will be built of granite, will be 100ft. in breadth, and will consist of four arches. It will rest on massive piers, 10ft. in breadth at the spring of the arches. The two landward arches will be each 88ft. in width, with a maximum headway above high-water mark of 15ft. 8in., while the two centre arches are each 92ft. in breadth, with a maximum headway of 18ft. The parapets will be of granite, of design similar to that of the present bridge. The increased width of the bridge is obtained by extending it 8ft. beyond the line of the present bridge on the eastern, and 30ft. on the western side, or to within about 40ft. of the piers of the Caledonian Railway Bridge. The existing bridge consists of seven arches—two landward arches 57ft. 6in. in span and 15ft. 6in. maximum headway, two of 55ft. span and 16ft. 10in. headway, two of 57ft. span and 17ft. 8in. headway, and a centre arch of 58ft. span and 18ft. headway. For the accommodation of the traffic while the new bridge is in construction a temporary wooden bridge will be erected to the east of the present structure.

CHIPS.

Foundation stones of a new Wesleyan church at Wolverton were laid on Saturday. The church, which is estimated to cost £2,300, is designed in the Early English style. Mr. E. Harper, of Birmingham, is the architect, the builders being Messrs. H. and C. Burden, of Chipping Norton.

The Oswestry Town Council recently had occasion to determine a contract for the construction of waterworks at Penygroeley, and advertised for fresh tenders. At their meeting on Monday it was stated that three tenders, varying from £14,876 to £16,657, had been received for the completion of the works, and that Mr. Rofe, the engineer, deemed them prohibitive. After a long discussion it was decided that the council should complete the works themselves.

The town council of Loughborough, Leicestershire, have adopted a sewage scheme prepared by Mr. W. H. Radford, of Nottingham, estimated to cost in execution £20,000.

Nearly eighty applications have been received by the Roads and Bridges Committee of the Herefordshire County Council for the county surveyorship, vacant by the resignation of Mr. Chieake.

The will of Mr. William Hudson, formerly of 19, Bennett's-hill, Doctors'-commons, architect and surveyor, and late of Hope Lodge, Grove-lane, Camberwell, who died on March 2nd, was proved on March 23rd, the personal estate amounting to over £18,000.

An inquiry, under the Local Government Board, was held at the local board offices, St. Anne's, Lancs, on Tuesday, into an application of the local authority to borrow £9,577 for the purpose of forming a sewage scheme. The inspector conducting the inquiry was Major-General Henry Darley Crozier, R.E. Mr. Bancroft, C.E., the engineer, explained the details of his scheme.

At a meeting recently held at Cambridge, under the presidency of the Bishop of Ely, it was decided to take steps for the erection of a new church to be dedicated to St. John, and to be built in Cavendish-avenue, in the parish of Cherryhinton. A building committee was elected.

A new vicarage has just been completed in Abbey-foregate, Shrewsbury, as the future residence of the vicar of Holy Cross. The architect is Mr. Lloyd Oswell, A.R.I.B.A., whose plans were carried out by Messrs. Treasure and Son, builders. The house contains entrance-hall, three good-sized public rooms, eight bedrooms, bathroom, servants' offices, and has cost £1,800.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. Passmore Edwards.

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One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 0d. (or 6dols. 30c. gold). To France or Belgium, £1 6s. 0d. (or 33fr. 30c.) To India, £1 6s. 0d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front Page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No front page or paragraph Advertisement inserted for less than 5s.

Situations.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is One Shilling for Twenty-four Words, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., L., LI., LIII., LIV., LVIII., LIX., and LX. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

GOOD FRIDAY.

The next number of this paper will have to be published on Thursday, April 14, instead of on Friday, as usual. All advertisements must, therefore, reach us by 3 p.m. on WEDNESDAY next, instead of at the same hour on Thursday, as usual.

Received.—S. R and B. Co.—C. R. (Salford) —Nestor.—Prismatique.—R. N. and Co.—B. M. T.—J. Nicholson.

"BUILDING NEWS" DESIGNING CLUB.

"Nil Nisi Bonum." (There is no objection whatever to competitors contributing designs for both subjects when two are given. It is better, however, to do one well than two indifferently.) — "Contrast." (You will find illustrations of garden architecture in Niven's "Worcestershire Houses," in Richardson's and Nash's "Old English Mansions." The garden pavilions at Montacute have been illustrated in our pages, and also the "Justice-room" at Severn End, Worcestershire.)

Correspondence.

PLUMBERS' REGISTRATION BILL.

To the Editor of the Building News.

Sir,—My attention has been called to your report of the evidence given by Scottish representatives before the Select Committee of the House of Commons. Your report says that my evidence was corroborative of that of Mr. Marchbank. It should have been reported that it was contradictory. With reference to the Scottish Society, its report is also misleading in as far as it says that that society has instituted flourishing technical schools throughout the country. As far as I am aware, it has only once subscribed £10 to one technical school in Dundee; during the last five years it has organised less than a dozen lectures on technical subjects, and it has given to apprentice plumbers less than £3 worth of prizes. Its whole expenditure for last year was £8, and it has been a declining society, so far as its membership is concerned, from the very first; its membership last year only amounting to 140 for the whole of Scotland. On the other hand, the National Society spent in the whole of Scotland, in addition to what was spent by the Plumbers' Company, about £1,300 and have nearly 1,500 members on their register. The National Society has also given prizes to nearly all the plumbing classes in Scotland, has held examinations and given prizes to young plumbers in all the different districts, has subsidised preparatory classes, and organised lectures for the benefit of unregistered as well as registered workmen. In the east of Scotland districts alone during the last year, fifteen lectures were delivered in Edinburgh and the principal provincial towns, and examinations held in connection with the local classes. Moreover, the representatives of the Scottish Society admitted before the Select Committee that they were in favour of the principle of National Registration, and the District Council here hopes that the members of the Scottish Society will take advantage of the offer of this Council made four years ago to receive its members on payment of the difference of the entrance fees, and thus make one undivided National Society.

I will be glad if you will find space in your next issue for this explanation.—I am, &c.,

James Thomson, C.E.

NO NEED FOR ARCHITECTS' REGISTRATION, EH?

Sir,—From to-day's issue of the *Alloa Journal* I cut the following gem, merely omitting the name of the enterprising practitioner in so many callings. By the way, "valuator" is good, but novel, and I am at a loss to know if the "house factor" is a dealer in, or a maker of, houses.

J * * * * J * * * * * * * *,
ARCHITECT AND BUILDER,
UNDERTAKER, HOUSE FACTOR, & VALUATOR.
—, ——— Street, Alloa.

—:o:—

J. J * * * * * * * begs to thank the public and friends for the Patronage bestowed on him for the last sixteen years, and hopes, by strict attention to business, to merit a continuance of their support.

Plans, Specifications, and Schedules of Quantities, prepared on the most reasonable terms.

Joiner and Builder.

Special attention to House Factorage and Valuation.

Furniture of all kinds supplied; also a good stock of Dressers kept on hand.

Undertaking.

Alloa Funeral and Undertaking Establishment. Coffins, Hearse, and Machines supplied very reasonable.

Note.—I am prepared to erect Buildings of all kinds, finished for a slump sum, and to give probable cost for Houses to be built or price for old or new Buildings free of charge.

J * * * * J * * * * * * * *,
ARCHITECT AND BUILDER,
UNDERTAKER, HOUSE FACTOR, & VALUATOR
—, ——— STREET, ALLOA
[established 1875.]
House — ——— STREET, ALLOA.

Comment is needless.—I am, &c.,

April 2, 1892. Registrationist.

CURIOUS "FIREPROOF" CONSTRUCTION.

Sir,—Having first visited the ruins of Messrs. Annandale's Paper Factory near Dunbar, which was destroyed by fire last Saturday, April 2, I beg to intimate an interesting instance of escape from fire of part of the premises. The official showed me a machine shed in the middle of the ruins that had not been seriously injured, either in contents or inclosure, by the fire all round it. He attributed this to its being covered with roof of glass, rough plate, in three bays, which was cemented water-tight all over, and also at the gable ends and along the eaves. This was done to keep the chamber free from dust and damp driven in by winds, and not as a provision against fire. The flames played over this roof freely, and the glass was deluged with the hose-water; but the rafters were not injured, nor the glass splintered. Another work machine hall close by was entirely burnt out, and this was stated to be due to the flames entering by the roof through the slates by which it was covered, and not by the windows or basement. The likely explanation of these phenomena may turn upon the question of the dysthermancy of glass to flame-heat, and consequently the chamber inside continued cooler and unaffected by the heat outside. In the slate roof the red-hot air of the conflagration penetrated through between the slates and heated them up as well, and so caused ignition of the timber framework underneath, and its rapid spread along the ridge. Further, the cementing of the glass roof all round prevented any red-hot air getting in anywhere to set fire to framework, just as in a Milner's safe the doors are made air-tight to keep out the flame and smoke of the fire. The slate roof, on the other hand, was full of fissures, and the eaves were open underneath, and so the red-hot air of the conflagration readily penetrated to the woodwork supporting it.—I am, &c., Viator.

Intercommunication.

QUESTIONS.

[10754.]—**Discolouration.**—I am erecting a tenement having face work of clean-cut rubble sandstone. Several of the stones lay for a considerable time on the ground, and being exposed to the weather they have become discoloured. The mason, unfortunately, has built these stones alongside those which have been newly cut. Would some of your correspondents inform me of a method whereby the green weathering and soot might be removed, and thus render the work uniform in colour?—Rosslyn.

[10755.]—**Ventilation of Dwelling-House.**—Would someone of special experience kindly give the best way of ventilating the rooms of a small house, say, for a room 14ft. square by 10ft. high, would fresh air be best admitted at 6ft. high, and how? And would vitiated air be best carried off at the ceiling level by, say, a 6in. diam. earthenware flue built into the chimney breast? It would appear difficult to carry off heated or vitiated air by a cold flue. If this same flue is used for rooms above, would there not be danger of the vitiated air escaping into these rooms from the lower ones? Mica flaps not altogether satisfactory. The model by-laws require 100sq.in. opening into fresh air where no fireplace is provided in habitable rooms. How can this be arranged without causing a draught in a small room, and where a fireplace or flue could not well be considered on account of expense or other reason?—Boreas.

CHIPS.

Sir Douglas Galton gave evidence on Wednesday before Mr. Lees Knowles's Committee, in favour of the technical education and registration of plumbers, and expressed the opinion that any one improperly styling himself a registered plumber should be liable to a penalty.

The Scottish National Gallery have purchased from Mr. C. Weirtheimer a portrait of a young woman, by Rembrandt, at the price of 5,500 guineas. The money was presented by Mr. M'Ewan, M.P.

It has been suggested that the vacant panels over the doors of the galleries in the Town Hall at Birmingham, some twenty in all, should be decorated with subjects from the history of the city by students in the Municipal School of Art. Two cartoons for decorative panels executed by students have been temporarily hung at the town hall. One represents the distribution of the dole of the Guild of the Holy Cross, and the other shows the flight of Dr. Priestley from the rioters in 1791.

Rapid progress is being made with the construction of the branch railway to Barnton, N.B. About 40,000 cubic yards of cutting, out of a total of 120,000, have been executed, and nearly $1\frac{2}{3}$ miles of the line have been roughly formed. A start has been made with the masonry of the bridges, three of which are now in course of construction.

A meeting-house for the Society of Friends is about to be built in Lord-street, Radcliffe, Lancs. Mr. John H. Barton, M.S.A., of Ashton-under-Lyne and Radcliffe, is the architect.

The Wigan corporation have under consideration the details of a scheme for the proposed auction mart for cattle for the town and district. The architects are Messrs. Maxwell and Tuke, of Manchester, and the site, which is approached from Prescott-street, has an area of 15,000 square yards, and is near two railway systems. Accommodation is to be provided for 800 cattle and 5,000 sheep.

An inquiry has been held at Dartmouth Guildhall by Mr. S. J. Smith, a Local Government Board Inspector, relative to the application of the town council to borrow the sum of £650 for the purpose of draining the New Road of the flood-water which runs down the valley. Mr. T. O. Veale, the borough surveyor, explained that it was proposed to intercept the flood-water at Ford Cross, and to lay cast-iron pipes, 15in. in diameter, from there to the boat float, where the water would be discharged.

A new Wesleyan school-chapel in Eagle-street, Stoney Stanton-road, Coventry, was opened last week. It has been erected at a cost of £700 by Mr. T. G. Golby, of Earlsdon, who acted both as builder and architect.

Dean Pigou is proposing to rebuild and enlarge the organ of Bristol Cathedral, at a cost of about £3,000. He has also declared his intention of replacing the instrument across the screen, which was the position occupied by it until the cathedral was restored by the late Mr. G. E. Street.

Legal.

DRAINAGE LIABILITIES.

AS sanitary science progresses, and a proper system of drainage comes to be more and more enforced by local authorities, the question who is to pay as between lessor and lessee, or landlord and tenant, is sure to arise more frequently, and grow of more practical importance. Disputes are constantly occurring over the construction of covenants in leases, which, to tell the truth, though drawn as stringently and as widely as possible, were so drawn without any reference to those modern ideas of drainage and improvement which could not have been foreseen. The recent case of "Lyon v. Greenlaw" (*Times*, 28th March) is a very good illustration of the kind of question so frequently met with nowadays. There the plaintiff was mortgagee in possession of a house at Esher, which the defendants occupied as assignees of a nine years' lease, expiring in 1892. In 1890 the rural sanitary authority, under the Public Health Act, 1875, served upon the plaintiff a notice requiring him to abate a nuisance arising from pumping sewage from a cesspool. This was done by a rearrangement of the local drainage system, and the connection of the house sewers with the drainage of the district for the first time. The local authority did the work, and the plaintiff, as "owner" for the time, paid the cost of £68, under threat of legal proceedings, and he now sought to recover that amount from the defendant, on the ground that he was liable under the covenant of his lease.

The material covenant upon which this claim was based declared that the tenant would pay "all rates, taxes, and assessments whatsoever which now are, or during the said term, shall be imposed or assessed upon the said premises, or the landlord or tenant in respect thereof." It was argued for the plaintiff that the work done by the local authority, and for which he had paid, came within the words "assessments imposed upon the premises or upon the landlord." Then the repairing clause provided that the tenant should "make, uphold, support, &c., all sewers, drains, &c.," and it was urged upon this that the words included the making of this new drain. Mr. Justice A. L. Smith, who tried the case, however, could not adopt either of these ingenious arguments, and held that the payment made by the plaintiff for the work of connecting his property with the main drainage system of the district was not covered by any of the words, "rate, tax, or assessment," as used in the lessee's covenant, while he declined altogether to take the view that the repairing clause included the making of an entirely new drain, permanently improving the premises; and so the tenant succeeded in his defence.

FRED WETHERFIELD, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

NOTE.—All questions for reply in this column must be headed "BUILDING NEWS," and must reach my offices, as above, by *Tuesday* morning to insure answer for same week.

TERRACOTTA. — HOUSE. — FLEAS.— UNINHABITABLE.— Although a plague of fleas in a furnished house has been held a good ground for breaking the contract, as being a breach of warranty that the house was fit to live in, this rule does not apply to an ordinary letting of an unfurnished house, as to which there is in law no implied warranty that it is habitable; and so you are, and remain, liable for rent, &c., under your agreement.

SURVEYOR. — HEDGE AND DITCH.—FIELDS.— In the absence of any clear dimensions, or of the usual indications upon the plan, the custom of the ditch going with the hedge must prevail, and the two plots will each have a hedge and ditch accordingly.

A. J. F.—GRATINGS.—PRESCRIPTION ACT.—ACKNOWLEDGMENT.—There is no necessity for the actual payment of rent to prevent the acquisition of a right to light or air by prescription. All that is needed is that it shall appear that the light was enjoyed by some consent or agreement expressly given for that purpose by deed or writing. In short, a brief acknowledgment that the gratings are allowed to remain open with your permission will be enough.

P. C.—PARTY-WALL.—"OWNER."—In both these cases the notice must be served on the freeholder, who is in both the "owner" under S. 3 of the Metropolitan Building Act, as he, and he alone, is receiving rent from the property as far as you state. But if the holder of the ground lease has actually let by under-lease, he would also be an "owner," and thus be entitled to notice—which you have given.

JUSTICE.—AGREEMENT.—DAMAGES.—Yes, the employer should certainly pay something by way of compensation, and he would be held liable in an action for breach of contract for some reasonable damages.

ECCLESIA.—DRAWINGS—TRACINGS —PROPERTY.—I consider that under the circumstances stated the architect can retain his drawings; but the tracings appear to belong to the committee who paid for them, and who cannot be compelled to give them up.

R. C. AND S.—PUBLIC SEWER.—DIVERSION.—The local sanitary authority having laid their main sewer across the land in question, apparently with the consent of its then owner, they cannot now be compelled to divert it as you desire, and if any such diversion is to take place, it must be with their approval and at your expense.

LEGAL INTELLIGENCE.

ARCHER v. HOBBS.—(Court of Appeal, April 6, before the Master of the Rolls and Lords Justices Fry and Lopes).—This action was brought by Messrs. Archer and Co., the architects of the Albert Mansions at Albert-gate, Hyde Park, against the building owners of the premises to recover the sum of £1,000 as the balance of their charge of £4,000 for designing the structure. The defendants resisted the claim on the ground that the architects had exceeded their authority in designing a building that cost £200,000, when the defendants had limited the cost to £100,000. The defendants counterclaimed on the ground that the plaintiffs had been guilty of negligence in designing the building by the excessive costs, and by not showing due skill in estimating the expense. The matter went before the Official Referee, who found there was no negligence on the part of the plaintiffs, and decided in their favour. The Divisional Court affirmed his finding. The defendants appealed. Their Lordships held that there had been no negligence whatever on the part of the plaintiffs, who had done their work properly, with care and skill, and they accordingly dismissed the appeal, with costs. Appeal dismissed accordingly.

ARCHITECT'S CLAIM FOR FEES.—At the Liverpool Assizes, on Friday and Saturday, the case of Williams v. Mead was heard by Mr. Justice Collins and a jury. In this action John C. Williams, architect, of Stanley-street, Liverpool, sued Mrs. Mary Ann Mead, of Netherfield-road, for £127 alleged to be due on account of work done in connection with the preparing of plans for a theatre. The plaintiff's case was that Mrs. Mead, who owned land in Everton Valley, instructed him to draw plans for the erection of a theatre on the land, the building to accommodate 2,000 persons and to cost not more than £11,000. Prior to this time he had made some sketches for Mr. James Kiernan. The defence was that no such instructions were given, that Mr. Kiernan wished to float a company to build a theatre, and that the defendant was only brought into the matter because her land was wanted. Further evidence on behalf of the defendant was now called. The jury found for the defendant.

FACULTIES FOR STAINED GLASS.—In the Arches Court, last week, Lord Penzance as Dean dismissed an appeal from a judgment of the Chancellor of the Rochester Diocese, granting a faculty authorising the plain lights in the east window of Nutfield Church with stained glass. Having referred to the case of "Peek v. Trower," Lord Penzance added: It is because this window is in itself a fitting architectural and decorative improvement to the chancel, because it is entirely free from the taint of superstitious or idolatrous uses, and because it has no doctrinal significance, that I hold it to be a distinctly advantageous addition to the present building, and that sanction to its erection ought not to be refused. If, indeed, it could have been established that this window would materially darken the chancel, such a state of things might constitute a substantial objection to the grant. But I am satisfied that there is no fear of any such result. The appeal, therefore, must be dismissed.

WALLS OF INSUFFICIENT THICKNESS.— Mr. Pereira, a builder, was summoned by Mr. C. Fowler, district surveyor of Shoreditch, for erecting a building with walls of a thickness less than as prescribed by the Building Act. Mr. H. Lovegrove, deputy D.S., proved the case, and stated that the defendant had been repeatedly warned. Mr. Mead ordered the work to be amended, and the costs, 22s., to be paid.

BALANCE OF BUILDING ACCOUNT.—MEDLAM v. GALPIN.—At the Somerset Assizes on the 15th and 16th ult., an action was heard before Mr. Justice Wills and a common jury; for the recovery of £139, balance of the price of work done by the plaintiff for the defendant at Evercreech. The whole amount claimed was £413, for pulling down two old cottages and erecting a house in their stead. Plaintiff had received £274 on account, and now claimed the balance. The defence was that the plaintiff had agreed to do the work for £260, the sum being afterwards raised by mutual agreement to £270. There was a counter claim for £150, damages owing, it was alleged, to the work having been carelessly and improperly done with bad materials. The jury returned a verdict for the plaintiff for £20 more than had been paid on account, and they found in favour of the defendant on the counter claim for 35s. The judge gave judgment for the plaintiff for £20, with costs on the county-court scale, and for the defendant for 35s., with such costs as he might be entitled to.

THE PORTSEA ISLAND BUILDING SOCIETY.—The inquiry into the Portsea Island Building Society affairs was resumed at Portsmouth on Saturday, Messrs. Townsend (chairman of the directors), Lewis (a local builder), and Pratt Wills (the secretary), being charged with conspiracy to obtain £3,450 by fraud from the society. It is alleged that Townsend bought property and sold it to Lewis at a profit, the money being obtained from the society, and the advances exceeding the value of the property. Other sums were advanced to Lewis, whose overdraft, it is further alleged, exceeded £30,000. The case was further heard on Monday, when the magistrates committed all three prisoners for trial, but allowed bail; that of Lewis being fixed at £200 for himself, and two sureties in £100 each.

WATER SUPPLY AND SANITARY MATTERS.

ASH-NEXT-SANDWICH.—The sewerage and sewage purification works for Ash have just been completed. The engineers for the works are Messrs. Charles H. Beloe, M.Inst.C.E., and Frank E. Priest, A.M.Inst.C.E., of Westminster and Liverpool, and the contractors were Messrs. G. H. Denne and Son, of Deal.

BATH.—At the Guildhall, Bath, last week, Mr. S. J. Smith and Mr. E. P. Burd, Local Government Board inspectors, held an inquiry into the application of the Bath town council for a provisional order enabling them to borrow £17,650 for increasing the water supply by purchasing the Taylor and other springs in the St. Catherine's Valley. Mr. Walton appeared in support of the application, which was opposed by the rural sanitary authority on grounds that it would interfere with the flow of water in the brook at Batheaston, and by several riparian owners at Batheaston. Mr. Day, managing director of the High-Level Water Company, argued that it would be more cheaper for the corporation to purchase a temporary supply from that company, who reached the highest levels of the city, during temporary deficiencies. Mr. Mitchell, consulting engineer to the corporation, gave evidence in favour of the scheme. Mr. Gilby, assistant engineer, who favours storage, gave facts as to the present demand for, and supply of water in, the city.

DOUGLAS, ISLE OF MAN.—A committee of the Tynwald Court sat at Douglas recently for the purpose of taking evidence on the great scheme of town improvement now before the Legislature. Under this scheme it is proposed to demolish the old part of the town and erect a number of blocks of artisans' dwellings. The town commissioners took action upon a report of Dr. Dearden, medical officer of health, who out of 142 houses in the district in question condemned one-third, and pronounced the locality in such a state as to be injurious to health. The medical officer said that the present state of things could not be remedied except by a scheme of reconstruction. The net cost of the project is estimated at £35,908. The number of inhabitants in the area to be dealt with is 1,194, of whom 970 belong to the working classes. Under the proposed plan 624 will be provided for in the new artisans' dwellings at a rental of from a shilling a week for a single room, to three-and-six for a suite of three rooms. There was no opposition to the scheme. Mr. T. H. Nesbitt, clerk of the Town Commissioners, gave evidence in favour of the scheme, and stated that a rate of fourpence in the pound would meet all requirements. Mr. T. G. Taylor, surveyor, also testified in favour of the scheme, and several valuers gave evidence as to the reasonableness of the cost of land to be purchased, and the amount to be realised by resale.

LEA VALLEY DRAINAGE.—A select committee of the House of Commons proceeded on Monday with the consideration of the Bill for the drainage of lands in the valley of the river Lea, in the counties of Middlesex, Essex, and Hertford. The scheme of the Bill is to lower and lengthen certain weirs between Lea Bridge and King's Weir to enable the water to get away more easily and naturally. The cost of the works is estimated at £10,000. Several landowners gave evidence as to the damage done near Waltham Abbey by the frequently recurring floods, especially in summer. Mr. H. J. Tingle, C.E., explained the engineering details of the scheme, which was designed mainly for the prevention of the summer floods. The adoption of the present proposals would rather facilitate the subsequent adoption of a complete scheme for the prevention of floods along the entire river. Mr. George Chatterton, C.E., gave evidence in support of the Bill. On Tuesday, Mr. Littler, Q.C., on behalf of the Tottenham Local Board, called evidence in opposition to the Bill, chiefly on the ground that the formation of a drainage district for a limited portion of the Lea Valley, and the execution of the proposed works, would be injurious to Tottenham, as it would increase the floods in that neighbourhood and aggravate the inconvenience and damage to the large working-class population dwelling on the river banks. After hearing witnesses, the committee came to the conclusion that the preamble of the Bill had been proved, and the Bill was passed with amendments, Mr. Littler intimating that the opposition could be renewed in the House of Lords.

Royton.—A Local Government Board inquiry was held at Royton, Lancashire, on the 31st ult., by Colonel Luard, R.E., with regard to the application of the local board for permission to borrow the second instalment of money for works already sanctioned by the Local Government Board, and also for sanction of a further loan for the erection of sludge-pressing plant, a refuse destructor, and sundry other works to complete the sewage works now in course of construction. The clerk to the local board (Mr. T. Bleasdale) explained to the inspector the history and financial position of the district. He pointed out that the original sewerage scheme was approved by the Local Government Board two or three years ago, and a loan of £27,500 sanctioned. This sum was chiefly for the sewers of the district, and the subject of the recent inquiry was chiefly to enable the purification works to be completed in the most efficient manner suggested by recent experience. The engineer for the scheme (Mr. Theo. S. McCallum, C.E., of Manchester) explained the general arrangement of the sewers and the details of the works. Nearly one half of the district is now sewered, and the work is progressing. The cost of the sewerage scheme for Royton, the sewage purification works (including 15 acres of land), and the destructors, will be about £51,500. The contractor for the tanks, filters, &c., is Mr. S. Johnson, of Pendleton. After the inquiry, the inspector visited the works, and expressed himself pleased with the complete nature of same, and the arrangement of the various parts. He will report to the Local Government Board in due course.

CHIPS.

Another of the memorial windows in the clerestory of the nave of Manchester Cathedral—that presented by the Earl of Ellesmere—has been completed.

Two stained-glass windows have been placed in the west end of North Holmwood Church in memory of the late vicar. The artist is Mr. C. E. Kempe.

The Association of Provincial Land Surveyors of Ontario are applying to the Legislature for incorporation. For some reason or other the Bill which has been introduced with this object has met with considerable opposition. The influence of this opposition seems likely, according to our contemporary the *Canadian Architect and Builder*, to also stand in the way of certain required amendments to the Ontario Architects' Act.

The highway board of Stratton, near Bude, have elected Mr. J. P. Baker, of Camelford, to be the district surveyor in the room of Mr. H. J. Hawkins, resigned.

By a fire which broke out in Appold-street, Finsbury, on Saturday morning, workshops occupied by D. E. Jones, builder, M. Powis Bale and Co., engineers, and Richmond and Graveson, engineers, were partly destroyed.

The Rye Rural Sanitary Authority at their last meeting appointed Mr. H. Bertram Nichols, C.E , of Birmingham, their engineer to prepare a scheme of sewerage and sewage disposal for the parish of Peasmarsh.

In the case of an application for the discharge from bankruptcy of John William Paine and Charles Frederick Paine (trading as Paine Brothers), of Holmdale-road, Hackney, and Vartry-road, Stamford-hill, the discharge has been suspended by the Court for three years.

It has been decided by the committee of the Great Northern Central Hospital, Holloway-road, to erect an additional wing (which will complete the new buildings) as a memorial to the late president of the institution, the Duke of Clarence. Tenders for the work have been accepted, the cost of which, with the necessary furniture and fittings, will amount to about £30,000.

The chairman of the Croydon Guardians laid, on Tuesday, the foundation-stone of the new board-room and offices for that body in Mayday-road. The building, which is to be of red brick, with tiled roof, will consist of a board-room 45ft. by 28ft., with accommodation for the Croydon Rural Sanitary Authority; a suite of offices for clerk, assistant-clerk, general clerks, relieving officer, and vaccination officer, and waiting-room for applicants for relief. The estimated cost is £6,500.

Our Office Table.

Mr. John Rhind, the well-known Edinburgh sculptor, has not lived many days to enjoy the honour of Associate of the Royal Scottish Academy, to which he was elected on Wednesday, the 30th ult., when he received the largest number of votes of the seventy nominations for the twelve vacancies. He died on Tuesday last, aged 63 years. Mr. Rhind, whose portrait was given in the Building News for Oct. 24, 1890, was a native of Banff, and was a pupil of the late James Handyside Ritchie, A.R.S.A. Principal among the many public memorials he erected may be mentioned those in memory of the Duke of Athole at Dunkeld, the Duchess of Sutherland at Golspie, the Earl of Dalhousie at Brechin, the Marquis of Tweeddale at Haddington, the recumbent figure of the Marquis of Montrose in St. Giles Cathedral, and only quite recently the colossal statue of the late Dr. Chambers in front of the Museum of Science and Art, Edinburgh. He also executed sculpture and decorative work on a large number of public buildings, notably Fettes College, Bank of Scotland, County Buildings, Scott Monument, University Club, Museum of Science and Art, and the Castle in Edinburgh; Mr. Young's Municipal Buildings, Glasgow; Gosford House, and Arniston House. Mr. Rhind, who was twice married, is survived by his wife and by four sons and two daughters, all of whom have followed in their father's artistic steps. The eldest, Mr. W. Birnie Rhind, has been associated with him for many years past in all his leading works. The second son, Mr. J. Massey Rhind, is achieving considerable success in New York as a sculptor. The third son is an architect. One of Mr. Rhind's daughters illustrates works for publishers in Edinburgh.

The Rev. Dr. John Collingwood Bruce, the accomplished antiquary, who died at Newcastle-on-Tyne on Tuesday, at the advanced age of 86, will be longest remembered as the erudite author of "An Historical and Descriptive Account of the Roman Wall in the North of England," which originated in his lectures on the subject before the Newcastle Literary and Philosophical Society and a pilgrimage to the wall. Glasgow University conferred upon him the degree of LL.D. in recognition of the high character of the work. Another literary work with which the name of Dr. Bruce is associated is "The Bayeux Tapestry," containing a copy on a reduced scale of the entire tapestry, which was published in 1856. In connection with the Newcastle Society of Antiquaries, the deceased gentleman has contributed valuable papers on a variety of subjects of archæological research. "Lapdarium Septentrionale" contains a description, with excellent engravings, of all the Roman and monumental stones discovered in the North of England.

The London County Council adopted on Tuesday a series of principles with respect to theatres and music-halls, which will convey to the Select Committee now sitting on the subject the views of the Council as to what legislation is required. Those of most interest to architects and builders are two out of the thirteen rules—No. 10, which provides that in the case of old theatres and music-halls, which were erected before the passing of the Metropolis Management and Building Acts Amendment Act, 1878, a period of grace of seven years will be allowed with regard to all the requirements of the Committee or the Council which, if carried out, would involve reconstruction, or the acquisition of adjoining property, which the Committee is satisfied cannot be secured; —No. 11, that in the case of new theatres and music-halls erected subsequently to the passing of the Metropolis Management and Building Acts Amendment Act, 1878, the owner of which has received a certificate from the Council, no further requirements for structural alterations should be made within a period of ten years from the date of the first certificate, and of five years from that of each subsequent certificate.

The town council of Stirling, who, in the capacity of trustees of Cowane's Hospital, are proprietors of the Abbey Craig on which the National Wallace Monument stands, have decided to take steps to prohibit the Stirlingshire County Council from blasting away the picturesque north-east front of the historic craig. The prohibition is not being sought a day too soon, for the dangerous and unprotected quarry of Craighton is being blasted and worked within 21 yards of the most frequented footpath to the monument, and some 130,000 tons of whin rock has already been removed for road-making, while several of the grand old trees on the rock itself have been levelled during the operation. The craig, with its walled-in woods covering an area of 75 acres, was handed over to Cowane's Trustees in 1869, and in 1876 they acquired at great cost the adjoining property of Holehead. The Right Hon. A. Campbell Bannerman, M.P., will introduce a Bill into Parliament at once with the object of protecting the rugged craig faces from further destruction, and it is to be hoped that this useful measure will not be obstructed.

Mr. Ford Madox Brown's eleventh mural painting for the large hall of the Town-hall of Manchester, just completed, represents the opening of the Bridgewater Canal in 1761. The scene is at the Barton Aqueduct over the Irwell. The Duke of Bridgewater, standing on one of his own barges, watches the first coal barge setting out, drawn by two mules and steered by the bargee's wife, whose two children, gaily dressed, and one of them hugging a cat, are tied on the roof of the cabin. Beside the Duke stands James Brindley, the engineer of the canal, and in the foreground a little boy is waving his cap from a small boat full of coal. On the bank the band of a Guard regiment is playing, and a woman is reaching forward between the legs of the bandsmen to pull a dog out of the water.

The twelfth loan exhibition of pictures is being held this week in the parish schools of St. Jude's, Commercial-road. The collection has been brought together by the vicar of St. Jude's, the Rev. S. A. Barnett, and the committee of Toynbee Hall, and is one of great interest, being one of the most representative of modern English art yet brought together. The two hundred and sixty pictures hung in the four rooms include works by Sir Frederic Leighton, P.R.A., Sir John Millais, Briton Riviere, Peter Graham, W. Q Orchardson, H. W. B. Davis, Marcus Stone, Henry Woods, J. Brett, G. Mason, J. Wyllie, Sir John Gilbert, G. F. Watts, J. C. Hook, E. J. Poynter, G. D. Leslie, Edwin Long, Colin Hunter, P. R. Morris, and W. P. Frith. The exhibition, which is open, free of charge, for a fortnight, is well worthy a visit to the East-end.

In Australia, especially in New South Wales, architectural competition is so keen that the public expect the profession to submit tenders for services. The *Building and Engineering Journal* says the idea is spreading that "the architect must put in a tender for his services on the same lines on which the bricklayer tenders for laying the bricks of the building." No doubt competition has been leading to this idea of professional labour, and what it is worth. Under-bidding is the order of the day, and the recognised scales of the profession are ignored. Well-earned commissions have been set on one side. The only remedy for this state of things is a statutory registration of all practising architects. In this country, though things are not so bad, we often hear of professional men under-bidding and offering their services below the customary rate. Only a legislative recognition of the architect's position and status will prevent this.

MEETINGS FOR THE ENSUING WEEK.

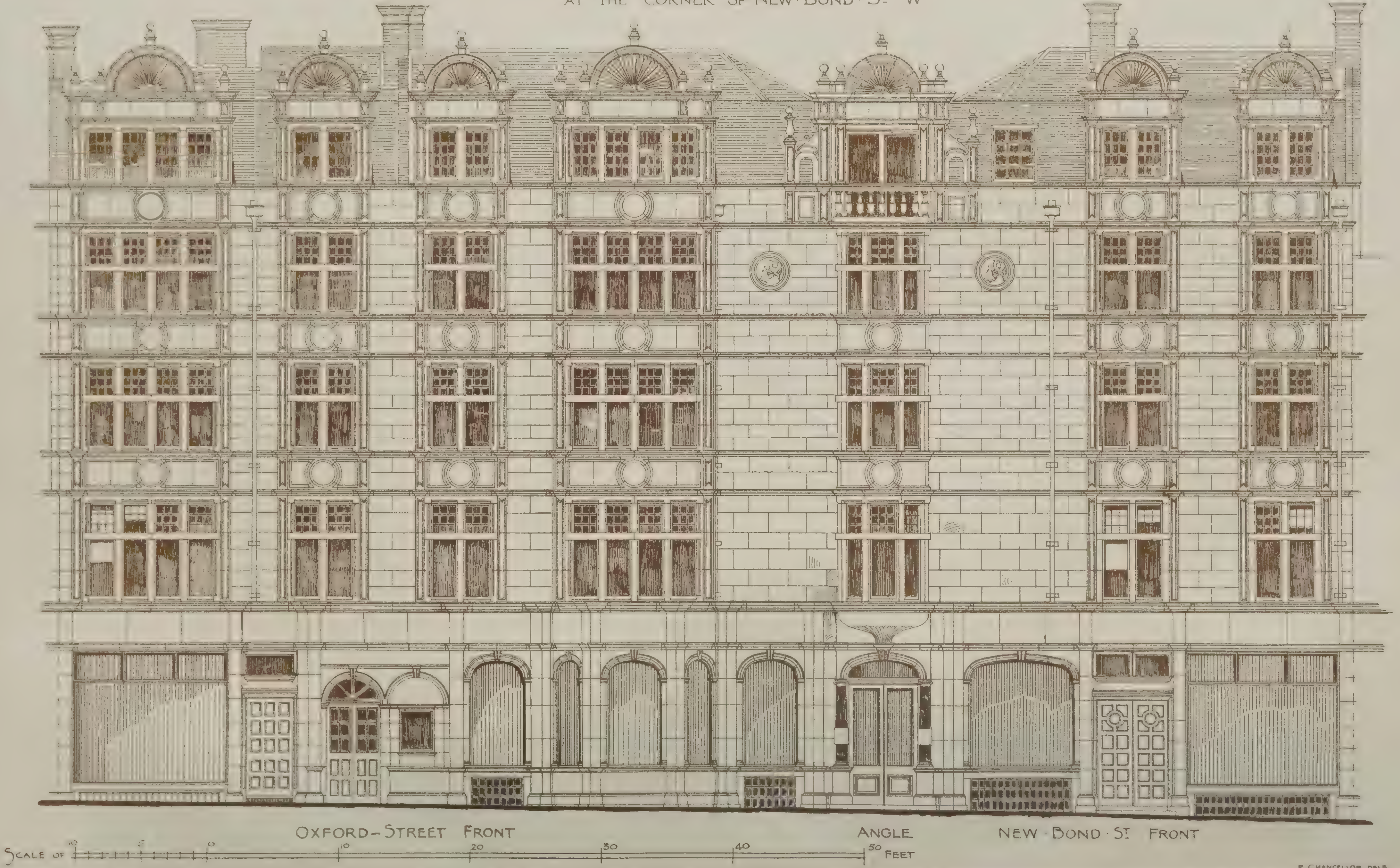
Tuesday.—Society of Architects. "Pastels in the Studio of the Architect," by W. H. Seth-Smith, F.R.I.B.A., President. 8 p.m.
Society of Arts. "English Brocades and Coloured Silks," by C. Purdon Clarke, C.I.E 8 p.m.
Sheffield Society of Architects and Surveyors. "Timber, its Growth and Characteristics," by W. H. Bidlake, M.A. 8 p.m.
Wednesday.—Civil and Mechanical Engineers' Society. "The Development of Ordnance," by G. Macdonnell Lemmi. 7 p.m.

The Stratford-on-Avon Rural Sanitary Authority has called in Mr. J. E. Wilcox, C.E., of Birmingham, to report and advise upon the drainage of Alveston.

THE BUILDING NEWS, APRIL 8, 1892.

NEW · PREMISES · FOR · MESSRS CORBYN · STACEY · & Co
AT THE CORNER OF NEW · BOND · St · W ·

THOS · HARRIS · F.R.I.B.A · ARCHT



E. CHANCELLOR DELt.

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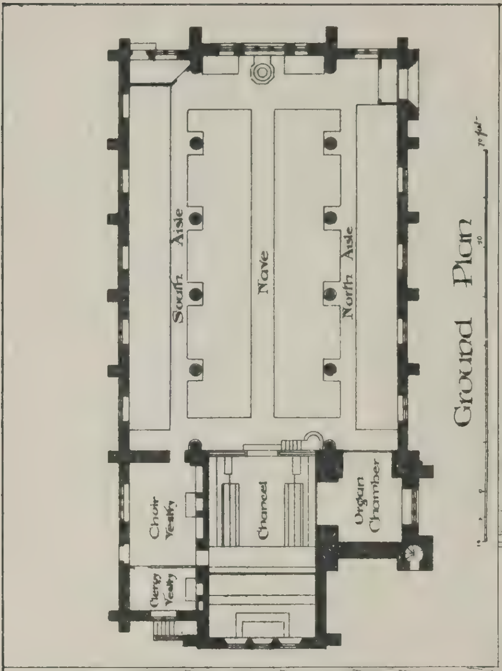

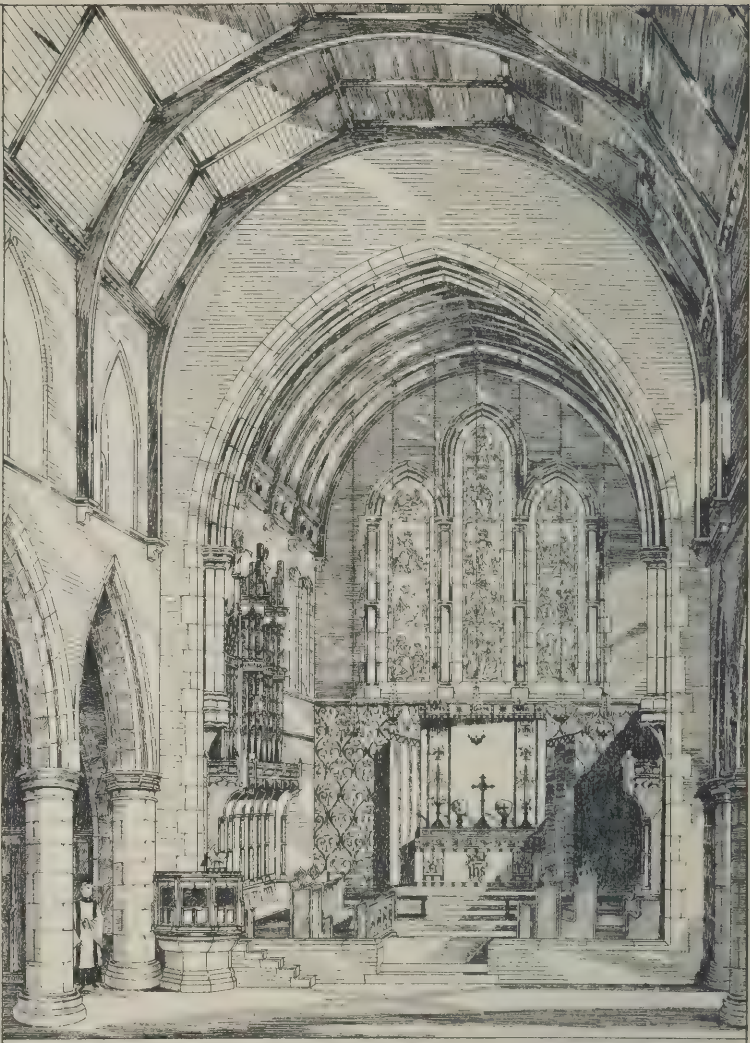

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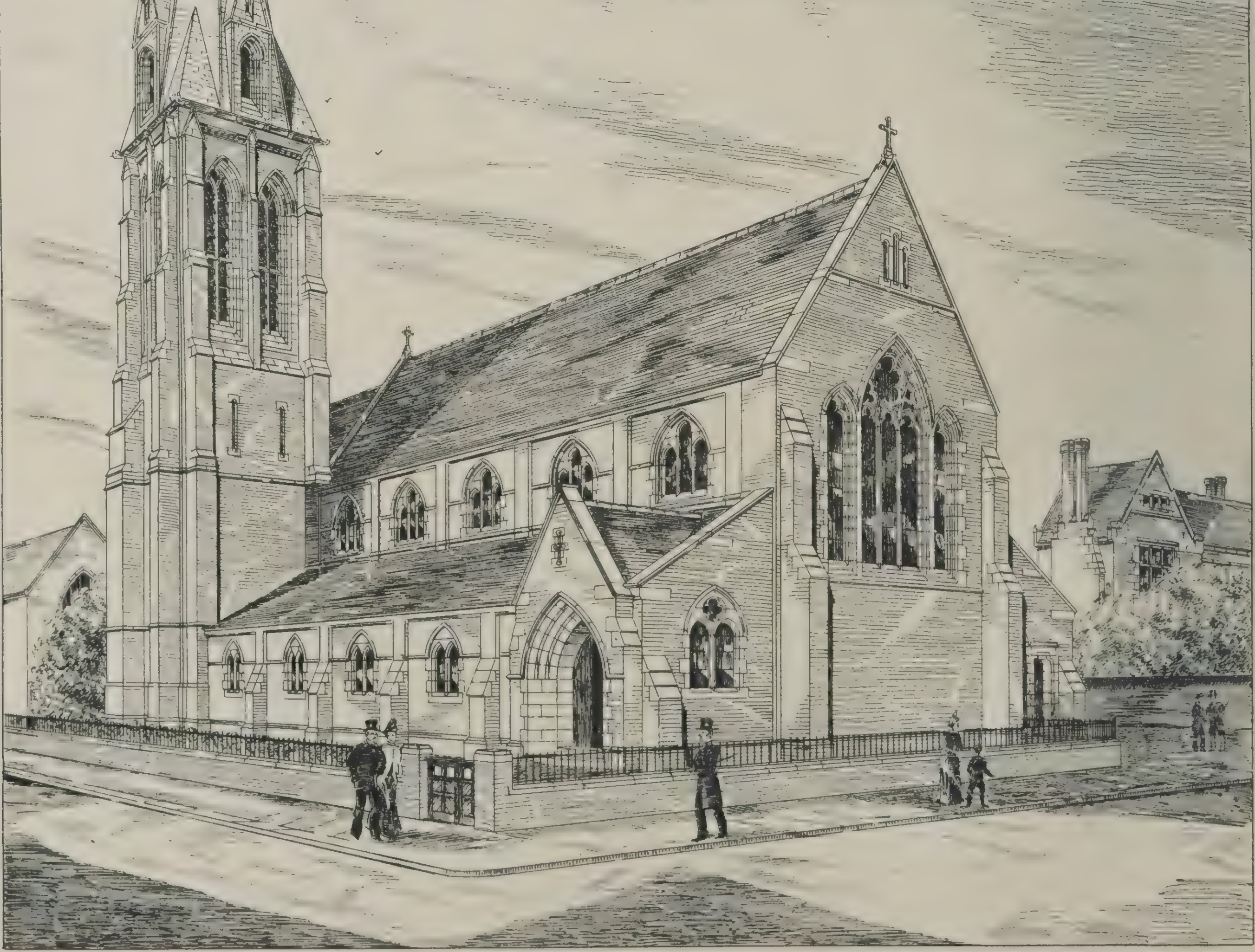

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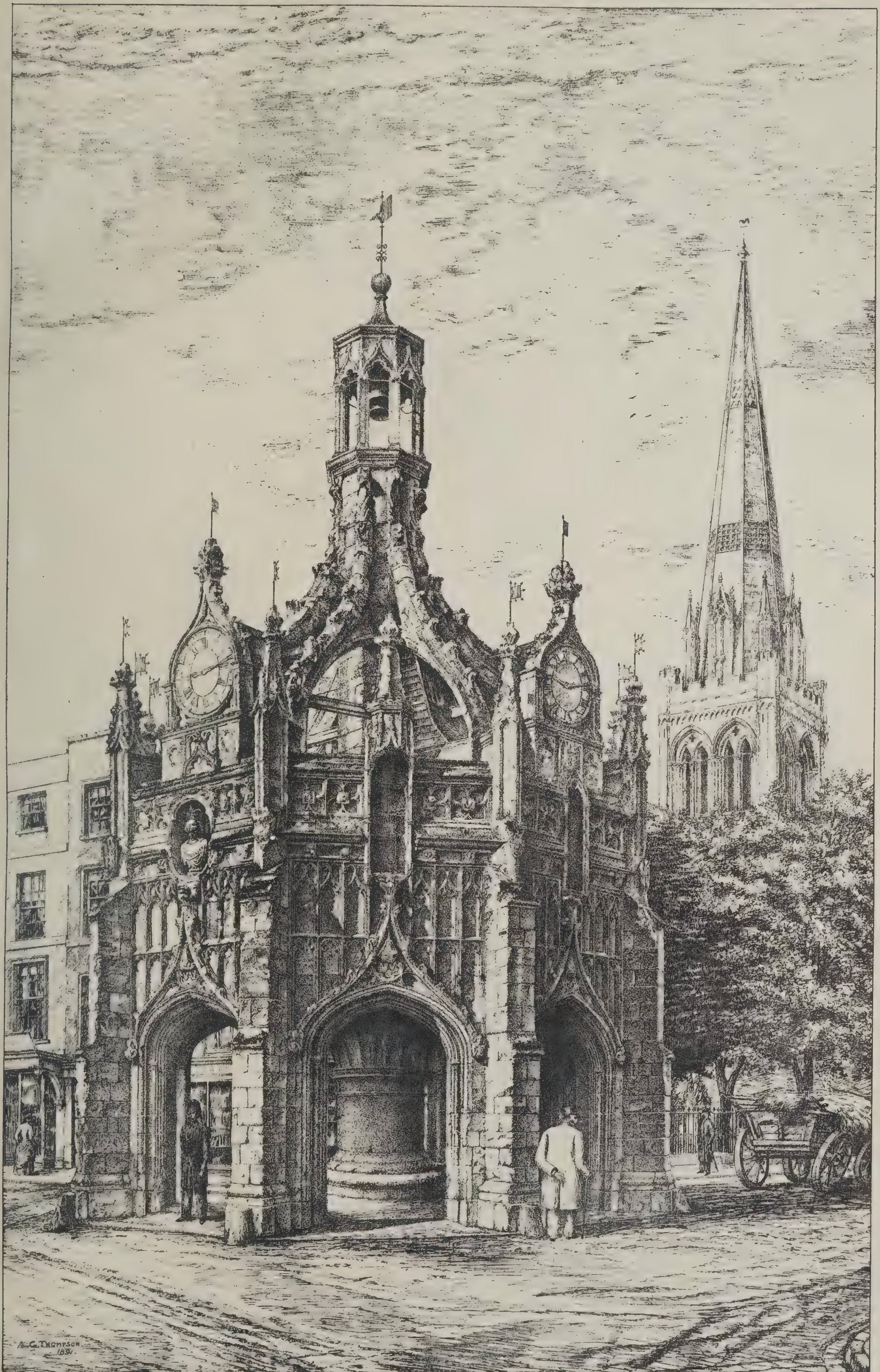

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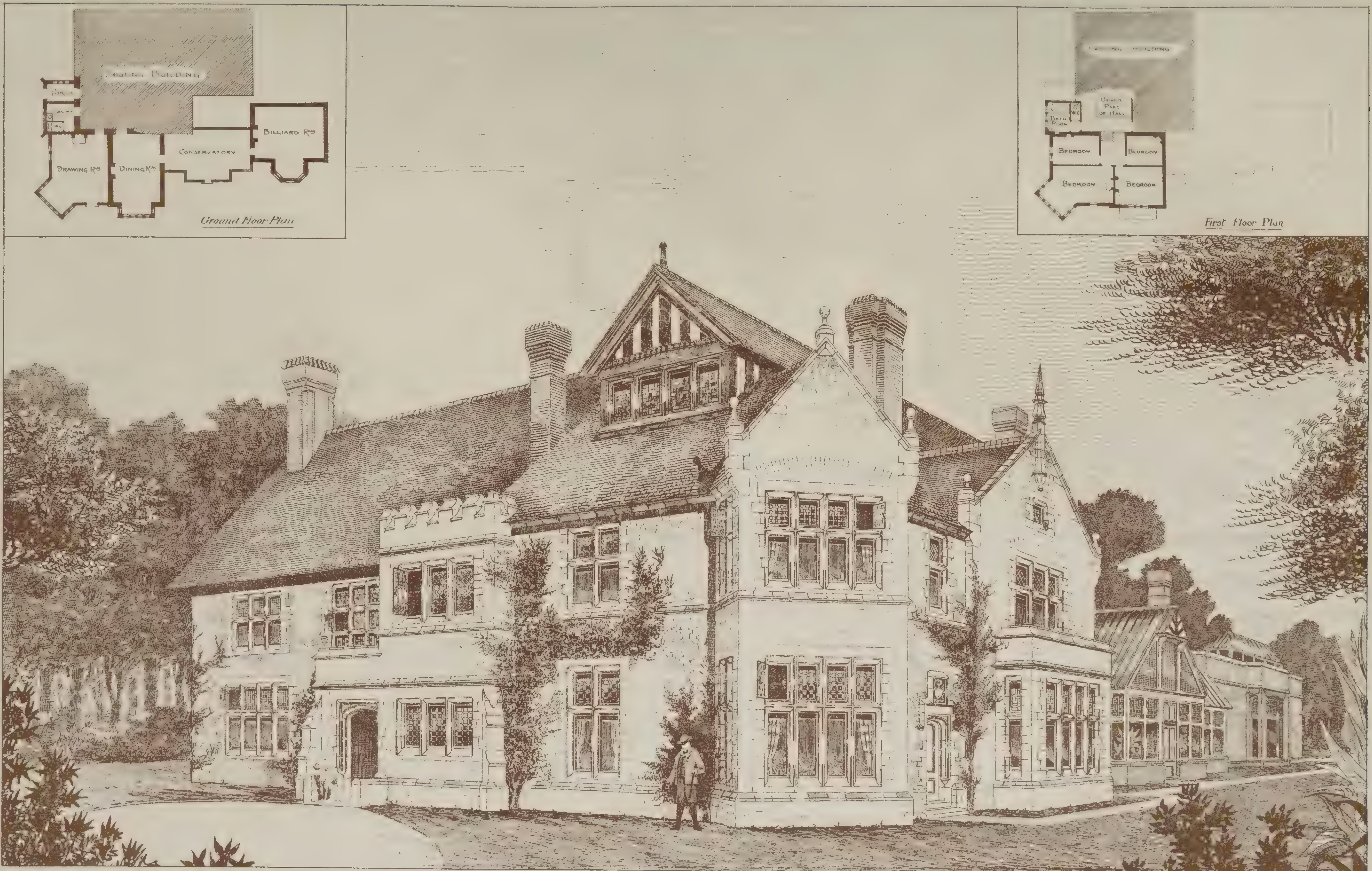
MARKET CROSS AND CATHEDRAL CHICHESTER.



H. Percy Monckton
Archt FRIBA

Residence - Ightham Park * near Sevenoaks - KENT.

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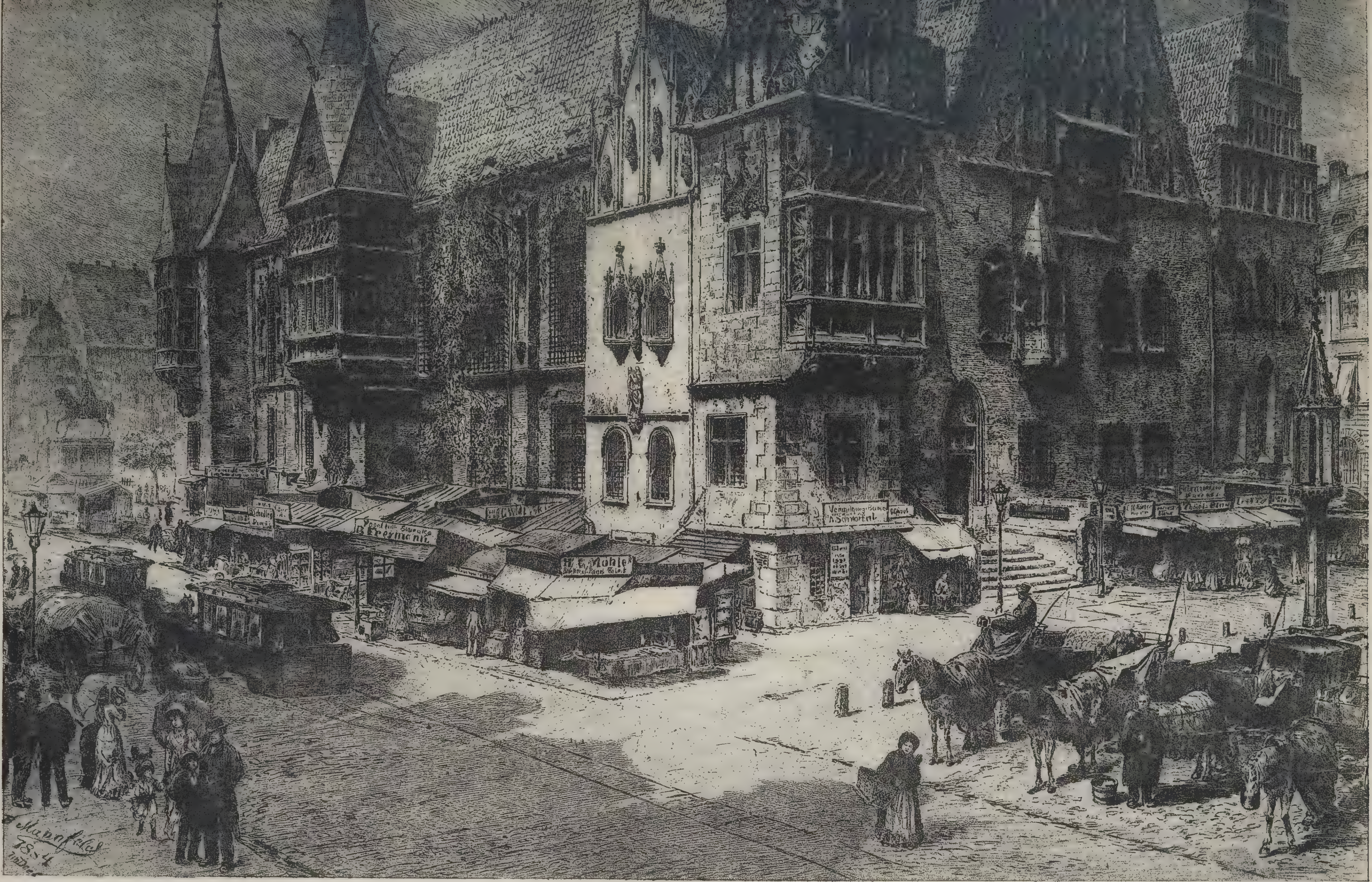

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BRESLAU · RATHAUS ·

FROM · AN ETCHING · BY · B · MANNFELD ·

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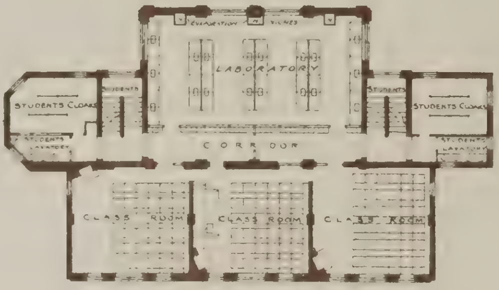

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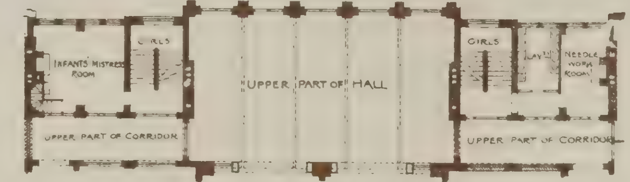
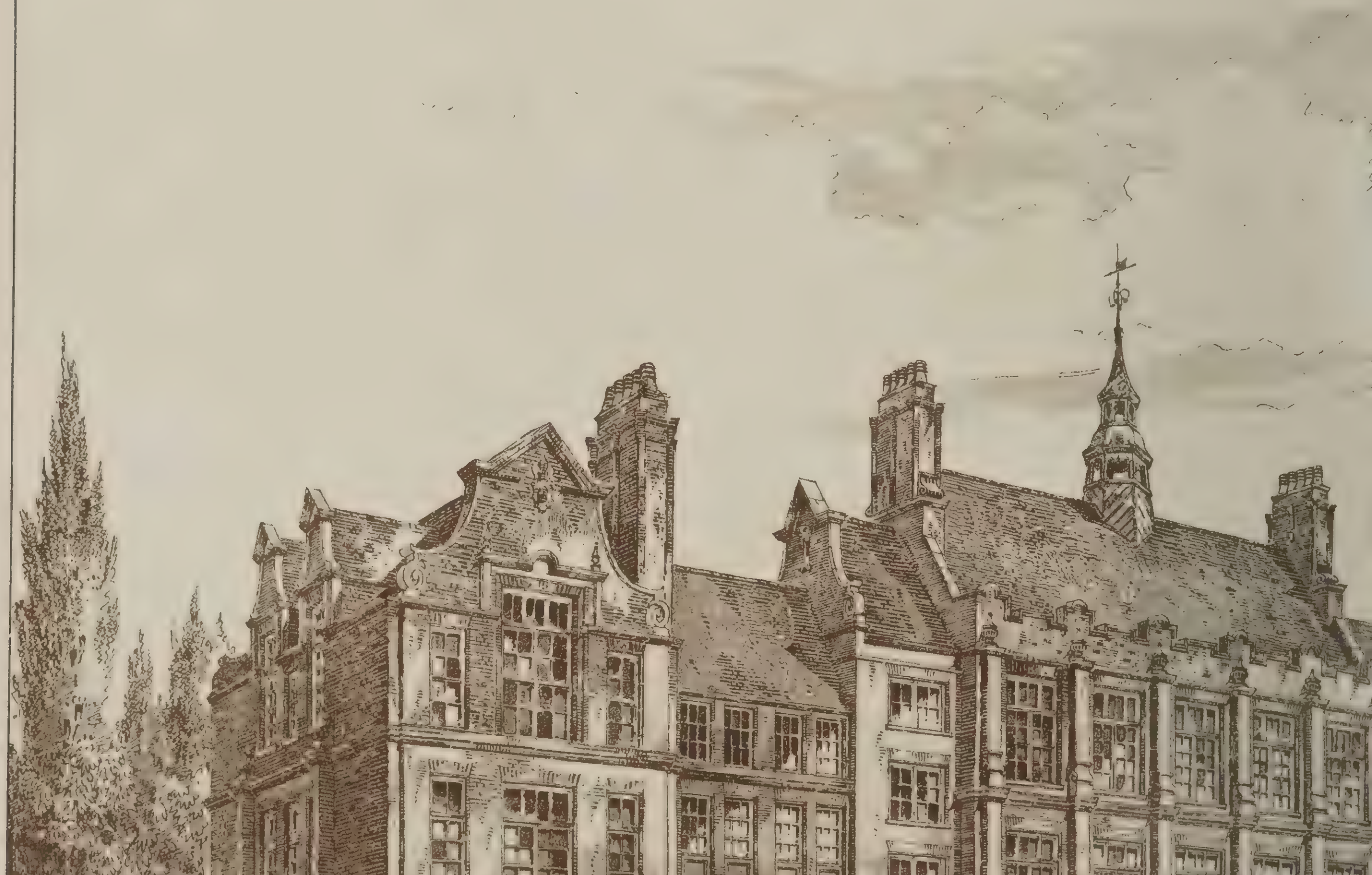
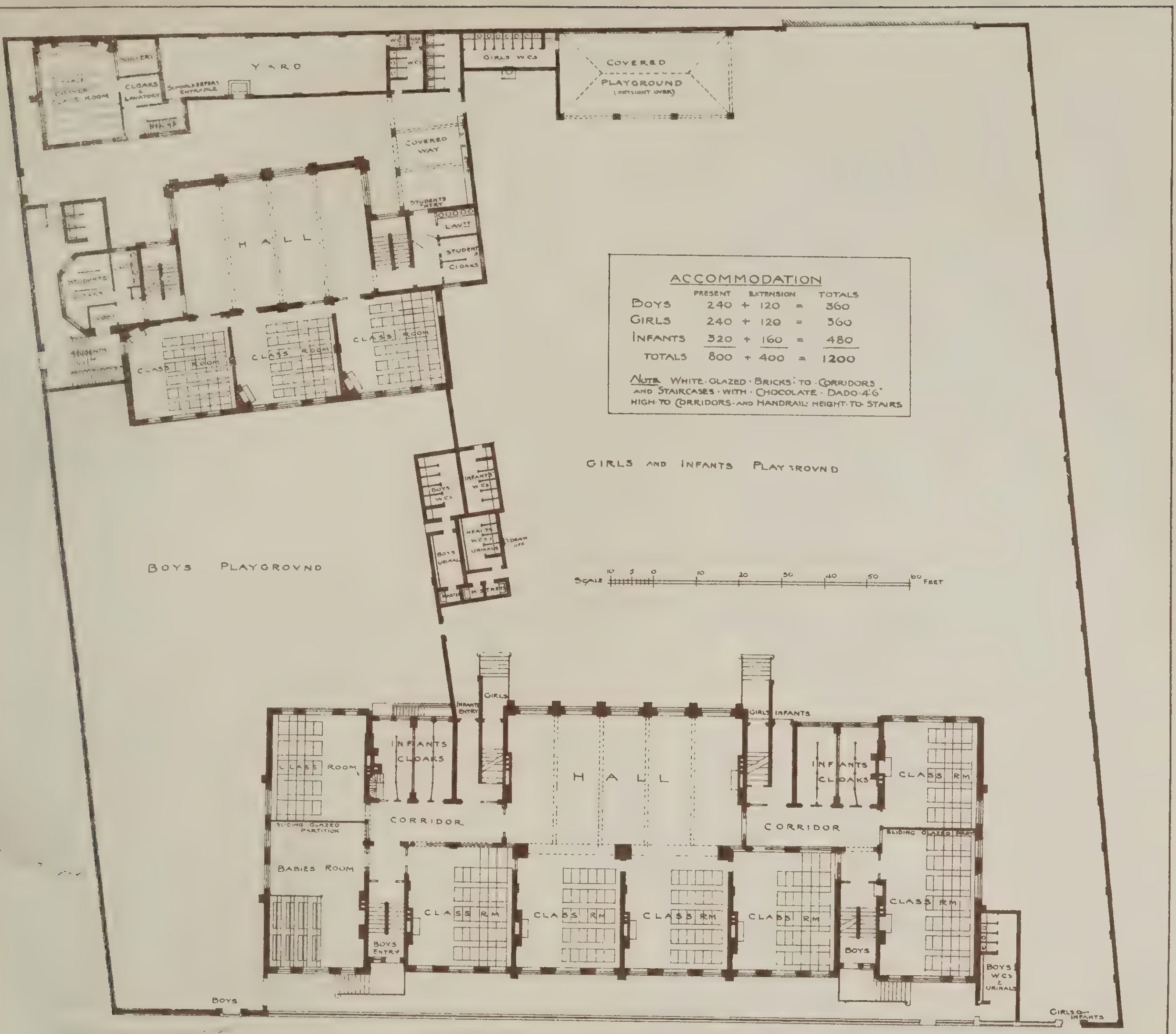


MEZZANINE BETWEEN GROUND & 1ST FLOORS

PUPIL TEACHERS' SCHOOL

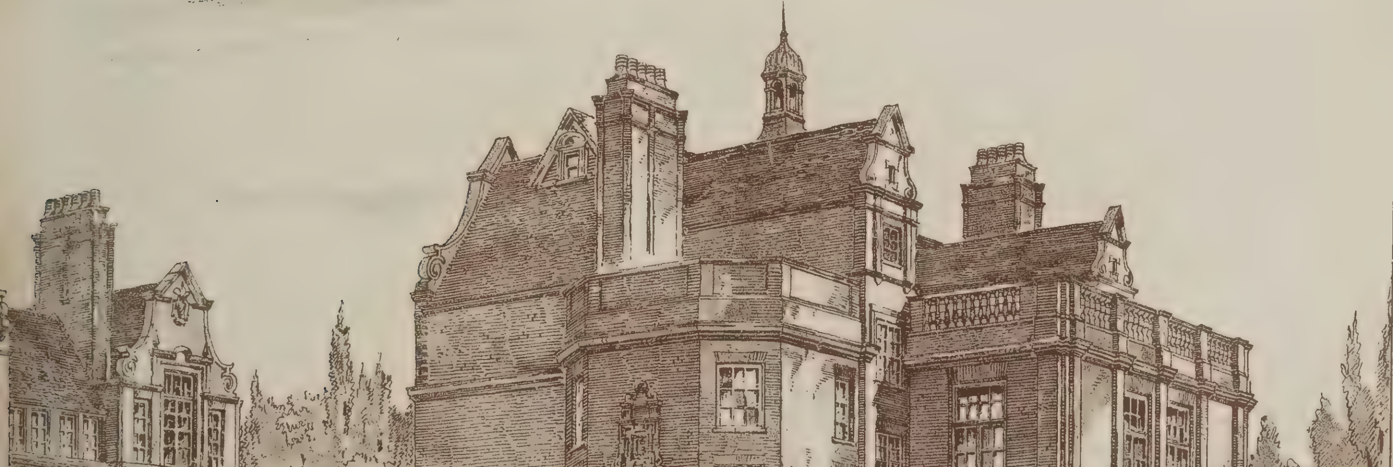




ACCOMMODATION

	PRESENT		EXTENSION		TOTALS
BOYS	240	+	120	=	360
GIRLS	240	+	120	=	360
INFANTS	320	+	160	=	480
TOTALS	800	+	400	=	1200

NOTE. WHITE GLAZED BRICKS TO CORRIDORS AND STAIRCASES WITH CHOCOLATE DADO 4'6" HIGH TO CORRIDORS AND HANDRAIL HEIGHT TO STAIRS



A. S. MITCHELL. delt.

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THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXII.—No. 1945.

FRIDAY, APRIL 15, 1892.

INARTISTIC BUILDINGS.

It is very seldom that an architect is called upon to combine his art with those of sculpture and painting all at once; more frequently his commission is to erect a plain and substantial building without ornamentation, and to leave to future donors or generosity the completion of the design. All our great edifices are to some extent exemplifications of this rule. Wren was not permitted to carry out his cherished design for the basilica of St. Paul's, and his views for the interior embellishment, the lining of the dome with mosaic after the manner of the cupola of St. Peter's, the erection of a splendid baldacchino in the choir, the adornment of the great spandrels of the dome with figure subjects, are yet but imperfectly realised. Many of our great judicial and municipal buildings still remain incomplete. Niches and tympana, panels and friezes are left without the sculptural accessories they were intended to enshrine, and the interior walls and ceilings have yet to be adorned by frescoes or mosaic. In church-building the idea of building by instalments is very prevalent. The architect is instructed to erect a shell, to be completed as funds permit. We know the result of this principle in the hundreds of half-finished churches—barn-like edifices without naves or chancels, with stunted towers, uncarved stonework, and bare internal walls. The architect has to study utility first to make a strictly convenient building; but at what a sacrifice of artistic thought and ability no one knows. To very few is given the architectural prescience of seeing it perfected in his mind's eye, of designing the germ of a great composition; or of being even permitted to erect a fragment of the whole building. What we mean is, there are many men who can design a mere shell, but who could not make it artistic; they can make it convenient and presentable as a building, but not a work of architecture, however much may be added by way of adornment afterwards. Such a structure may be the work of an engineer—one who limits himself to the merest requirements, but who cannot see the possibilities that an artist can. Hurried building has never been propitious for architecture. The ordinary building committee, whatever the means at their disposal, like a building that looks complete, and they prefer therefore to expend their money in the erection of a cheap but whole building, than on an instalment of a more handsome design. The old Mediæval builders of our great cathedrals were in no hurry: they built a magnificent nave, choir, or Lady-chapel, like those of Lincoln, Winchester, or St. Alban's, at one time, and left for a succeeding generation the erection of the aisles or the extension of the nave. We see, for instance, at Ely Cathedral four distinct epochs in the building. The nave is Norman, the presbytery Early English, the choir and octagon lantern Decorated, each erected at those several dates. Again, we find no attempt to complete the design externally; it is developed by degrees; the transepts, central tower or spire, and western towers are added one by one. Such was the growth of our ancient churches, but now the idea is to erect a huge shell as complete as possible for a limited sum. An air of poverty and meagreness is the result.

A large church or Congregational chapel is wanted to accommodate a certain number of people for a certain cost. What can the architect do? The means at his disposal enable him only to design a large shell or shed properly; but, to disarm criticism, he must have traceried windows and some sort of tower. No effort can ever make such a building architectural; all subsequent additions in the way of ornament or decoration are thrown away. To save cost anything like pillars and a division into nave and aisles is avoided, and the main effort is to design a self-sustaining roof of one span. The practical architect who has only one idea accomplishes his task in a plain, matter-of-fact manner, and the result is a meagre-looking, naked structure without clothing or any pretence of art. We see hundreds of these buildings erected for churches, chapels, and halls; they answer fairly well, but they can never be made artistic or comfortable, however much is afterwards spent on them. Why? Because the idea has been to reduce to a minimum the walls, the roof timbers—to employ cheap materials. The designer had a stinted view of the object. The true architect would proceed on different lines: he would refuse to design a building to hold a certain number of persons for a thousand pounds that would properly cost two thousand. A perfect design might be prepared and submitted, and the funds at disposal expended in erecting a nave, perhaps, or a portion of it, to a certain height, with a temporary roof; but the walls, as far as they were erected, would be solid and of good proportions, the buttresses and windows and architectural details of jambs, mullions, and tracery would be carried out with the best materials and in a good style, however simple, as far as they could be, for the means in hand. Such a fragmentary erection may shock many well-meaning people who like to see a complete structure; but it is the only way of building architecturally when funds are small. This instalment method has been always successful to people of right sense. We could point to several handsome churches erected in London during recent years on this plan, amongst them St. John the Divine, Vassall-road, by the late Mr. Street, to which recently a very noble tower and spire have been added, and the wide nave vault decorated; the fine brick church of St. Peter's, Leigham Court-road, Streatham, designed by Mr. Fellowes Prynne, recently finished by the addition of an apsidal ended baptistery and front at the west end; and quite recently the superb brick edifice of All Saints, West Dulwich, by the same architect;—though only three bays of the nave are completed, the whole eastern end, with its apsidal termination, is perfect, and presents a lofty and dignified appearance. The Church of the Oratory at Brompton is another instance of an incomplete western façade and dome. The late Mr. Sedding's fine church of the Holy Trinity, Sloane-street, is perfect in structure, but still requires internal embellishment. In each of these buildings the Mediæval plan of proceeding by instalments has been followed, and an architectural result has been achieved that would have been impossible on the other system of erection.

The influence upon architectural design of the modern plan of erecting plain structures of a cheap kind is prejudicial; we find most architects with small funds at their disposal—say for a municipal building or a church—devote less thought and study to the design than they would if the funds were more liberal, instead of using as much or greater effort to give the best result. Economy with them is equivalent to a paucity of invention rather than the incentive to greater display of it. This is not the true architect's mode of dealing with the problem: he looks beyond the bare four walls and roof to the probabilities—how, for instance, he can seat a large congregation or an assembly by some departure from existing models, or how he can dispose his apartments to produce economical roofing or grouping. Though he may not have the power to erect a building in which architecture, sculpture, and painting can be united, he nevertheless keeps in view the possible means of development—how he can clothe the shell with appropriate ornament. He can do this only by making the shell capable of receiving ornament, by arranging the plan with that object, by giving it proper proportions, and by designing every part of the structure in such a manner as to suggest decorative features and details—keeping, in short, a motive in view. The principal fault of designs for cheap buildings like warehouses, municipal offices, institutes, churches, &c., is that there is no idea of rising above circumstances, or of making the building anything better than a bare, cheap, or imperfect structure of iron or brick; the plan is hurried and ill-considered, the walls are thin and of inferior materials, the details meagre and feeble. We can point to many such buildings with only an ornamental front to redeem them—a mere mask covering a bald shell of brick walls, of iron girders and columns, and apartments which cannot be artistically treated. No amount of lavish surface decoration in the shape of carving, of ornamental tiles or mosaic of wall fabrics will make such a work artistic, any more than a costly garment will endow an individual with the qualitities of a true gentleman or lady. The skeleton or framework of a structure must be composed and integrated before the vesture can shape itself with propriety, and its walls and roof can be made vehicles for adornment.

THE SAFETY OF STRUCTURES USED FOR PURPOSES OF AMUSEMENT.

Owners and lessees of theatres, music-halls, and other buildings appropriated for amusements must lately have been looking rather askance at the proceedings of the London County Council and the Select Committee of the House of Commons. Ever since the late Board of Works' attempt to make owners and managers of theatres comply with certain structural regulations by introducing a Bill into Parliament in 1887, there has been some shyness between proprietors of these buildings and the constituted authorities. The former were quite satisfied with the Lord Chamberlain's requirements, and they did not want interference from any other authority, and they preferred a separate department or branch of the Home Office to the whims of County councillors. The public were willing to go to theatres, and this being so, the owner or caterer was perfectly satisfied if their customers were. No statutory powers existed under the Act of 1878 by which the old Board could make inspections of buildings, and it was obvious to all that serious defects of plan and construction existed in many theatres. The Theatres and Music Halls Committee have been engaged for some time past in preparing a Bill which would remedy these defects. In 1889 they invited representatives of the theatrical and music-hall professions to confer with them, and a draft Bill was prepared, which, however, did not meet with the approval of the interested parties. The Bill of last year is almost identical in its scope, the main objects being to codify the existing law, to enforce identical regulations on theatres and music-halls, to give the Council power to insist that buildings used for public entertainments shall be structurally fit for the purposes intended, and that they shall be so kept; and to give power to compel proprietors to take measures necessary for the protection of the public from fire and accident. While theatres come under certain provisions of the 6 and 7 Vict. c. 68, buildings for music and dancing are regulated by an Act of 25 Geo. II., and require a license from the County Council.

It is needless to say several infringements of the law have been discovered; those who have been licensed after properly complying with the County Council's requirements have complained about the neglect of competitors in the same profession, and that thus an unfair competition prevails. While some of the best-known theatres and halls have been constructed or rebuilt with great care to prevent the spread of fire or panic, other buildings are very imperfect.

We have lately called attention to the regulations issued by the committee with regard to the requirements for the protection from fire of theatres, houses, rooms, and other places of public resort within the administrative County of London. They are, as we then said, very sweeping in their effect, for if put into operation there would not be many buildings that would escape the ordeal, and they would diminish considerably the erection of new buildings of this class. Perhaps the public themselves would be none the worse for this; and we certainly think promoters would be gainers, if we take into account the large competition in London alone. Be this as it may, the practical effect of the requirements would be to close many theatres and buildings set apart for stage plays and amusements. In the case of Mr. Toole's theatre, that gentleman's architect had stated that it would be quite impossible to carry out the principal requisitions within the limits of the present site, and also that the landlords had no premises to lease for the extension of the dressing-rooms. A similar difficulty would be found in many other cases. The committee, at least, seem to have seen the force of these objections, for they acknowledge the conditions cannot be altered except by rebuilding, and they have therefore not pressed their requisitions, on the condition that Mr. Toole will not renew the lease, which expires in 3½ years, and to this that gentleman has assented. Mr. Emden had pointed out that this was not a dangerous building; that its exits and entrances were sufficient, though not conveniently arranged.

This instance was an exceptional one; there are many other buildings with much larger sites with ill-arranged and imperfect means of exit which would be necessarily condemned. Many buildings used for entertainments, and built expressly for the purpose of letting out for concerts, lectures, and dancing, to be seen in nearly every suburb, are inadequately provided with means of egress. In some of them a long, narrow, and often tortuous entrance to the hall is the only way of exit. The hall has been built in the rear of a house or shops, on the ground behind, and the very narrow entrance corridor is formed through the front buildings, so as to give frontages for shops. It is, of course, a cheap way of building a hall, as the structure may be a mere bare brick shell of four walls without any architectural pretensions. Sometimes the entrances are side passages through the front premises. The galleries and staircases are inadequate to the wants of a large assembly, and the floors are often weak. There are no side or rear exits, the hall is built adjacent to houses or tenements all round, so there is no means of escape in case of panic; while, should a fire break out, the adjacent properties are likely to become involved. Mr. Fardell, the ex-chairman of the Theatres and Music Halls Committee, in his evidence before the House of Commons Committee, instanced a building at Kensington used as an assembly-room, where he found a staircase leading to the roof of hall where cottages were built over the hall, giving accommodation to 70 persons, and Mr. Dixon-Hartland referred to the old Alhambra before it was burnt, having a lodging-house close to it. Many premises used for entertainments and stage plays have been found to be unlicensed; they are not structurally adapted or fit for public assemblies, having in some cases been private houses or business premises converted into halls by the removal of partitions and the alteration of the old entrances. Private living-rooms or shops are often to be found under the same roof or within the same walls, and they are closely built round, with only front means of exit. The floors are weak and the party-walls inadequate.

These are some of the structural defects to which the new Act is to be applied, and the more frequent inspection of these buildings is the only means available of discovering defects.

But there is something to be said on the other side. It must be mentioned the buildings used for these purposes were built under certain conditions; the proprietors have incurred large expenses in making them comply with the Acts of 1878 and 1882, and they have been licensed in due course. As the late chairman of the Committee said at the inquiry, the County Council had ordered work to be pulled down which had been required to be done by the late Board. Why should new provisions be enforced every few years? Very often, again, the occupiers have but a short term, and it is unfair to call upon them to incur further expense. We believe there is a clause which makes the owner liable in the first instance, and the cost is proposed to be charged as an annuity. To meet the objection raised to further extensive alterations being required, the regulations passed the other day by the committee are of importance. One recommendation runs as follows: "That in the case of old theatres and music-halls which were erected before the passing of the Metropolis Management and Building Acts Amendment Act, 1878, a period of grace of seven years should be allowed with regard to all requirements of the committee or the council, which, if carried out, would involve reconstruction or the acquisition of adjoining property, which the committee is satisfied cannot be secured"; that "in the case of new theatres and music-halls erected subsequently to the above Act, the owner of which has received a certificate from the council, no further requirements for structural alterations should be made within a period of ten years from date of first certificate, and of five years from that of each subsequent certificate." These recommendations are only reasonable and just to those who have short terms, and have already expended large sums on the buildings.

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THE SEWAGE FARMS OF BERLIN.

At the eighteenth ordinary meeting of the Institution of Civil Engineers, the paper read was on "The Sewage Farms of Berlin," by Mr. Herman Alfred Roechling, Assoc.Mem. Inst.C.E.

Berlin is situated in the sandy plains of North Germany on both sides of the river Spree, which empties itself into the Havel, at the town of Spandau, about five and a half miles below the city. The Havel is a tributary of the Elbe, and forms a succession of lakes immediately above and below the junction with the Spree, which are picturesque in places, and are a favourite holiday resort of the population. The flow of water in the Havel and in the Spree is very sluggish, and the latter river in periods of great drought discharges only about 460c.ft. per second. The area of the city is about 24½ square miles, and its population at the last census (1st December, 1890) was 1,578,794. The density varies from 220 to 25 persons per acre, each dwelling-house (flat system) being inhabited by an average of 65 people. There are about 250 miles of streets, 80 miles of brick sewers, 285 miles of stoneware pipe sewers, and 55½ miles of pumping mains to the sewage farms. The waterworks were purchased (from an English company) by the city authorities in 1874, and the authorities also established their own gasworks, as they could not come to terms with the Imperial Continental Gas Association. The city provides for its extraordinary expenditure by the issue of loans, the last loan, that of 1886, £2,500,000, was issued above par (101·18): this is an excellent indication of the credit it enjoys in the money market. After the Franco-German War, Berlin became the German metropolis. Since then it has grown rapidly, and the changes it has undergone have been very marked. Whole districts have been cleared of their old insanitary houses, new streets have been formed, and others have been widened.

Many new and elegant buildings have sprung up, the old abominably-smelling street-gutters, which were practically open sewage-carriers, have disappeared, and under the sway of an intelligent and enterprising City Council, which is the sole municipal authority, Berlin has become one of the finest and best managed cities in the world. It was originally intended to drain the City in the ordinary way by two main intercepting sewers—one on each side of the river, with one common pumping station, and to discharge the sewage, after some slight treatment, into the Spree. A scheme was prepared on these lines in 1861; but it was not accepted, and finally, after numerous experiments respecting the best mode of sewage disposal had been made, the City Council decided to employ sewage-irrigation, and Mr. Hobrecht's new plan for the main drainage of the town was adopted in March, 1873. The works were commenced in August of the same year, and they have been in hand ever since. Under Mr. Hobrecht's scheme the whole area of the town is divided into twelve separate drainage areas, called "radial systems," which are entirely independent one of the other. They have each a pumping station, from which the sewage is raised direct on to the farms, two drainage districts being in some cases united to one rising main. The area of these radial systems varies from about 674 acres to 2,117 acres, the total population in such of them as are entirely built over being about 200,000. The authorities have purchased the whole of the land required for sewage farming; some of this land lies in the north and north-east, about six miles from the city, and some in the south about 12 miles distant from it. The total area of all the farms has now reached 18,790 acres, of which at present only 11,016 acres are under sewage treatment; the remainder is, however, being prepared for sewage farming, and the acreage of the farms is extended as circumstances require. The subsoil on the farms is, generally speaking, sand, with a preponderance of sandy loam in places, especially on the northern farms, and is well suited for sewage irrigation. The land is practically level, with small eminences here and there. The sewage of about 112 persons is now treated on each acre of land. The distribution of the sewage takes place by means of underground cast-iron pipes, which start from the stand-pipes on the rising-mains and terminate on the small summits, where the open earth carriers commence. The whole of the land that receives sewage has been specially prepared for irrigation by levelling and draining. The effluent from the farms is conveyed in open ditches into small streams, which empty into the river Spree, partly above, partly in the city, and partly below it. The authorities employ a large number of "misdemeanants" in the work on the farms; these are men who have been sentenced for various minor offences to undergo a period of confinement in the House of Correction; they are the loafers of the Berlin streets. From a philanthropic point of view, this course cannot be too highly commended, as it gives the men a chance to get back into regular habits, and thus to redeem their character. The city has spent about £2,906,792 in works of sewerage, and £1,173,648 in the sewage-farms, and about 350 million tons of sewage have been utilised on the farms since the commencement of irrigation. Broadly speaking, the largest acreage in 1889-90 was under cereals, viz., 2,817 acres, then follow the grass plots with 1,785 acres, the roots and green vegetables take the third place with 1,013 acres, and oil-producing plants are cultivated only on 237 acres. There has been a very fair profit on the management of the farms since 1886, but, of course, the amount has not been sufficient to meet the payments for capital expenditure. The deficiency, however, is not a large one, as it has necessitated only an average annual rate of 0·89d. in the £ during the last five years, or a payment of 7·11d. per head of the population per annum. This is a remarkably small amount, and compares favourably with what has been paid in England for sewage-utilisation. The degree of purification attained has been excellent, as on an average from 95 to 98 per cent. of the organic ammonia contained in the sewage has been abstracted on the farms. This is considerably above the figures quoted by the Rivers Pollution Commissioners as the result of sewage-farming in this country. The farms have had no ill effect upon the health of the population living on them, and the prejudice against them has almost died out, which is evidenced by the ever-increasing demand for sewage by adjacent farmers and landowners. On the whole, Berlin is to be congratulated upon the cheap and efficient way in which it utilises its sewage. Where other towns have failed it has succeeded, and that upon a scale at present without a parallel.

AMALGAMATED SOCIETY OF CARPENTERS AND JOINERS.

IN the thirty-second annual report of this society, just issued, the general secretary, Mr. F. Chandler, remarks that during the year 1891 the society encountered difficulties of an exceptional character, which often caused him to doubt whether the report would contain a satisfactory financial statement, because of the possibility of having to announce a diminution of the accumulated capital. These fears, however, are now happily dispelled, as, notwithstanding the heavy demands made upon their resources, the society has been able to increase its cash balance by £4,018 17s. 11d. He claims that good work has been done in illustrating the practical utility of the organisation, the real value of which is not to be estimated by the fact that each year they accumulate an amount of capital which cannot be usefully employed. Ample funds to meet promptly every claim, and a substantial balance at the end of each year are all, he holds, that is necessary or desirable; the former has always been done, the latter they have always had at command. During the year forty-four branches have been opened, most of them in districts where hitherto no vestige of unionism existed. Twenty-seven of these new outposts are situated in England, seven in Ireland, one in Scotland, one in Wales, five in the United States, and three in Australia. During the same period four branches were closed, the numbers now being—England and Wales, 380; Ireland, 33; Scotland, 22; United States of America, 41; Canada, 10; Australia and New Zealand, 16; and South Africa, 4; total, 541 branches. The number of members admitted has been 6,567, which, after allowing for deaths and exclusions, left a total membership of 34,779, or an increase during the twelve months of 3,284. The income amounted to £88,213 12s. 5½d., and the expenditure to £84,194 14s. 6½d.; and at the end of the year a cash balance of £64,660 12s. 9½d. was in hand. The total amount of assets is £70,936 2s. 9½d., *i.e.*, £2 2s. 1d. per member over the ordinary membership of 33,533, or £2 0s. 9½d. over the whole. In relieving our unemployed members £17,421 11s. 6½d., or 10s. 4½d. per member, was expended. This amount, although slightly in excess of 1890, is less than any preceding year since 1878. Accident benefit is responsible for £2,100, or 1s. 3d. per member, this being the largest amount paid in any year since the society has been established, and twenty of these cases arise out of injuries sustained either through machinery or accidents on buildings. Several extensive fires having occurred during the year, it entailed an expenditure of £1,820 15s. 2½d. in replacing members' tools lost by this and other causes, which is also the largest amount ever paid in one year. Superannuation benefit cost £6,179 14s. 10½d., or 3s. 8d. per member, as against 3s. 6¾d. in 1890, and 3s. 9½d. in 1889. The sick benefit required £21,379 9s. 9d., or 12s. 9½d. per member; funerals, £3,551 0s. 6d., or 2s. 1¼d. per member; sending members to situations, £267 13s., or 1¾d. per member. In assisting cases of distress and relieving the widows and families of deceased members £1,039 10s. was disbursed, and in assistance to other trades £652, showing a total expenditure from the contingent fund of £1,691 10s., or 1s. per member. To support members in their efforts to improve their position and to retain their present privileges entailed an expenditure of £15,504 0s. 3½d., or 9s. 2¾d. per member, which is £6,206 6s. 3d. more than required last year; "but this is mainly due to the stoutly-contested battle which was fought in London during the latter half of the year, and finally settled by arbitration." Mr. Chandler gives tabulated figures showing that all over the country advantages have been gained by members. These, with few exceptions, have been the result of amicable arrangements made by the managing committees, and the evils resulting from disputes have been averted at a cost of £1,155 10s. 7½d., or 8¼d. per member, under the heading of trade management expenses. Strikes occurred, however, in Bedford, Cambridge, Drogheda, Grimsby, London, Norwich, Prestwich, Radcliffe, Richmond, St. Helen's, and Waterford, the most serious of which was that of London, "where," the Secretary continues, "in order to crush, if possible, the combination of the men by suppressing the very purpose for which our union exists—viz., mutual support—they (the master builders) determined to lock-out all hands, with the ostensible object of extinguishing the strike against three firms; but so far from succeeding, it had, as upon all previous occasions, the direct opposite effect, as it evoked a spirit of resistance and organisation amongst the men, causing them to stand more firmly together, thereby securing the admiration and support of most of the organised trades in the country, and greatly increasing and strengthening our union by the additional numbers which this policy forced into our ranks." He urges the members to redouble their efforts to strengthen their organisation, and by means of federation and other associated measures place themselves in a position to bargain with the employers on more equal terms. In conclusion, Mr. Chandler observes: "The past year has not been a time when a deal of money could be saved, but the funds at our disposal have been profitably utilised. It has paid in full every legitimate demand made upon its resources, and the close of the year finds it with increased strength steadily pursuing its course of self-reliant usefulness."

ARDROSSAN NEW DOCK.

THE new dock, which has just been constructed in connection with the Ardrossan Harbour, was opened on Tuesday by Lady Gertrude Montgomerie. The harbour was commenced in 1806, and after 30 years' labour, and an expenditure of £200,000, two tidal basins and a wet dock of four acres were opened, the depth being 19ft. at high water. The dock now opened—which lies to the north of the old one—with a tidal basin and new breakwater, have just been completed by the contractors, Messrs. Lucas and Aird, London, from the designs of Messrs. Strain, Robertson, and Thomson, civil engineers, Glasgow and London. The new dock—which will be known as the Eglinton Dock—covers an area of 10 acres, being 700ft. long and 620ft. broad, and has a depth of 27ft., while the quay accommodation extends to over 2,700ft. In order to bring about the necessary depth 400,000 cubic yards of excavations had to be accomplished, a large quantity of the material, consisting of rock, for the most part sandstone interbedded with limestone, and intersected also with trap-dykes. With regard to the construction of the walls, on the north side the old Montgomery pier was utilised as far as possible, a portion of it having been widened from 30ft. to 165ft., to give additional railway facilities. On this side advantage was also taken of the old quay wall, while on the south side the standing quay wall was likewise used—these old walls being underbuilt with concrete. On the east and west sides of the dock the walls are new, and have been constructed of rubble concrete. The dock is divided from the new tidal basin by a cross quay 80ft. wide, and is entered from that basin by a passage 60ft. wide, provided with gates of greenheart timber. The outer or tidal basin covers fully four acres, being 500ft. long and 370ft. broad, and has 1,600ft. of quays. The new walls, which are founded on rock, are of rubble concrete. The new breakwater is 1,320ft. long, and runs for 1,000ft. from north to south, and afterwards in a north-easterly direction. The breakwater has been entirely constructed of concrete, and is founded at the southern extremity on rock, where it is 14ft. wide at the top, and at the northern part it is 10ft. wide. Rubble concrete has been used for the superstructure, which was built within timber framing on concrete bag-work. The portion below low-water level was constructed of concrete deposited in bags containing from 25 to 40 tons each. Besides the dock extension, the quay accommodation has also been very greatly extended. Two hydráulic hoists, each with a lifting capacity of 18 tons, have been erected, and also three cranes of a lifting capacity of three tons.

CEMENT CONCRETE TESTS.

A LARGE number of experiments have been made by the engineers of the Melbourne Metropolitan Board of Works as to the desirability of bluestone toppings and screenings being substituted for sand for making Portland cement concrete or mortar for the main outfall sewer. The results show that the substitution is advantageous; that samples or briquettes made with Beaconsfield sand and cement, and bluestone toppings and cement in the same proportion—viz., 2 to 1 of cement—show the strain required to break the briquettes was much greater with the latter material than with sand. As to the crushing strength of the concrete, this being the chief requirement for sewers, the experiments made showed conclusively that from ratios of 1 to 8 to 1 to 15 the mortar made with bluestone toppings was much stronger than that made with sand. Other series of tests prove the same superiority of bluestone toppings in every case, and the authorities have decided to allow either bluestone toppings or sand to be used for the outfall sewer, whichever is the cheaper. Comparing the strength and cheapness of the various concretes, the following give very good results:—1 of cement, 4 of bluestone toppings, 1 of bluestone screenings, and 1 of bluestone; also 1 of cement, 3 of bluestone toppings, 2 of screenings, and 2 of bluestone; also 1 of cement, 2 of bluestone toppings, 2 of screenings, and 3 of bluestone; of these the latter is recommended for the sewers. The general results are thus summarised:—"(1) Neat Portland cement is stronger both in tensile and crushing strength than any mixture; (2) that Portland cement mixed with bluestone toppings to form a mortar is always stronger if sand be substituted for toppings; (3) that mortar composed of 1 of Portland cement and 1 of bluestone toppings is reduced in strength by the addition of screenings; that the addition of 2 parts of screenings increases the strength of the poorer mortars, and that the maximum strength is obtained by the addition of 1 part of screenings to mortars of ratios 1 to 2 to 1 to 5; (4) that in Portland cement concretes, the best result with any mortar is given when combined with 1 part of screenings and 1 part of stone; that the increase of screenings has a tendency to weaken the concrete if more than 1 or 2 parts be used; that with mortars poorer than 1 to 2, 2 or 3 parts can be added without materially reducing the strength." Mr. C. E. Oliver, A.M.Inst.C.E., carried out these tests by means of the testing machine at the Melbourne University, with the assistance of Mr. W. Kernot.

FOUNDATIONS OF BUILDINGS.

THE foundations of the City Hall at Kansas City are constructed on a system at once strong and economical. The site, formerly a ravine, had been filled with rubbish, and was partly of clay. It was found that pile foundations were impracticable on account of the dryness of the filling and the risk of the piles decaying; therefore, a system of piers of cylindrical form was adopted, the excavation being done by a large steam-power auger, followed by a $\frac{3}{16}$in. caisson filled with vitrified brick, which withstood a crushing pressure of 135 tons. The piles were 4ft. 6in. in diameter, laid in hydraulic cement mortar, grouted solid in each course and well bonded. These piers were sunk to the rock of oolitic limestone 8ft. thick, and capped by cast-iron plates and steel I beams. Round and between the beams is a concrete filling, and the top surface is covered by ¼in. boiler-plate bolted to the flanges of the beams, upon which plate the walls are built. Piers with great loads are strengthened by 12in. Z-like columns resting on the rock. These piers are distributed over the whole of the foundations at certain distances apart, at piers and at all angles of the building where heavy loads are to be sustained. The beams carried by the piers are incased in concrete, and are 15in. steel, except the smaller cross-beams. A somewhat similar plan of supporting walls upon piers and beams has been carried out at Great Yarmouth to prevent the yielding of the foundations of the new municipal buildings. A general description, plan, and details are published in the *Engineering Record*, from a paper by the architect, Mr. S. E. Chamberlain, of Kansas City, from which the above particulars are obtained. The system of resting weighty buildings or walls on piers of brickwork or concrete that can be taken down to the solid rock or substratum is worthy of attention by architects, who have often to build on treacherous soils, which require costly excavation and trenches on the ordinary plan.

PRICES.*—XXXIV.

JOINER (*continued*).

(All Prices Include Profit.)

Public House and Other Fittings, Spanish Mahogany unpolished—

		£	s.	d.
½in. wrot one side plinths or linings finished for polishing	per ft. sup.	0	1	10
Ditto ditto ditto moulded	ditto	0	2	1
¾in. ditto	ditto	0	2	1
Ditto ditto ditto	ditto	0	2	4
1in. ditto	ditto	0	2	4
Ditto ditto ditto	ditto	0	2	7
1in. square framed wrot. one side inclosure to counter made to remove	ditto	0	2	9
Ditto moulded	ditto	0	3	0
Ditto bead flush	ditto	0	3	0
Ditto bolection moulded	ditto	0	3	3
Ditto raised panels	ditto	0	3	8

(Note.—These prices do not include the framed bearers at back.)

1¼in square framed inclosure	ditto	0	3	2
Ditto moulded	ditto	0	3	5
Ditto bead flush	ditto	0	3	5
Ditto bolection moulded	ditto	0	3	8
Ditto raised panels	ditto	0	4	0
Ditto square framed, circular on plan	ditto	0	8	0
Ditto moulded ditto	ditto	0	8	6
Ditto ditto bolection ditto	ditto	0	9	0
1½in. square framed	ditto	0	3	6
Ditto moulded	ditto	0	3	9
Ditto bead flush	ditto	0	3	9
Ditto bolection moulded	ditto	0	4	0
Ditto raised panels	ditto	0	4	4
Ditto square framed, circular on plan	ditto	0	8	9
Ditto moulded	ditto	0	9	3
Ditto ditto bolection	ditto	0	9	9
2in. square framed	ditto	0	3	10
Ditto moulded	ditto	0	4	1
Ditto ditto bolection	ditto	0	4	4
Ditto bead flush	ditto	0	4	1
Ditto raised panels	ditto	0	4	10
Ditto square framed, circular on plan	ditto	0	9	6
Ditto moulded ditto	ditto	0	10	0
Ditto ditto bolection ditto	ditto	0	10	6
Allow extra for 1in. door	each	0	2	6
Ditto ditto 1¼ ditto	ditto	0	3	3
Ditto ditto 1½ ditto	ditto	0	4	0

Counters—

1in. counter top buttoned to bearers, including plain edges, but not bearers	per ft.. sup.	0	3	3
Ditto circular on plan, measured square	ditto	0	4	0
1¼in. ditto	ditto	0	3	6
Ditto ditto circular on plan	ditto	0	4	4
1½in. ditto	ditto	0	3	10
Ditto ditto ditto	ditto	0	4	10
2in. ditto	ditto	0	5	0
Ditto ditto ditto	ditto	0	6	3
1 by 2½ moulded edging or nosing screwed on edge of counter	per ft run	0	0	8
1¼ by 2½ ditto	ditto	0	0	9
1½ by 3 ditto	ditto	0	0	11
2 by 4 ditto	ditto	0	1	8
1 by 2½ ditto circular	ditto	0	1	6
1¼ by 2½ ditto	ditto	0	1	8
1½ by 3 ditto	ditto	0	2	1
2 by 4 ditto	ditto	0	3	3
½ by 4 plain pilasters	ditto	0	0	8
½ by 6 ditto	ditto	0	0	9
¾ by 4 ditto	ditto	0	0	10
¾ by 6 ditto	ditto	0	1	1
Ends fitted	each	0	0	3
¾ by 6 framed ditto	per ft. run	0	2	0
1 by 6 ditto ditto moulded	ditto	0	2	6
Ditto ditto ditto ditto bolection	ditto	0	2	10
Ditto ditto reeded (not framed)	ditto	0	2	0
1 by 9 square framed	ditto	0	3	0
Ditto moulded	ditto	0	3	6
Ditto ditto bolection	ditto	0	3	10
Ditto raised panels	ditto	0	4	3
1¼ by 9 square framed	ditto	0	3	3
Ditto moulded	ditto	0	3	9
Ditto ditto bolection	ditto	0	4	1
Ditto raised panels	ditto	0	3	6
Small moulded neckings, mitred round pilasters	each	0	1	9
Moulded caps ditto ditto	ditto	0	2	6
Ditto bases	ditto	0	3	3
Ditto ditto large	ditto	0	4	0
2in. pateræ carved in solid	ditto	0	1	3
2½in. ditto	ditto	0	1	6
3in. ditto	ditto	0	1	10
4in. ditto	ditto	0	2	6
4 by 2½ by 2 moulded and carved trusses ordinary patterns	per ft. run	0	3	3
6 by 3 by 2 ditto	ditto	0	5	0
6 by 4 by 2½ ditto	ditto	0	6	0
6 by 4 by 4 ditto	ditto	0	7	6
4 by 4 by 2 carved caps, ordinary character	ditto	0	5	0
6 by 6 by 2 ditto	ditto	0	9	0
9 by 9 by 3 ditto	ditto	0	18	0
10 by 10 by 4 ditto	ditto	1	1	0

Bar Divisions—

1½in. wrot. two sides, and framed bar division, fitted and fixed	per ft. sup.	0	3	6
Ditto moulded both sides	ditto	0	4	3
Ditto ditto ditto bolection	ditto	0	5	0
Ditto stop-chamfered both sides and plain stops	ditto	0	5	0
Ditto raised panels ditto	ditto	0	6	0
Extra for door in ditto	each	0	6	0
2in. wrot two sides and framed bar division, fitted and fixed	per ft. sup.	0	4	0
Ditto moulded both sides	ditto	0	4	9
Ditto ditto ditto bolection	ditto	0	5	6
Ditto stop-chamfered both sides, and including plain stops	ditto	0	5	6
Ditto raised panels both sides	ditto	0	6	6
Extra for door in ditto	ditto	0	6	6
2½in. ditto square-framed	ditto	0	4	6
Ditto moulded both sides	ditto	0	5	3
Ditto bolection moulded both sides	ditto	0	5	9
Ditto stop-chamfered both sides, and plain stops	ditto	0	6	0
Ditto raised panels both sides	ditto	0	7	0
Extra to door in ditto	ditto	0	7	0

Panels left out for glass, including loose beads or mouldings, price at square-framed, and price one set of loose beads extra; these are usually taken separately in quantities.

		£	s.	d.
1 by 3½ moulded capping, screwed	per ft. run	0	0	8
1½ by 4 ditto ditto	ditto	0	1	3
Ditto with small mouldings under on both sides	ditto	0	1	8
2 by 5 grooved and moulded on solid	ditto	0	2	8
1 by 3½ ends return moulded	each	0	0	8
2 by 5 ditto ditto	ditto	0	0	10

Elbows—

1½in. square-framed elbows, open for glass in one square, with moulding on solid and one set of loose beads, and capping, fixed complete	each	0	12	0
Ditto ditto ramped, ogee-shaped on one edge, and capping	ditto	1	0	0
Carved corbel or bracket, to carry either of the above	ditto	0	12	6
2in. square-framed elbows, as first item	ditto	0	14	0
Ditto ditto ramped on one edge	ditto	1	2	6
Carved corbel or bracket, to carry either of the above	ditto	0	15	0
2½in. square-framed elbows	ditto	0	18	0
Ditto ditto ramped on one edge	ditto	1	8	0
Carved corbel or bracket, as above	ditto	1	0	0

Counter Screens, no ironmongery included—

1in. framed screen framing with beads both sides, fixed in square about 15 by 12	per ft. sup.	0	3	6
Ditto with each square framed separate, rounded on edge, and hung on centres, not included, top and bottom	ditto	0	5	0
Ditto framed separately, and made to slide	ditto	0	4	10
1¼in. all as first item	ditto	0	3	9
Ditto all as second item	ditto	0	5	3
2½ by 2¼ wrot framed and beaded rail, in short lengths	per ft. run	0	2	3
2½ by 3 ditto ditto	ditto	0	2	6
2½ by 4 ditto ditto	ditto	0	3	6
3 by 2¼ ditto ditto	ditto	0	2	9
3 by 3 ditto ditto	ditto	0	3	3
3 by 4 ditto ditto	ditto	0	3	9
3 by 3 wrot all round posts	ditto	0	1	6
3½ by 3½ ditto ditto	ditto	0	2	3
4 by 4 ditto ditto	ditto	0	2	9
Chamfered angle, stopped	ditto	0	0	2½
Plain stops	ditto	0	0	2½
Moulded ditto	ditto	6d. to 8d.		
Staff beaded angle	ditto	0	0	2½
Cut tops	each	2s. 6d. to 7s.		
Moulded neckings, mitred round	ditto	0	1	9
Ditto bases	ditto	0	3	0
½in. flutings (short), with quadrant stops	ditto	0	0	10
1in. carved pateræ	ditto	0	0	9
1¼in. ditto ditto	ditto	0	1	0
1½in. ditto ditto	ditto	0	1	3
1¼ by 3 capping, moulded both edges and fitted to posts	per ft. run	0	0	10
1½ by 3 ditto ditto	ditto	0	1	0
1½ by 4 ditto ditto	ditto	0	1	5
2 by 4 ditto ditto	ditto	0	2	0
Ends of posts framed through counter	each	0	0	9
1in. wrot both sides and square-framed dwarf framing under cabinets, hung with butts	per ft. sup.	0	2	6
Ditto moulded	ditto	0	2	10
Ditto bolection moulded	ditto	0	3	1

Shelves, &c.—

		£	s.	d.
½in. wrot two sides, shelves over: 6in. wide	ditto	0	1	10
¾in. ditto ditto	ditto	0	2	2
1in. ditto ditto	ditto	0	2	6
1¼in. ditto ditto	ditto	0	2	9
1in. deal ditto, with 2in. of mahogany glued on (staining deal to be charged extra)	ditto	0	1	1
1¼in. ditto ditto	ditto	0	1	2
1½in. ditto ditto	ditto	0	1	3
¾in. wrot two sides, mahogany divisions, grooved in	per ft. sup.	0	2	3
1in. ditto ditto	ditto	0	2	6
1¼in. ditto ditto	ditto	0	2	9
1½in. ditto ditto	ditto	0	3	0
¾in. wrot one side, bottom on deal bearers 3in. high	ditto	0	2	3
1in ditto ditto	ditto	0	2	6
Stopped grooves in mahogany under 12in. long for shelves	each	0	0	8
½ by 1½ wrot and chamfered shelf bearer rounded on end and screwed on	ditto	0	0	5
¾ by 2 ditto ditto	ditto	0	0	6
1 by 2 ditto ditto	ditto	0	0	8
½in. moulded edge	per ft. run	0	0	2
¾in. ditto ditto	ditto	0	0	2½
1in. ditto ditto	ditto	0	0	3
1¼in. ditto ditto	ditto	0	0	3
1½in. ditto ditto	ditto	0	0	3
Circular corners to ditto	each	8d. to 1s. 2d.		

Public House and other Fittings, Wainscot, Oak, or Walnut, unpolished—

⅝in. wrot one side plinths or linings finished for polishing	per ft. sup.	0	1	5
Ditto moulded	ditto	0	1	7
1¾in. ditto	ditto	0	1	8
Ditto ditto moulded	ditto	0	1	10
1in. ditto	ditto	0	1	10
Ditto ditto moulded	ditto	0	2	0
1in. square framed wrot one side, inclosure to counter, made to remove	ditto	0	2	2
Ditto moulded ditto	ditto	0	2	5
Ditto ditto bolection	ditto	0	2	7
Ditto ditto bead flush	ditto	0	2	6
Ditto ditto raised panels	ditto	0	3	0

(Note.—These prices do not include the framed bearers at back.)

1¼in. square framed inclosure	ditto	0	2	6
Ditto ditto moulded	ditto	0	2	9
Ditto ditto bolection	ditto	0	2	11
Ditto bead flush	ditto	0	2	9
Ditto raised panels	ditto	0	3	3
Ditto square framed circular on plan	ditto	0	6	6
Ditto moulded ditto	ditto	0	7	0
Ditto ditto bolection ditto	ditto	0	7	6
1½in. square framed	ditto	0	2	9
Ditto moulded	ditto	0	3	0
Ditto ditto bolection	ditto	0	3	2
Ditto bead flush	ditto	0	3	0
Ditto raised panels	ditto	0	3	6
Ditto square framed circular on plan	ditto	0	7	6
Ditto moulded	ditto	0	8	0
Ditto ditto bolection	ditto	0	8	6
2in. square framed	ditto	0	3	2
Ditto moulded	ditto	0	3	5
Ditto ditto bolection	ditto	0	3	7
Ditto bead flush	ditto	0	3	5
Ditto raised panels	ditto	0	4	0
Ditto square framed circular on plan	ditto	0	8	9
Ditto moulded	ditto	0	9	3
Ditto ditto bolection ditto	ditto	0	9	9
Allow extra for 1in. door	each	0	2	6
Ditto 1¼in.	ditto	0	3	0
Ditto 1½in.	ditto	0	3	6

Counters—

1in. counter top buttoned to bearers including plain edges, but not bearers	per ft. sup.	0	2	6
Ditto circular on plan including edges and measured square	ditto	0	3	3
1¼in. ditto	ditto	0	2	10
Ditto circular on plan	ditto	0	3	8
1½in. ditto*	ditto	0	3	0
Ditto circular on plan	ditto	0	4	0
2in. ditto*	ditto	0	3	10
Ditto circular on plan*	ditto	0	4	9
1 by 2½ moulding edging or nosing screwed on	per ft. run	0	0	7
1¼ by 2½ ditto ditto	ditto	0	0	8
1½ by 3 ditto ditto	ditto	0	0	10
2 by 4 ditto ditto	ditto	0	1	5
1 by 2½ ditto ditto circular	ditto	0	1	5
1¼ by 2½ ditto ditto	ditto	0	1	7
1½ by 3 ditto ditto	ditto	0	2	0
2 by 4 ditto ditto	ditto	0	3	0
½ by 4 plain pilasters	ditto	0	0	6½
½ by 6 ditto ditto	ditto	0	0	7½
¾ by 4 ditto ditto	ditto	0	0	9
¾ by 6 ditto ditto	ditto	0	1	0
Ends fitted	ditto	0	0	3
¾ by 6 framed ditto	ditto	0	1	8
1 by 6 ditto moulded	ditto	0	2	2
Ditto ditto bolection	ditto	0	2	5
Ditto reeded (not framed)	ditto	0	1	8
1 by 9 square framed	ditto	0	2	6
Ditto moulded	ditto	0	2	8
Ditto ditto bolection	ditto	0	2	11
Ditto raised panels	ditto	0	3	6
1½ by 9 square framed	ditto	0	2	9
Ditto moulded	ditto	0	3	4
Ditto ditto bolection	ditto	0	3	5
Ditto raised panels	ditto	0	3	10
Small moulded neckings mitred round each	ditto	0	1	5
Moulded caps	ditto	0	2	2
Ditto bases	ditto	0	2	9
Ditto ditto large	ditto	0	3	3
2 pateræ carved in solid	ditto	0	1	1
2½ ditto ditto	ditto	0	1	4
3 ditto ditto	ditto	0	1	6
4 ditto ditto	ditto	0	2	2
4 by 2½ by 2 moulded and carved trusses ordinary pattern	ditto	0	2	9
6 by 3 by 2 ditto ditto	ditto	0	4	4
6 by 4 by 2½ ditto ditto	ditto	0	5	6
6 by 4 by 4 ditto ditto	ditto	0	6	6
4 by 4 by 2 carved caps ordinary character	ditto	0	4	0

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* Erratum.—In article XXXIII. these items should read, 1½in. (Honduras) 2s. 9d.; 2in., 3s. 6d.; circular ditto, 4s. 6d.

		£	s.	d.
6 by 6 by 2 carved caps ordinary character	per ft. run	0	8	3
9 by 9 by 3 ditto ditto	ditto	0	16	6
10 by 10 by 4 ditto ditto	ditto	0	19	0

Bar Divisions—

1½in. wrot two sides and framed bar division, fitted and fixed	per ft. sup.	0	2	9
Ditto moulded both sides	ditto	0	3	3
Ditto ditto bolection ditto	ditto	0	3	9
Ditto stop-chamfered both sides, and plain stops	ditto	0	3	9
Ditto raised panels	ditto	0	5	0
Extra for door in ditto	each	0	4	6
2in. wrot two sides and framed bar division fitted and fixed	per ft. sup.	0	3	4
Ditto moulded both sides	ditto	0	3	10
Ditto ditto bolection ditto	ditto	0	4	4
Ditto stop-chamfered both sides, including plain stops	ditto	0	4	4
Ditto raised panels both sides	ditto	0	5	6
Extra for door in ditto	each	0	5	6
2½in. square framed	per ft. sup.	0	3	8
Ditto moulded both sides	ditto	0	4	3
Ditto ditto bolection ditto	ditto	0	4	9
Ditto stop-chamfered both sides, including plain stops	ditto	0	4	9
Ditto raised panels both sides	ditto	0	5	10
Extra to door in ditto	each	0	6	0

Panels left out for glass, including loose beads or mouldings, price at square framed, and price one set of loose beads extra.

1 by 3½ moulded capping screwed	per ft. run	0	0	7
1½ by 4 ditto ditto	ditto	0	1	1
Ditto and small mouldings under on both sides	ditto	0	1	6
2 by 5 grooved and moulded on solid	ditto	0	2	3
1 by 3½ ends return moulded	ditto	0	0	7
2 by 5 ditto ditto	ditto	0	0	9

Elbows—

1½in. square framed elbows open for glass in one square with moulding on solid, and one set of loose beads, and capping fixed complete	each	0	10	0
Ditto ditto ramped ogee-shaped on one edge and capping	ditto	0	16	6
Carved corbel or bracket to carry either of the above	ditto	0	11	6
2in. squared-framed elbows as first item	ditto	0	12	6
Ditto ditto ramped ogee, &c.	ditto	0	19	0
Carved corbel or bracket to carry either of the above	ditto	0	13	6
2½in. square-framed elbows	ditto	0	15	0
Ditto ditto ramped ogee, &c.	ditto	1	2	6
Carved corbel or bracket	ditto	0	16	6

Counter Screens, no ironmongery included:—

1in. framed screen framing with beads both sides fixed in squares, about 15 by 12	per ft. sup.	0	2	9
Ditto ditto with each square framed separately, rounded on edge, and hung on centres, not included top and bottom	ditto	0	4	6
Ditto ditto framed separately and made to slide	ditto	0	4	2
1¼in. all as first item	ditto	0	3	0
Ditto as second ditto	ditto	0	4	9
2½ by 2¼ wrot framed and beaded rails in short lengths	per ft. run	0	1	11
2½ by 3 ditto ditto	ditto	0	2	2
2½ by 4 ditto ditto	ditto	0	2	9
3 by 2¼ ditto ditto	ditto	0	2	2
3 by 3 ditto ditto	ditto	0	2	7
3 by 4 ditto ditto	ditto	0	3	3
3 by 3 wrot all round posts	ditto	0	1	4
3½ by 3½ ditto ditto	ditto	0	1	8
4 by 4 ditto ditto	ditto	0	2	2
Chamfered angle	ditto	0	0	2
Plain stops	each	0	0	2
Moulded ditto	ditto	4d. to 6d.		
Staff beaded angle	per ft. run	0	0	2
Cut stops	each	2s. 3d. to 5s 6d.		
Moulded neckings mitred round	ditto	0	1	8
Ditto ditto bases	ditto	0	2	9
½in. flutings (short, with quadrant stops)	ditto	0	0	10
1in. pateræ carved on solid	ditto	0	0	10
1¼in. ditto ditto	ditto	0	1	2
1½in. ditto ditto	ditto	0	1	5
1¼ by 3 capping moulded both edges and fitted to posts	per ft. run	0	0	9
1½ by 3 ditto ditto	ditto	0	0	11
1½ by 4 ditto ditto	ditto	0	1	4
2 by 4 ditto ditto	ditto	0	1	8
Ends of posts framed through counter	ditto	0	0	10
1in. wrought both sides and square framed dwarf framing under cabinets, &c., hung with butts	per ft. sup.	0	2	2
Ditto ditto moulded	ditto	0	2	5
Ditto ditto ditto bolection	ditto	0	2	7

Shelves, &c.—

		£	s.	d.
½in. wrought two sides shelves over 6in. wide	per ft. sup.	0	1	7
¾ ditto ditto	ditto	0	1	10
1 ditto ditto	ditto	0	2	1
1¼ ditto ditto	ditto	0	2	4
1in. deal ditto with 2in. of mahogany glued on (staining deal to be charged extra)	ditto	0	1	2
1¼ ditto ditto	ditto	0	1	3
1½ ditto ditto	ditto	0	1	4
¾in. wrought two sides mahogany divisions grooved in	ditto	0	2	0
1 ditto ditto	ditto	0	2	3
1¼ ditto ditto	ditto	0	2	6
1½ ditto ditto	ditto	0	2	9
¾in. wrot one side, bottom on deal bearers 3in. high	ditto	0	1	10
1in. ditto ditto	ditto	0	2	1
Stopped grooved in mahogany under 12in. long for shelves	each	0	0	6
½ by 1½ wrot and chamfered mahogany shelf bearers rounded on end and screwed on	ditto	0	0	4
¾ by 2 ditto ditto	ditto	0	0	5
1 by 2 ditto ditto	ditto	0	0	6
½in. moulded edge	per ft. run	0	0	1½
¾ ditto ditto	ditto	0	0	2
1 ditto ditto	ditto	0	0	2½
1¼ ditto ditto	ditto	0	0	2½
1½ ditto ditto	ditto	0	0	2½
Circular corners to ditto	ditto	6d. to 1s		

IRONMONGER.

Nails, Brads, &c., including profit only.

Fine Cut Tacks, per reputed thousand—

¼in.	2½d.	⅜in.	3d.
½in.	3½d.	⅝in.	3½d.
¾in.	3½d.	⅞in.	3¾d.
1in.	4d.		

Ditto Tinned—

¼in.	3d.	⅜in.	3½d.
½in.	4d.	⅝in.	4d.
¾in.	4d.	⅞in.	4½d.
1in.	5d.		

Wire Tacks—

¼in.	4d.	⅜in.	4d.
½in.	4½d.	⅝in.	5d.
¾in.	5½d.	⅞in.	6d.
1in.	7d.		

Joiners' Brads—

½in.	3d.	⅝in.	3d.
¾in.	3½d.	⅞in.	3½d.
1in.	4d.	1¼in.	5d.
1½in.	5½d.	1¾in.	6d.
2in.	7d.	2¼in.	8d.

Ditto Oval Wire, per 1lb. box—

½in.	1s. 6d.	⅝in.	1s. 4d.
¾in.	1s. 3d.	⅞in.	1s. 2d.
1in.	1s. 0d.		

Flat Chequered-head Wire Nails—

Nos. 4, 6, and 7 gauge	(3½ to 6in.)	per lb.	0	0	3
Nos. 8 and 10 ditto	(2 to 3in.)	ditto	0	0	3¼
Nos. 11 and 12 ditto	(1½ to 2in.)	ditto	0	0	3½
Nos. 13 and 14 ditto	(1 to 1¾in.)	ditto	0	0	3¾
Nos. 15 and 16 ditto	(1 to 1¼in.)	ditto	0	0	4
Nos. 17 ditto	(½ to ¾in.)	ditto	0	1	4½
Nos. 20 ditto	(½in.)	ditto	0	0	8

THE SOCIETY OF ARCHITECTS.

An ordinary meeting of the Society of Architects was held on Tuesday evening at St. James's Hall, Piccadilly, Col. C. O. Ellison, F.R.I.B.A., of Liverpool, the first President of the Society, in the chair. Messrs. Sidney Rivett, 5, South Quay, Great Yarmouth, and Henry Titus Wakelam, Grassendale, Liverpool, were elected as members. The Chairman announced that the Council had nominated as honorary members Sir James D. Linton, President of the Royal Institute of Painters in Water Colours, and Mr. Wyke Bayliss, President of the Royal Society of Water-Colour Painters. The announcement was received with applause.

The following paper was then read by Mr. W. Howard Seth-Smith, F.R.I.B.A., F.S.I., President, entitled—

PASTELS IN THE STUDIO OF THE ARCHITECT.

Anyone wishing to inform himself on the subject of pastel-painting as a fine art will find a pleasant sketch, entitled "The Golden Age of Pastel," in *The Century* magazine for December, 1891, by Elizabeth Champney. My short paper will be devoted specially to its uses as a medium for expressing architectural ideas, whether in form or colour. I will, however, preface my remarks by a quotation from the above-mentioned article as to its history and durability:—"Paintings made a century and a half ago, or even two centuries, still retain the same lovely qualities with which they delighted the beholders when fresh from the artist's easel, while some oil-paintings of the same period have sunken in and blackened. This is only what we ought to expect, for a piece of pastel is pure colour; all that chemical action can do has been effected in the absorption of the pigment by the chalk. No oil or varnish is mingled with the paint to darken as time passes, and to obliterate or obscure the original lines. . . . . The real inventor of pastel-painting is unknown to history. It is possible that the perfected art was developed very slowly from the drawing in crayons, of which the early Italian painters were so fond. A drawing executed in black, white, and red chalk by Frederigo Bariccio, bearing the date 1528, is in the Dijon Museum. To these three colours others may have been gradually added until the crayons arrived at the full gamut of the portrait." The Italians make a claim to the invention of pastel, based on the fact that the name used by all nations for the material is derived from the Italian word "pastello," signifying "little rolls of paste." Whoever may have first discovered the medium, it is to a gifted Italian lady that we probably owe the prevalence which the art obtained in France during the latter half of the 18th century, and the impulse received about the same time by English and German artists. At the beginning of the 19th century the hour had struck in France for a change in its art as well as in all of its institutions. It was the birth of the Republic. Henceforth no more of the graceful art of beauty and pleasure, of delicate tints and poetic sentiment. Romance, gallantry, amusement, refinement, and playfulness were all swept away by the great tide of emotion. Prud'hon fought during the latter part of his life for the art of pure beauty; but he was overpowered by the rising popularity of a new genius, David. The French revolution had modelled itself on ancient Republican institutions, and David sprang to the front with a renaissance of classical art. Oil-painting was his chosen medium, and the beautiful art of pastel faded from view. But the medium is too lovely to suffer this ignoble neglect. So well adapted to the art of the landscapist, the flower-painter, the painter of still life, and, above all, to the requirements of the portrait painter, it was to be expected that the turn of a century would bring it again to the surface, and that the renaissance of pastel would find among its most enthusiastic adherents the colourists of the day. So strong is the movement lately begun by the leading French artists, that we may even hope that the renaissance will surpass the brilliancy of the "golden age." I do not lay claim to any considerable attainment in the art of pastel-painting, but having found this medium useful I do not hesitate to bring it before you, as architects, as worth a trial. Certain it is that among artists generally pastel work is now much in vogue, and the architect, if he takes a high view of his vocation, will despise no movement which may refine his sense of colour, assist his imagination, or enable him more expeditiously to express his intentions. It is true that a busy architect cannot be expected to be proficient in more than one method of pictorial drawing, it may be water-colour, pencil, pen-and-ink, or combinations of these; but no great skill is necessary to enable one to make some practical use of each and all, including pastels. I am not sure I should recommend them for the architectural pupil, for a beginner cannot be too precise, especially in the representation of form, whereas pastel work is eminently suggestive; but if one uses water-colour, pencil, pen-and-ink, or a hard chalk frequently as a corrective to the more hasty and suggestive work, nothing but good can come of the effort, just as an artist will turn from time sketches to finished efforts, that he may become neither ragged on the one hand nor too realistic on the other. A box of pastels would seem to me to be as necessary in our studios as is our palette of oil-colours. Just as there are things which water-colours will not do and oil will (such, for instance, as samples of the exact shade for one's oil decorations), so in the same way pastels offer the advantage that one can alter repeatedly till one arrives at the exact form or colour effect required without commencing over again, as one would have to do in water-colours, nor need one wait till one coat is dry before you can apply the other, as with oils. Then the variety in a good box of pastels gives a wonderful keyboard of colours upon which the imagination may play, and by the combination of this extensive notation what harmonies would not be evoked! Again, pastels are very rapidly applied with a little practice, and rich and subtle effects caught which it is next to impossible to obtain by water-colours. The special uses so far as I have tested them (though I have no doubt that many others will suggest themselves to you when once you have tried them) are as follows:—Firstly, the rapid production of exterior and interior perspective sketches, especially with a view to enabling one to judge of the relative beauty and suitability of different coloured materials, and to change those effects until one is satisfied. The flexibility of the medium and its accidental combination constantly suggest new ideas as to materials or their disposition and relationship. I am aware that just now there is a disposition to exclude colour from our sketch designs of buildings, from the impression that an attractive bit of colour may warp the judgment and tend to weaken a sensitive appreciation of form, and I will not deny that there is much truth in this as regards drawings made to captivate competition promoters; but the man who cannot exercise sufficient self-restraint to enable him to be truthful in studying for his own purposes is to be pitied. Make your first roughing-out of form in charcoal if you will—it is an excellent plan as tending to freedom of idea —but let us remember that the most beautiful outline and detail may easily be marred in execution by the use of ugly or ill-combined colouring. Imagine how eagerly you would search the market, and often with unexpected success, for some material or tint previously unknown, in order to make permanent, for the delight of generations to come, colour-harmonies and refinements which had been suggested to your mind by, perhaps, accidental effects obtained by study in this beautiful medium. I said at the outset that pastels must be regarded as suggestive; but I am not sure that I am not doing both the material and artists a wrong by making such an admission, for who will say so after seeing the exquisitely fine and delicate portraits in pastel by John Russell, R.A., in the possession of Mr. Edwin Lawrence, and at South Kensington Museum, or those by Rosalba or La Tour in the Louvre (I exhibit one or two prints of the latter's works published in *The Century* magazine article). If the medium is capable of producing such detail as is required for facial expressions and dress trimmings, surely it is equal to the delineation of fair-sized architectural drawings made for the purpose either of studying or explaining general effects. Speaking generally of the profession, it is to be feared that our work has suffered incalculably from a mechanical and hammered-out style of drawing. All this is necessary in preparing the working drawings and details, and these will correct any tendency to want of precision, but we lose a thousand suggestions for pictorial effects and for original and more beautiful form and mouldings, by not adopting more broad and artistic methods. Half-hard pastels can be procured, which can be pointed and used in drawing in fine detail, if such be desired. [Mr. Seth-Smith showed at this point several sketches (some being original rough sketch designs submitted to clients and to competition committees, others copied studies), as illustrations of his remarks.] They were, he added, each the work of a short afternoon, and I think you will agree with me that to produce a like effect in water-colour would require a very much longer time. How easy to vary these, to soften the tones of the brickwork from orange red to the dull strawberry of Luton bricks, or even vice versâ, a feat impossible in water-colour. Banding can be inserted, and any moderately bold detail suggested, and the forms seized upon by the imagination can be worked out in pencil on tracing-paper. Secondly.—Its second use, in my opinion, is to produce the exact pattern necessary to guide your decorator when instructing him as to distemper or flatting colours; and here, again, pastels are infinitely better than oils, for the reason that the luminous effect, upon which success of the finished work depends, can be produced in a moment by preparing the surface of your pattern with the most brilliant colours which you desire should palpitate through the finishing coats. In giving the patterns to the painters you must avoid their being rubbed. I do not think that the necessary roughness of the usual pastel paper, of which a great variety of tints can be obtained from some of the best artists' colourmen, is any disqualification, as the uneven surface is soon filled up with the medium. Thirdly, pastels may be used in producing schemes of colour decoration to large scale, and the full-size designs of wall papers, friezes, &c. Perhaps a word should be said as to the importance of avoiding contact of the chalks with any open wounds in the hand, as many of them are of a poisonous nature. Even if never used in such ways the possession of a box as a colour reference is valuable. Berville, Chausse, et Dantin, Paris, sell an excellent and cheap box, costing 25 francs; and some of the London firms supply good pastels either in boxes or by the crayon. With special reference to the paper to be used, one of the safest tones is a neutral grey, which telling through in places, will generally harmonise; but where large surfaces of deep warm tones are required, as for buildings, a darker and warmer paper, such as varieties of brown paper as near the general surface colour as can be obtained, should be used, the lights and greys being superimposed. Another merit in pastel work is that the commonest brown paper will often offer as good (and sometimes better) surface for their application than many a one specially prepared. If softening is required, the use of the finger to rub chalk together will suffice, or soft paper made up into a pad, or a silk handkerchief, the latter giving a specially soft touch on a rough paper.

Mr. Goodwin proposed a vote of thanks to the President for his interesting paper, remarking that whereas as a rule a lecturer who described a new process referred to it in such enthusiastic terms that they naturally felt suspicious, making an allowance for high colouring, Mr. Seth-Smith had treated pastel from a common-sense point of view, and had not hesitated to point out its limitations and drawbacks, as well as its advantages, thus greatly adding to the value of his paper. They must, as artists and architects, be prepared for the changes in fashion always going on in the public mind. No one school or medium in art, and no one style in architecture, had a longer life in popular estimation than ten or twelve years, and there certainly seemed signs that the turn of pastels was coming on. In pastels everything depended on the scheme of colour adopted. As Mr. Seth-Smith had pointed out, it was no mere modern process, and he had recently seen at Cambridge a sketch by Sir Peter Lely for a portrait of Oliver Cromwell which appeared to be executed by some such chalk process. Pastel could not be regarded as entirely satisfactory as a substitute for water-colours, but it was a beautiful medium, its best use being, he thought, as a groundwork upon which harder chalks were used for finishing, the two being worked in together. Pastels were also of advantage in taking notes for first sketches as impressions were received or ideas occurred to the artist.

Mr. Quartermain seconded the motion, and Mr. George Howe, in supporting the vote of thanks, pointed out the utility of the process in enabling an architect to convey his exact ideas as to the tones of a scheme of colour decoration to the decorator. A great advantage of pastels was that so long as they were not rubbed, they were absolutely unaffected by time.

Mr. W. Allport referred to the rapidity with which pastels were executed, and to the exactness of the colour effects obtained, which rendered them very useful to the architect in his preliminary sketches.

A member inquired if it was necessary or possible to set pastel sketches, and if so, what medium was used? Also how far could the process be used in conjunction with water-colours? Had the President tried pastels when out sketching, and if so, did he find any practical difficulties?

The Chairman referred to the value of pastels when sketching in obedience to a client's suggestions, so as to get in the most rapid manner the idea of the effect of a design; and put the vote of thanks, which was carried by acclamation.

Mr. Seth-Smith, in replying, explained there were practical difficulties in the way of outdoor sketching with pastels, one of which was that to employ a full gamut of colour necessitated the carrying of a cumbrous box of chalks; his plan was to select some 30 or 40 sticks, and to restrict his scheme to the play of colour these afforded. The tendency to smudge was another difficulty. Lechertier, Barbe, et Cie., of Regent-street, sold two solutions for setting pastels, which seemed to be composed of shellac and spirit. Pastels set very well, and were then permanent; but there was the great disadvantage that the high lights were thereby dulled, and had to be touched up again. If pastel sketches were to be framed and hung in an architect's office, for instance, they need not be set; but if sent away to clients or a competition committee, setting must be resorted to. Pastellists when sending their unset work to the framers packed them so tightly as to prevent slipping; but great care had to be exercised. Pastels were, as Mr. Goodwin had said, coming into fashion, and etchings, which had reigned for about ten years, were losing their hold on the public taste. Pastelism could not be regarded as an exact medium, but the range of colour and rapidity of execution were, he held, compensations. The Italian "wash" system of combined set chalks and water-colours produced beautiful effects, and the two vehicles harmonised well with each other.

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BOOKS RECEIVED.

Ninth Annual Report of the Metropolitan Public Gardens Association. (London: 83, Lancaster-gate, W.)—The report is encouraging; 71 new members have joined the association, the membership of which is 806. Among the promised schemes are the acquisition and laying out of the Hilly Fields, Brockley, S.E.; the Hackney Marshes, E.; Alexandra Park, N.; Lincoln's Inn-fields; an inclosed part of Wandsworth Common, S.W.; the Bethnal Green Poor's Land, E.; Victoria Park Cemetery, E.; recreation ground in Fulham Palace-road, S.W., in all an area of 831 acres. The association will shortly commence laying out, among other open spaces, Bedford-square, E.; Christchurch disused burial-ground, Spitalfields, E.; St. Anne's burial-ground, Soho; St. Bride's burial-ground, Fleet-street; St. Peter's Church ground, Fulham; St. Augustine's Church ground, Lillie-road, S.W.; Bartholomew-square, E.C.; Hoxton-square, N.; and is assisting to secure several other open spaces and burial-grounds, the improvement by tree-planting and seat provision of several roads. The object of setting apart breathing and resting places for the old, and playgrounds for the young in the midst of dense localities is worthy of all praise, and the movement is one of the best devised to meet the evil of overcrowding. The rescue of vacant plots of ground within the Metropolitan area, the laying out of disused churchyards, planting and seating waste spaces, are the main objects, and those spaces are set apart as resting places, gardens, and playgrounds, and conveyed to some vestry district board, or the London County Council for maintenance. An appendix gives a list of the churchyards and burial-grounds which are intended to be, and are, laid out, and a map is given showing the work of the Association, by which it appears that open spaces and burial grounds in every part of London have been laid out, and trees planted in numerous places, and seats provided in vacant sites and footpaths.——*Wilson W. Phipson, M.Inst.C.E.: a Memoir* (London: G. Chard, Charlotte-street, Fitzroy-square, W.) is a brief and interesting review of the life of the well-known engineer, and the introducer of a new system of heating and ventilation, which was largely adopted by architects of eminence in all the more important buildings, including the Royal Albert Hall; Natural History Museum; Alexandra Palace; University Building, Glasgow; Law Courts, Birmingham, &c. ——*Nature in Ornament.* By Lewis F. Day. (London: B. T. Batsford, High Holborn.)—Mr. Lewis F. Day, whose textbooks of ornamental design we have noticed at different times, in this volume, which is larger in bulk, endeavours to show the natural development of ornament from nature, its constant relation to natural form, and to deduce principles from the work of old masters of the art. We can only say, from a casual perusal of the volume and its admirable plates and illustrations, that the author has produced a book that will be of much service and help to the thoughtful design of ornament. The chapters on "Ornament in Nature," "The Simplification of Natural Forms," "Parallel Renderings," are very helpful to a philosophical study of ornament. It is not a study of botany, but of vegetable forms that is required; not science and classification, but the type of arrangement and form found in leaves, flowers, and stem-growth. The book is an excellent manual for the student of ornamental design, and the examples are beautiful and well selected, on the whole.——*Laxton's Builder's Price Book for* 1892 (London: Kelly and Co.) is the second edition of a price book which is so well known amongst the profession that it needs only a few lines of commendation, except to say the volume is well up to date as regards prices of materials and workmanship, and the information it contains is greatly extended. This edition contains all the usual memoranda, data, and professional information as to building contracts, Metropolitan Building Acts, and by-laws of the London County Council. Notes of cases and decisions, timber marks, and descriptive articles on electric lighting and other recent specialities in the building trades are appended.——*Secondary Batteries*, by J. T. Niblett, illustrated (London: Biggs and Co., Salisbury-court, E.C.), describes recent commercial developments of the lead secondary battery; the author has derived his information from electrical and other publications, and manufacturers of storage cells, and from his own experience in the manufacture of apparatus of this kind. All kinds of modern apparatus for the storage of electricity are described, and clearly illustrated, including those of the original, or Planté, type, the Faure, and other storage cells. The book is well printed, and will be useful to all manufacturers.——*Architecture, Mysticism, and Myth.* By W. R. Lethaby, with illustrations by the author (London: Percival and Co.)—To the artistic mind the attempt to trace the origin of architectural forms to esoteric causes is rather more attractive than that of ascribing them to utilitarian ideas. Mr. Lethaby, in his clever little book under the above title, is seemingly imbued with this feeling, and, as far as we know, his work is the only one, as he says, "to set out, from an architect's point of view, the basis of certain ideas common to the architecture of many lands and regions." The author seeks to investigate the thoughts behind forms, to trace the origin of features to mysterious or hidden doctrines, such as the "world fabric" of the early cosmogonies, the "microcosmos," the "Four Rivers and Central Tree," the planetary spheres, and other primitive imaginations, which pictured pavements to the sea and ceilings to the dome of the sky. In the ancient temple, tomb, and palace we find these analogies. Champollion observes the Egyptian conceived the square type of building or tomb, the ceiling was compared to the sky. In the early Chaldean system the dome was conceived as symbolising the celestial vault; the Chaldeans thought of a tree growing at the centre of the world, and the same idea is found among other early nations. So every style had its primordial idea or germ. The early Chinese edifices were disposed to correspond with the heavens which they symbolised. The Buddhist stupas or topes also represented the universe—the base, the earth; the semicircular dome, the atmosphere or sky; the railed structure at the top, the heaven, where the four gods or eyes watch. The architecture of Japan is highly symbolical. Orientation was prefigured on all Egyptian and Buddhist edifices; the temple was entered from the east, the statue of Buddha facing that way; so the Greek and other temples had also eastern entrances. Thus the ultimate facts behind all architecture, which gave it form, says the author, are mainly three: "First, the similar needs and desires of men; secondly, on the side of structure, the necessities imposed by materials and the physical laws of their erection; and, thirdly, on the side of style, nature." The pyramids, the Mexican temples or altars show the square form, and they were oriented. In Memphis the door of every tomb is turned to the east, a rule in all early temples. The god, or altar, or throne of the presence, thus fronted the rising sun. The cube and the hemisphere are the most sacred forms—the first that of the Sanctuary at Jerusalem and St. John's type of the Holy City, the latter the form of the Buddhist tomb, and both combine to form the builder's problem in every age. But we cannot follow the author farther. The idea of a centre of the earth is another of the myths which the ancients sought to realise in various objects; thus the centre stone of the world exercised the Greek imagination, as in the central stone of Delphi. Other images, such as the "Golden Gate of the Sun"; pavements resembling the sea, like the pavement in St. Mark's at Venice, so referred to by Ruskin and Street; "ceilings like the sky," as the mosaic dome of Ravenna—a star-bespangled vault—are all instances of symbolic art. Mr. Lethaby borrows, of course, from various sources, such as Perrot and Chipiez, Max Müller, Dr. Tylor, and many other writers of legendary lore and mysticism; but his work is at least an attempt to trace the symbolical meaning or esoteric germs of architecture, and as such is well worth perusal.——*Capital at Bay.* By J. Stafford Ransome, Assoc.M.Inst.C.E. (London: S. H. Cowell, Ludgate-hill.)—This little *brochure* is a reprint of articles from the *Globe*, in which the author deals with the Newcastle overtime strike, subsidising masters during strikes, trade-union misrepresentation, arbitrations, trade benefits, &c. Mr. Ransome writes, of course, from the masters' side of the question, but what he says is worth reading by union men. He rightly says that some of the unions are not acting in the pecuniary interests of the men, especially in regard to overtime and piecework. In both these matters the men have been compelled against their interests to resist. About piecework, he writes the reason why the union leaders object to piecework is "that it gives to the good men a chance of coming to the front, of which they rapidly avail themselves, and this is dead against union morals. A good man must hide his efficiency under a bushel, and lower his standard to the necessary mediocrity." Mr. Ransome says also, with much truth, that where piecework is most general the efficiency is proportionately great, as the best men gravitate to piecework centres.——*Spon's Architects' and Builders' Price Book*, 1892, by W. Young, Architect, nineteenth edition (E. and F. N. Spon, Strand, London), furnishes in a compact form, well printed, and alphabetically arranged, all the necessary memoranda and tables for architects and builders. The book has been enlarged and revised, and a chapter added, with specifications and estimates, on electric lighting installations, lightning conductors, &c. The rules and regulations of the Society of Telegraph Engineers and Electricians for the prevention of fire risks are given, with examples of electric lighting for houses. The price lists are concise and clearly tabulated, and the volume is interspersed with tables on the thicknesses of wall as laid down in the Metropolitan Building Act, marks on timber, weight of metals, tables of squares and cubes, of valuation of property, surveyors' fees, and the architect will find many useful memoranda on the prices per cubic foot, dimensions of church seats, the rules of the Incorporated Society for Wall Thicknesses, and other notes which are generally only obtained by reference to handbooks.——*The Public Health (London) Act*, 1891. By W. H. Blanch. (London: P. S. King and Son, King-street, Westminster, S.W.; E. W. Allen, Ave Maria-lane.)—As a handbook for the use of house-owners and tenants, we cannot do better than recommend Mr. W. Harnett Blanch's book, which contains the whole of the new Act, with notes and an introductory chapter on recent legislation, the General Order issued by the Local Government Board containing the regulations as to medical officers and sanitary inspectors, and the Model By-laws. Mr. Blanch's sketch of sanitary legislation will be of use to those who wish to study the subject with a view of noting the progress of sanitary measures. The notes appended to some of the sections are especially of value. The Schedules showing enactments applied, forms of summons and notices, and the enactments repealed, are of much value. Every house-owner, builder, and tenant in London should acquaint himself of the provisions of this Act, which will revolutionise the existing condition of matters.——*Transactions of the Edinburgh Architectural Association*, Part IV., is to hand. It contains a view of Gosford New Mansion House, and several descriptions of places visited during the past session. Mr. Blanc describes the Parliament House and Argyle Tower, Edinburgh Castle, and assigns the Parliament House to James IV.'s reign, though an earlier building existed. The tower was so named by the fact that the Marquis of Argyle was confined in it during the night preceding his execution. Mr. Blanc also describes Newhall House. Visits to Kinross House, Linlithgow Place, and Bonhard House are described by Mr. Thomas Ross. Mr. David MacGibbon describes Dirleton Castle and Norham Castle and Church. Mr. Balfour Paul, Mr. Thomas Bonnar, and others contribute as leaders of visits.——*Oxbarrow and Money-Kent's Universal Office Manual* (London: 17, Victoria-street, S.W.) is an exemplification of modern double-entry book-keeping in its latest phase, and contains remarks on the conduct of office work, with various forms of account books useful to builders, engineers, and manufacturers. The observations on counting-house and business routine and the glossary of business terms are useful. The authors say that commercial houses incur various risks and losses by single entry and other imperfect forms of book-keeping, and endeavour, by the specimens given, to show that double-entry is not beyond the grasp of an average man of business. The examples given are valuable.——*Transactions of the Cremation Society*, No. V. (London: 8, New Cavendish-street, Portland-place, W.), gives an encouraging account of the progress made by the society, for, while in 1885 only three bodies were cremated, during 1891 there were 99. The Woking crematorium has given a start to other establishments, and crematoria are being erected in various parts of the country. At Manchester, one will shortly be opened; another is contemplated at Liverpool; and the City of London Commission of Sewers is about to erect one in Ilford Cemetery. The evidence given in the report on the movement, and the resolution passed at the International Congress of Hygiene last year that the process is "especially called for where death occurs from epidemic disease," show that existing prejudice against cremation has diminished. A description of the crematorium erected at Woking, comprising a handsome chapel, directions for arranging cremation, and plans of the improved Gorini cremation furnace are given. We commend the pamphlet to all interested in the subject.——A second edition of *The History of the Coal-devouring Cooking Range, and its Progeny, Smoke and Fog*, by F. Dye, is announced. It is sensibly and moderately written.

CHIPS.

A new 30ft. thoroughfare, to be known as Cromwell-street, is being constructed between St. Nicholas-street and Friars-road, Ipswich. The eighteen houses on the north side have been built for a local Freehold Land Society by Mr. Edgar Catchpole, and the seventeen houses on the south side by Mr. Charles Borrett, while one house at the Friars-road end is by Mr. W. H. Fenn. The whole has been executed from the designs of Mr. Frank Brown, of Ipswich.

The funeral of the late W. J. Beadel, of Hutton Hall, M.P. for Mid-Essex, and past-president of the Institution of Surveyors, took place on Saturday afternoon at Hutton.

The Metropolitan Asylums Board, by a bare majority, has rejected a proposal to purchase an area of nine acres of building land in Park-lane, Stoke Newington, and closely adjoining an entrance to Clissold Park, as the site for a seventh fever hospital. The price asked was £36,000.

John Bradney, Thomas Skett, and Isaac Butler, of Bradmore, near Wolverhampton, trading as Bradney and Co., builders and contractors, St. Mark's-road, Wolverhampton, have executed a deed of assignment for the benefit of creditors. The unsecured liabilities are returned at £4,555 16s. 8d., fully-secured creditors £2,244 17s. 3d., and the net assets are returned at £3,610 8s. 4d.

Under the will of the Ven. Edward Balston, Archdeacon of Derby, and vicar of Bakewell, head master of Eton College 1862-8, Monro's "Sabrina," with cabinet for pedestal, is left on the death of his wife, together with a portrait of Lord Francis Hervey, by Sant, portraits of Lord Edmond Fitzmaurice, Mr. Reginald Hardy, and others, and drawings by Richmond of former pupils, to the Provost and Fellows of Eton College.

The Council Chamber at Leith, recently rebuilt from plans by Mr. James Simpson, a local architect, has just been decorated by Mr. Bonnar, of Edinburgh. The chief feature of the work is the heraldic treatment of the panelled ceiling. The cost of rebuilding, furnishing, and decorating has been £2,000.

On Saturday the Bishop of London consecrated the new chancel of Christ Church, North Finchley. The church was begun about 25 years ago, and over £10,000 has been spent on the building, the latest addition costing £4,000.

On Saturday afternoon an inquest was opened at Lancaster on the bodies of Joseph and Eleanor Parkinson, son and daughter of Mr. J. Parkinson, architect, of Lancaster, who died on Friday night from blood poisoning. The children, with an elder sister, suffered from symptoms of poisoning after playing in their parents' garden on Thursday. It is supposed that the fatality resulted from chewing tinfoil.

A portrait medallion of the Rev. John Stewart, for many years minister of Ardrossan Free Church, has been placed in the porch of the church. The medallion is the work of Mr. Clark Stanton, R.S.A.

The streets of Berlin are soon to be enriched by a large number of "Urania pillars," of which it is proposed to set up in all 300. These pillars will be about 18ft. high, constructed of cast iron, and will each contain a clock, meteorological instruments, weather charts, astronomical and geographical announcements, and also a plan of the neighbouring streets in enlarged form. The instruments are to be regulated from the observatory. The pillars will also be used for advertisements.

The United Counties Club on Trevor Hill, Newry, was opened last week. The premises were formerly occupied by the Belfast Bank, and have been altered for club purposes, from plans by Mr. W. J. Watson, M.R.I.A. Mr. Alexander Wheeler was the builder.

The Bill of the Central London Railway for an extension of their authorised line to Liverpool-street Station, and that of the City and South London Railway for extending their system to Islington have complied with the Standing Orders of the House of Commons.

At a meeting of the committee of the Athenæum Club, held on Friday, Mr. Frank Dicksee, R.A., was one of three gentlemen who were elected, under the terms of Rule II., which provides for "the annual introduction of a certain number of persons of distinguished eminence in science, literature, or the arts, or for public services."

WAYSIDE NOTES.

No apology was required by Mr. Seth-Smith for bringing the subject of pastel work before the Society of Architects. Anything that will lead the modern architect towards broad methods of drawing and designing is good. Pastels, therefore, must serve an excellent purpose. Breadth and fulness of treatment cannot but be encouraged by a medium of this nature. And "breadth" is what modern architecture requires above everything. So, at least, says Mr. Herbert Railton, who, as a devotee to architectural representation, should be entitled to speak with authority on this point.

With a "soft" lead-pencil we can rapidly give line effects, and light and shade as well. The pastel will enable one as easily and rapidly to produce effects of colour. As Mr. Seth-Smith says, the box of pastels should be part and parcel of an architect's equipment. So also we should all agree that such a box of colour-pencils might well be omitted from the *impedimenta* of the young student, who should struggle with the fine point and pen in the pothook stage of his existence. Those who have much to do with decorative work, and possess a soul above merely commissioning a firm of decorators to submit a sketch for a scheme of decoration, would certainly find the pastel-box handy, and the method of working conducive to the success of the design. I suppose that the average artistic disposition, being based upon the nervous temperament, has irritability as a more or less pronounced ingredient. Waiting for colours to dry is always weary work. The pastel process, avoiding this trial of the flesh, is, therefore, calculated to promote a genial frame of mind in the artist, besides insuring despatch. I look to an extension of the method of rough designing by means of pastels now that Mr. Seth-Smith has brought the subject forward in a little practical, useful paper, that contrasts well with raving discourses on high architecture.

Mr. Alma Tadema has been before the Committee of the House of Commons *re* the M.S. and L.R. extension, and has afforded the Committee and onlookers thereat some diversion with respect to his statement as to drawing straight lines whilst his house shook with the vibration of a neighbouring railway. Residents in St. John's Wood have given evidence against the proposed scheme. On Monday Mr. Cates appeared as witness before the Committee, and gave evidence as to the manner in which the Crown property in the neighbourhood of the proposed railway would be affected; but, after all, the Select Committee have passed the preamble of the Bill.

Mr. Blashill has this week enlightened the select committee dealing with the question of the regulation of theatres and music-halls. It appears that, compared with the district surveyor, the architect to the County Council has little to do with the supervision of theatres, &c., beyond the matter of fire and panic, the extinction of fire, the sufficiency of gangway, passage-way, doorway, and all other questions of ingress and egress. Structural matters seem mostly left for settlement to the district surveyors, against whom there is an appeal, though one rarely exercised. Mr. Blashill thinks that the condition of things in theatres and music-halls, as regards the safety and convenience of the audience and the sanitary state of the buildings, is much better than formerly, great improvement having taken place during the last fifteen years, building science having advanced, and there being greater experience as to the sources of danger.

Inhabitants of Battersea are agitating for the purchase of the Albert Palace by the County Council, and its employment for public purposes. It seems that an opportunity for acquiring the premises will occur on the 27th inst. The question arises, if the Albert Palace is no good to anyone else, as seems to be implied by its life-history, what good will it do the County Council to acquire the building? It may be all right for the people of Battersea, who will thus acquire something mostly paid for by other people's money. At a public meeting held in the Chatham Hall on Monday evening last, it was stated that the Vestry of Battersea was asking for a loan of £12,000 to build a public hall. Of course, if the County Council present Battersea with the glass house, it may save the Vestry this money; but somebody else's money will have to be expended. Were it the Crystal Palace, one would say it was worth while, and perhaps desirable, to make the building public property; but the Albert Palace is a very different affair.

I have lately met with a pupil of old Sir Joseph Paxton, and have heard much of interest about the renowned gardener who nonplussed all the architects of the day. I am told that Sir Joseph had a great fancy for the number 8. Thus, 8 × 8 = 64, a bay of the Crystal Palace, and so on. It was apparently his ruling dimension, and was carried into his business as horticultural builder, the parts of the conservatories, hot-houses, and winter-gardens he erected being invariably designed with the factor 8. The selection of 8 is rather strange. 9 is generally supposed to be *par excellence* the magic number, in mathematics at any rate, and the fortune-teller and school-girl would have 3. Practical, matter-of-fact people, who have to design, take 5 or 6 and go on the duodecimal system. Given nothing, I suppose one would most naturally employ 5 as a governing dimension and work in decimals. I have not inquired of my friend whether Sir Joseph rose in the morning at 8 and retired to rest at the same hour in the evening; but he did tell me of one curious habit in this way relating to the great man's fad, but for the moment it has slipped my memory.

One is so used to be regarded by the general public as the "builder's young man who does the drawin's" that it has long ceased to rasp one's sensibility. But one hoped that people of culture—the editor of the *Spectator*, and the like, for instance—had begun to understand something about the real relation of the architect to his client on the one hand, and the builder on the other. It is not so, however. In an otherwise sensible note, on the death of the late John Murray, the Albemarle-street publisher, the *Spectator* says: "His liberality is highly praised; and though we do not know precisely why authors should expect liberality from publishers, *any more than designers from builders*, it is certain they do." Do they? If they get no more, I quite understand now the outcry of the authors againt the Barabbases of literature. I suppose the *Spectator* believes the builders do really pay us our commission, after all?

Coincidences in deals at whist, of which the papers have been full lately, are nothing compared to those that constantly occur in connection with competitions. Take a very common case. There is a competition, say, for a new piggery at Mughole-in-the-Swamp. The plans are sent in under motto. None of the committee know anything about the authorship of the several designs, and the chairman knows considerably less. The first, second, and third plans are chosen, the sealed envelopes broken, and, behold, the authors are all inhabitants of Mughole, while the first man is nephew of an old friend of the chairman, the second is Mr. Jones's wife's son, Mr. J. being a sort of self-appointed vice-chairman, and the third premium goes to the brother of the silent man who sits with folded arms at the committee table and says nothing, though generally credited with a profound depth of learning on matters of building and architecture. Surely a very noteworthy chapter of coincidences!

Another interesting old house is coming "under the hammer." The old manor house in the Undercliff, at Bonchurch, Isle of Wight, with three-and-a-half acres of ground, is to be sold by auction on May 17. St. Boniface House, as the building is called, is of a manor belonging to Earl Godwin in the days of the Heptarchy, and is mentioned in Domesday Book. It is said that its history can be traced for about nine hundred years to the present time. It now belongs to two orphan minors, whose trustees have given instructions for the sale. William Wilberforce was once a tenant of the manor house, and wrote of it enthusiastically. The building is in a corner of the Island to which I have never penetrated, so do not speak from experience of the place; but from all accounts it seems a charming and "desirable" residence enough.

Goth.

Engineering Notes.

Dover.—Considerable progress has been made with the construction of the promenade pier during the last three months, and four complete bays have been erected, the structure now being 160ft. from the edge of the promenade asphalte. Mr. Webster, the engineer for the work, has completed all his tests of the material at the works in Stockton-on-Tees, and the construction of the iron girders and piles is proceeding rapidly. The joists to carry the wooden deck-beams and deck are of steel. About 60 tons of these joists have been delivered on the site.

Peterhead.—In the course of the next few weeks the block-setting "Titan" crane to be used in connection with the harbour of refuge works at Peterhead will be ready for use. The breakwater across the south bay at Peterhead will be formed of blocks of concrete weighing from about 20 to 45 tons each. By means of this "Titan," or travelling crane, the blocks will be put in position; it will stand on the end of the finished portion of the breakwater, and the blocks will be brought to it on waggons. The "Titan" will then lift them and swing them round to the front, and lower them to their bed, where they will be set by divers. The drawings for the crane were prepared in the office of the late Sir John Coode, who was engineer-in-chief of the harbour of refuge works, and the construction of the crane was carried out under the supervision of Mr. Matthews, M.I.C.E., now one of the partners of the firm. Its extreme length is 160ft., and the extreme width of the under carriage is 34ft. The material is mild steel of high quality. The whole framework consists of box girders, and the working load is 50 tons; but the proof load is 62½ tons, the radius being 100ft. This test was made while the crane was temporarily fitted up at Messrs. Stothert and Pitt's works at Bath. The "Titan" was sent to Peterhead in sections. The fitting up of the crane has occupied the time of 30 men for six months.

CHIPS.

A baptismal font in alabaster has just been placed in Brechin U.P. Church. It was designed by Mr. G. Washington Browne, A.R.S.A., architect, Edinburgh, and executed from his drawings by James H. Kerr, sculptor, Haymarket.

At the time of the wreck of the *Utopia* off Gibraltar, collections were made in Italy for the purpose of testifying in a permanent form the national gratitude towards those English sailors who perished in attempting to save the Italians on board. The committee has opened a competition among Italian artists for designs for a large wreath in bronze to be placed on the tomb of the brave Englishmen. A commission of artists will decide upon the best design.

The present supply of water to Haddington being insufficient for the wants of the town, the police commissioners have decided to instruct Messrs. Leslie and Reid, civil engineers, of Edinburgh, to furnish a report, plan, and estimate of the probable cost of a fresh supply from Longyester.

The will of the late M. Martel, formerly President of the French Senate, has been an agreeable surprise for the town of St. Omer, which has inherited his important gallery of pictures and numerous other works of art.

The Ven. Archdeacon Barber presided at a consistory court held at Chester Cathedral on Friday, when plans were approved for a new church to be erected at St. John's, High Leigh, in place of the one recently destroyed by fire.

Mr. Silvanus Trevail, C.C., of Truro, architect, has been unanimously re-elected chairman of the County Sanitary Committee, the headquarters of which is to be at Truro. The Housing of the Working Classes Act, 1890, and other sanitary legislation was under the consideration of the committee, with the result that it was decided to again call the attention of the various medical officers of health and sanitary inspectors of the county to the duties imposed upon them by these Acts. It was also decided for the chairman to proceed with the digest of the various medical reports preparatory to the June meeting of the County Council.

The foundation stone of the new board-room offices and out-relief station for the Croydon Union was laid on Tuesday week by Mr. J. Farley, chairman of the board of guardians. The architect is Mr. Fredk. West, of Croydon, and the contractor Mr. Alfred Bullock, also of Croydon. The cost of the building will be about £6,500.

CONTENTS.

Inartistic Buildings 523
The Safety of Structures used for Purposes of Amusement 523
The Sewage Farms of Berlin 524
Amalgamated Society of Carpenters and Joiners ... 525
Ardrossan New Dock 525
Cement Concrete Tests... 525
Foundations of Buildings 525
Prices.—XXXIV. 526
The Society of Architects 527
Books Received 528
Wayside Notes 530
Engineering Notes... 530
The BUILDING NEWS Directory XIII
Our Illustrations 531
Competitions 550
Architectural and Archæological Societies 550
Building Intelligence 551
Correspondence 552
Intercommunication 553
Legal 553
Legal Intelligence 553
Parliamentary Notes 555
Water Supply and Sanitary Matters 555
Our Office Table 555
Trade News 556
Tenders 556

ILLUSTRATIONS.

GLASGOW GALLERIES AND MUSEUM.—ANGELS IN CHANCEL CORNICE, NICHOLASTON CHURCH.—STONES HILL, LIMPSFIELD, SUSSEX.—MANCHESTER ARCHITECTURAL ASSOCIATION PRIZE DESIGN FOR LYCH-GATE.—BUSINESS PREMISES AT IPSWICH.

Our Illustrations.

SELECTED DESIGN FOR THE ART GALLERIES AND MUSEUM, KELVINGROVE PARK, GLASGOW.

WE now illustrate the selected design for this great work by Messrs. J. W. Simpson and E. J. Milner Allen, of London. We gave the award last week, and it has now been confirmed. The following are some of the conditions observed in the final competition:—The original sketches, description, and calculations must be returned with the additional drawings, statements, and calculations now required, and sent in on or before the 31st day of March, 1892, addressed as before to Mr. Alfred Waterhouse, R.A., City-chambers, Glasgow. Each competitor must make a declaration in writing that all the drawings sent in in this final competition have been made by himself, or by his ordinary office staff, and not with the aid of assistants specially retained for this service, except in the case of the perspective view. Competitors must understand that though their completed design is not necessarily restricted to an expenditure of £120,000, they must clearly show what part of their design can be executed for that sum; and this part of their design should embrace (1) the music-hall, (2) the picture-gallery, administrative offices, and as much of the museum as is practicable, so as to be in itself a properly organised whole, though not, of course, complete externally on all sides. They are further required to show what portion of the structure can be completed for £150,000, and also to state for what sum the remainder of the design, if any, can be executed. The central hall is not intended so much for vocal concerts as for instrumental music, and the better music is heard in the courts of the museum and the picture-galleries, corridors, and staircases surrounding the hall, the more nearly will the building meet the object of the promoters. The commission of the accepted architect shall be calculated on his own estimates; that is to say, if that portion of the complete design only is built which he estimates, as shown on his plans by red lines, to cost £120,000, then he shall be paid on said sum of £120,000 at the rate of 5 per cent., and that whether the actual cost is more or less than £120,000, and whether or not that portion of the design is or is not modified by the executive previous to giving out schedules or taking in offers. If that portion of the design estimated to cost £150,000 is built, then the commission shall be calculated on that sum or on such proportion of that sum as is expended, and that whether or not that portion of the design is or is not modified by the executive previous to giving out schedules or taking in offers. If the whole design is built, then the architect shall be paid 5 per cent. on the sum he estimates it to cost, whether the actual cost is more or less, or whether the executive modify the plans or not before giving out schedules and taking offers. The commission shall cover all claims and charges of whatever kind competent to him, unless, after the offers are accepted, and during the course of construction the executive materially add to the cost of construction, and by a writing under their hand authorise the architect to execute those alterations. No commissions shall be charged on mural decorations, painting, stained glass, lighting or fittings, including organ. The executive will consult the architect, and his services shall be at their disposal; but in regard to these matters they reserve a free hand. The executive anticipate that the structure will ultimately be completed as designed, and they will use their best endeavours to provide funds to erect at once as large a portion as possible; but if, at the termination of their labours, any portion of the design remains unbuilt, then the plans, including the sketch of the unbuilt portion, shall become their property, and when they transfer the structure to the corporation, they shall be at liberty to transfer the plans also, and it shall be lawful for the corporation to complete at any future time, under the hands of the city architect or otherwise, the building according to the sketch transferred to them, and the accepted architect shall not be entitled to object or to claim any additional remuneration. If, during the progress of the work, any dispute in regard to the remuneration, rights, or duties of the architect, or to any other matter in which he is interested, shall arise betwixt the executive committee and the architect, then such dispute shall be referred to Mr. Waterhouse, or, failing him, to Mr. Aston Webb, Fellow of the Royal Institute of British Architects, whose decision shall be final and binding on both parties. The promoters acting as the "Association for the Promotion of Art and Music in the City of Glasgow" were constituted by the "International Exhibition Association of Industry, Science, and Art" to raise the exhibition surplus of £46,000 to at least £100,000, to erect art-galleries, concert-hall, museum, and school of art. Sir Archibald Campbell, Bart., is the President. We believe the work is to be put in hand without delay. Next week we shall give other illustrations of the chosen design, with drawings of the other designs to follow.

ANGELS IN CHANCEL CORNICE, NICHOLASTON CHURCH.

THESE photographs were taken from the models of the oak chancel cornices for Nicholaston parish church, now being restored. The chancel is 14ft. 6in. long by 12ft. wide. One Early principal only remains; the rest of the roof (now being replaced) is quite modern. The work is being executed by Mr. W. Clarke, sculptor, Llandaff, from the designs of Messrs. Halliday and Anderson, architects, Cardiff and Llandaff.

STONES HILL, LIMPSFIELD.

THIS house was erected last year at Limpsfield, in Surrey, from the designs of Mr. Robert Griggs, of Gray's Inn-square. The walls are built hollow and faced with red bricks; the roofs are covered with plum-coloured Broseley tiles, the main cornice, window-frames, and other outside woodwork being painted white. The contractors were Messrs. James Smith and Sons, of South Norwood, and Mr. A. W. Mitchell was clerk of works. The cost was about £3,500.

PRIZE DESIGN FOR A LYCH GATE.

THE drawings we illustrate gained a first prize in the Manchester Architectural Association's class of design, eligible to architects' pupils and assistants who have not been in the profession more than five years. The lych-gate is roofed with oak shingles; the whole of the structure above the bases (which are of stone) is of oak, with the exception of the beaten-lead finials. The design is by Mr. Roger, Oldham, who was a pupil of Messrs. Heathcote and Rawle, architects, Manchester.

BUSINESS PREMISES AT IPSWICH.

THE illustration of business premises at Ipswich, which we publish this week, represents the additions to the shops and warehouses of Messrs. R. D. and J. B. Fraser, jewellers, general furnishers and outfitters, who have, within the last few years, developed one of the largest businesses in the Eastern Counties. The new buildings shown occupy the site of the old *Ipswich Journal* printing office, having an extensive frontage on Princes street, the main thoroughfare from the railway station to the Cornhill. Besides the extensive additions before mentioned, new cabinet and other workshops, packing rooms, van entrance, &c., are just completed, having a frontage on Elm-street, and corresponding in height and appearance with the frontage shown. The total frontage of the buildings is 329ft. Well lighted and commodious principals' and clerks' offices are centrally placed for commanding the business. A very complete system of heating and electric lighting has been adopted throughout, and there are two goods-lifts and a hydraulic passenger lift. The buildings have been erected by Mr. F. Bennett, of Ipswich. The works have been executed from the designs, under the direction of Messrs. Wm. Eade, F.R.I.B.A., and E. Thos. Johns, of Ipswich, architects.

CHIPS.

The extension of the central school of art is now in progress for a committee of the Birmingham corporation. The chief contract, that for the building, was taken by Mr. John Bowen at £11,872.

At Friday's meeting of the Barton board of guardians, the clerk reported that the Local Government Board had given its sanction to the amended plans prepared by Messrs. Mangnall and Littlewoods, architects, of Manchester, for the workhouse extensions at Patricroft, and that tenders had been invited for the foundations for the first block of buildings. The cost of the proposed alterations, inclusive of land, will be £30,000.

Mr. Alfred Cheshire, who for the last two years has occupied the position of surveyor to the Rugeley local board, died on the night of the 31st ult., and was buried in the Rugeley Cemetery on Tuesday week. The deceased was but 30 years of age, and was formerly in the office of Major Bonney, the previous surveyor to the board.

The local board of Felixstowe discussed, on Saturday, the alternative sewerage schemes devised by Mr. G. S. Horton, their surveyor. Plan B, with an outfall to the sea between Felixstowe Pier and Landguard Fort, was provisionally approved, but it was decided to invite the opinion of an expert of great eminence before adopting either. A sum of £25 was voted to Mr. Horton in recognition of the extra labour entailed by the preparation of the schemes.

The eighth annual exhibition of the Home Art and Industries Association is fixed for June 17, 18, 20, and 21, at the gallery in the Royal Albert Hall, London. The association has now affiliated to it over 500 classes, at which wood-carving, leather work, metal work, and modelling are taught, whose efforts will be shown in the forthcoming exhibition.

The council of the Royal Archæological Institute has decided that the jubilee meeting of the society shall be held in London in 1894.

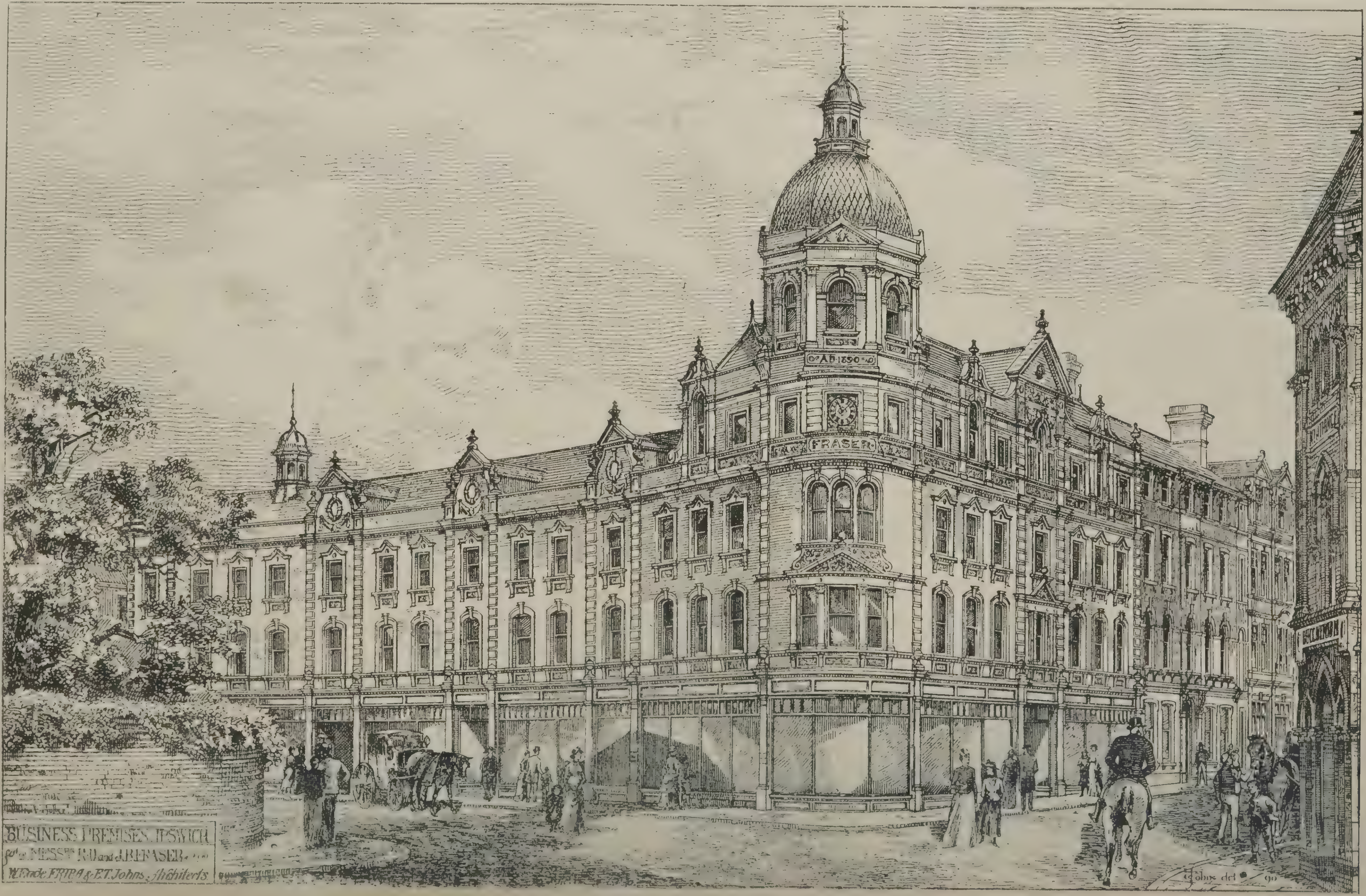
In the bankruptcy case of Robert Taylor Hookway, of Bideford, architect and builder, the bankrupt has been discharged conditionally.

On Thursday, the 7th inst., General C. Phipps Carey, R.E., Local Government Board inspector, held an inquiry at the Town-hall, Gravesend, as to an application by the town council to borrow £7,000 with which to provide buildings for the local School of Science and Art. The estimate included £6,500 for building, £1,250 for land, and £250 for contingencies, making £8,000. The grant from the Science and Art Department will be £1,000.

The parish church of Claypol, Lincolnshire, has just been reopened, after restoration of the chancel, at a cost of £850. The chancel has been re-roofed with oak, and the six windows have had the stonework repaired, besides being re-glazed with tinted glass. The floor has been relaid with wood from the old seats removed from the nave. The work of restoring the nave will now be proceeded with, and is estimated to cost £3,000.

At a meeting of the Garloch district committee, Aberdeenshire, on Saturday, Mr. Joseph Farquhar, contractor, Aberdeen, was appointed road surveyor of the district, in room of the late Mr. Dawson.

The church of St. Elwyn, Hayle, has just been enriched by three stained-glass windows inserted in the east end of the sanctuary. Each of the two lower windows consists of three lights, the middle light being much longer than the side ones; and the third is a rose window above. The subject of the north window is the Crucifixion, the Blessed Virgin Mary and St. John occupying the side spaces. The Ascension forms the subject of the south window, and in the lower part of the middle light and in the side lights the eleven Apostles are represented. In the rose window our Lord is pictured in glory, surrounded by adoring angels. The artists were Messrs. Ward and Hughes, of London.


A.D. 1890
FRASER
BUSINESS PREMISES. IPSWICH
for MESSrs R.D. and J.B. FRASER.
W. Eade F.R.I.B.A. & E.T. Johns, Architects.
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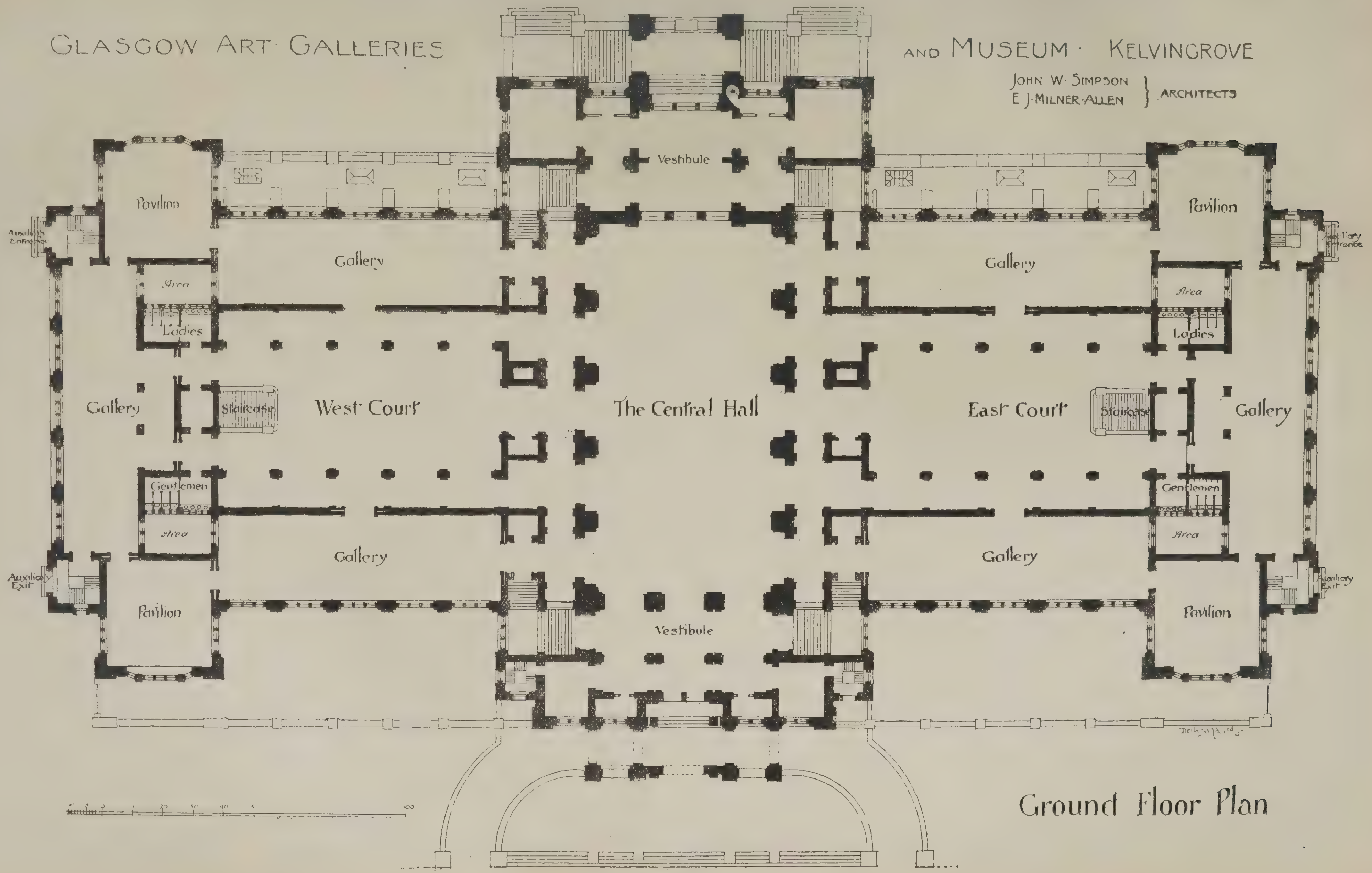

GLASGOW ART GALLERIES AND MUSEUM · KELVINGROVE

JOHN W. SIMPSON
E. J. MILNER-ALLEN } ARCHITECTS

Ground Floor Plan

COMPETITIONS.

Glasgow Art Galleries.—The Kelvingrove Park Galleries Committee met on Wednesday to consider the second report by the assessor, Mr. Alfred Waterhouse, R.A., on the six designs submitted in the final competition, when, as we foreshadowed last week would be the case, they decided to adopt No. 30, that submitted by Messrs. John W. Simpson and E. J. Milner Allen, of 10, New Inn, Wych-street, W.C. The design forms the subject of a double-page illustration in our present issue.

Coxlodge Asylum, Newcastle-on-Tyne.—The Visiting Committee of the Newcastle-on-Tyne City Lunatic Asylum have publicly exhibited the twenty-two plans and designs submitted for the building of the extension of the City Lunatic Asylum at Coxlodge, sent in for competition by architects practising in Newcastle-on-Tyne, during the present week in the town hall. It will be recollected that this competition was decided in February last, when the corporation, on the recommendation of Mr. G. T. Hine, their assessor, gave the first premium to Mr. J. W. Dyson, the second to Messrs. Montgomery and Carr, the third to Mr. W. L. Newcombe, and the fourth to Messrs. R. K. Freeman and S. R. Robbins.

Farnworth Public Baths.—In the limited competition an amount was stipulated for the cost, which was not to be exceeded. This condition not being fulfilled by the design at first selected, tenders were obtained for the buildings which were placed second in the competition, and as submitted by Messrs. Bradshaw and Gass, F.R.I.B.A., of Bolton. These being satisfactory, the work has been put in hand according to their designs.

Heywood, Lancs.—The assessor's award was opened and the result made known of the competition amongst architects for plans for the proposed technical school, Heywood, on Thursday night, the 7th inst. This disclosure was made at a meeting of the Technical Instruction Committee, held in the council chamber, where the numerous plans were displayed. Mr. Tuke (of Maxwell and Tuke), Manchester, was the assessor, and in his award he stated that he had no hesitation in awarding the first prize in the competition to the plans marked No. 2A and No. 2B, alternative plans, sent in by the same author. He experienced some difficulty in deciding upon the respective merits of the plans for the second and third prizes; but he suggested that the premiums should be equally divided between the plans marked No. 3 and No. 10. The committee resolved, after deliberation, to adopt this suggestion, and the prizes are, therefore, awarded as follows:—1st, Messrs. Woodhouse and Willoughby, 100, King-street, Manchester, and at Stockport; 2nd and 3rd, Messrs. Butterworth and Duncan, Rochdale; and Mr. F. Brockbank, Liverpool. The plans which have secured the premier award are considered by the assessor to be the best in the sense of superior construction and arrangement, fulness of detail for work, excellence of adaptability to school requirements, simplicity of arrangement, and easiness of access. The grouping of the different classes of departments is also considered best in these plans, and also the amount and arrangement of the lighting. The large lecture theatre would be capable of seating 300 people. The site is in Hind Hill-street, at the corner of Pine-street. The plans were on view in the Reform Club at Heywood on Monday and Tuesday last.

The foundation stone of St. Mark's, at Weeping-cross-trees, Salisbury, will be laid by the Archbishop of Canterbury at the latter end of this month. The total cost of the church will be £9,000. It is proposed to build in sections. The first section will consist of the chancel, organ chamber, vestries, and heating apparatus, costing about £2,000.

Mr. Plunket, First Commissioner of Works, received in his room at the House of Commons on Monday a deputation from the United Building Trades Committee, introduced by Mr. Broadhurst. The complaint of the deputation was that in several specified cases of public work, including police and post-office extension, the contracts were sub-let in such a way as to tend to "scamping," and to payment in some cases of less than the recognised trade wages. Mr. Plunket said he would have the alleged cases invested by inspectors and surveyors who acted under the Board of Works in such matters.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

Edinburgh Architectural Association.—This association met in the Architectural Hall, George-street, on Thursday, the 7th inst., Mr. H. Blanc presiding, when a paper, entitled "The Hie-Gait and Sautmercat of Glasgow in the Olden Time," was read by Mr. A. H. Millar, Dundee. It was his purpose, he safd, to show why Glasgow had taken its present form. With this view he had taken the pathway leading from the cathedral to the river-side as the nucleus of the city. The cathedral was on the summit of the hill, and around this edifice the houses of the ecclesiastical officials were erected, and thus formed a species of sacerdotal or Levite village. A distinct colony of salmon fishers was established at the river-side, and a footpath was formed from the cathedral to the brink of the river. In the course of time an industrial colony of craftsmen was added to the fishers' village, the pathway became a beaten track, and in time developed into the present High-street and Saltmarket. Lateral extensions from this point took place by the Drygate and Rottenrow, and by Gallowgate and Trongate. After giving a short history of the cathedral, the lecturer, with the aid of lime-light views, glanced at the history of Glasgow from the 5th to the 19th century. At the close Mr. Millar was thanked for his paper, on the motion of Mr. Washington Browne, A.R.S.A. —About forty members of the association paid a visit on Saturday to Yester House and the old Castle of Yester, near Gifford. They were received by the Marquis and Marchioness of Tweeddale. Mr. Thomas Bonar, the leader of the party, explained that little was known of the early history of the old feudal tower, which dated back as far as 1267. There still remained evidence enough to show that it must have been a very powerful stronghold. Tradition had it that it was the last castle that stood out against Cromwell's troops. After that date it fell completely into disuse and decay, owing not only to the effect of time, but to the removal of its stones for building operations by the people of the locality. The castle came into the possession of the present family some time in the 14th century by the marriage of Sir William Hay to the daughter and heiress of Sir John Gifford of Yester, who was the last of that name. The character of the architecture of Yester House, Mr. Bonar explained, was known as Scottish Classic, and was a fine example of that style, bearing a family likeness to such houses as Arniston, Airth, Drum, and others. The building dated from 1740-46.

Glasgow Architectural Association.—At the last monthly meeting, the president, Mr. Alexander M'Gibbon, in the chair, a paper on "Early Irish Architecture" was read by Mr. Charles E. Whitelaw, member. The Irish examples of pre-Anglo-Norman building are specially valuable, as of that period England has but a meagre collection. The diminutive size and austere simplicity of the Celtic oratories must be attributed as much to veneration for some prototype as to poverty and social rudeness. St. Patrick formulated a model, whose dimensions very nearly approach those of the Greek churches of somewhat similar date. Cormac's Chapel, 1127, is about earliest example of the true Norman, in most points similar to English usage, excepting the chancels, that continued to be constructed with square east end rather than semicircular or polygonal. The round towers are not now considered to date earlier than 9th century. They range from 50ft. to 150ft. in height, and from 40ft. to 60ft. in diameter at the base, and have from four to eight stories. Their purpose was undoubtedly for the secure storage of valuables. Mr. Whitelaw showed drawings of Celtic ornament and moulding of features, such as doors and windows, and by photographic views, to the number of over fifty, brought the whole range of Irish architecture before the meeting. The discussion following was opened by Mr. Blanc, and at its close the customary vote of thanks was awarded the essayist.

York Architectural Association.—Under the auspices of the association, Mr. W. G. Penty, F.R.I.B.A., delivered the second part of a lecture on "Technical Education in Relation to the Building Trades," in the York Institute, on Thursday evening, the 7th inst. Mr. A. Pollard, president of the association, occupied the chair. Mr. Penty having alluded to the antiquity of the art of building, dealt with the importance of technical education on account of foreign competition. In these progressive times, and this age of great inventions, it was impossible to say what might be the next development or surprise; but we had scarcely arrived at the time when our buildings could be "made in Germany," and sent over ready to be dropped into any convenient site which old England might provide.

CHIPS.

The West Town Church Schools, Dewsbury, are being warmed and ventilated by means of Shorland's patent Manchester stoves and exhaust roof ventilators, the same being supplied by Mr. E. H. Shorland, of Manchester.

Mr. T. Charles, assistant town surveyor of Hinckley, has been unanimously appointed engineer and surveyor to the Horbury Local Board, near Wakefield, from a large number of applicants.

A new post-office and stationer's shop has just been erected in White Ladies-row, Redland, Bristol. The building and the adjoining stores premises have been erected from the designs of Mr. J. H. La Trobe; Mr. H. A. Forse, of Charles-street, Bristol, being the contractor.

A new Conservative club was opened at Helmshore, in Rossendale, last week. It is built of stone, is three stories in height, and contains billiard, conversation, and recreation rooms. Mr. Henry Fielding, of Haslingden, was the architect.

The foundation stone of a mission church for Mylor was laid on Wednesday week, the Bishop of Truro being present. It is being erected by Mr. Tresize, of Mylor Bridge, from plans by Mr. H. C. Rogers, of Gwennap. When complete it will be 29ft. 4in. by 67ft. 10in., will provide accommodation for 230, and chairs will be used. The cost will be £700.

New Wesleyan Sunday-schools, which have been erected on the site of an old Wesleyan chapel at Wharton, Winsford, were opened on Tuesday week. The contractors were Messrs. James Fowles and Sons, of Over. The new schools, which have been designed by Mr. J. Cawley, of Castle Northwich, are 90ft. by 35ft., and have been erected on pitch-pine logs 14in. square, so that in the event of a recurrence of subsidence the structure could be raised. They consist of a schoolroom, holding 800 children, a band-room to seat 300, a store room, and six classrooms. The cost of the new building is £940.

A dedication service was held in Jedburgh Church on Sunday in connection with the inauguration of a new vestry, organ chamber, and pulpit. The apse of the building—which is in Early English style, with naves, transepts, and apse—was formerly occupied by the vestry, organ-loft, and choir-seats. It has now been opened up and formed into a chancel, which is furnished with screen, Communion-table, choir-seats, Glastonbury chair, and lectern.

A contract for erecting the larger portion of the Battersea Polytechnic on a portion of the site of the ill-starred Albert Palace has been taken by Messrs. Holloway at £35,988, who have commenced operations. The building is to be ready for opening in October, 1893.

For the proposed monument to William Tell, the Swiss Committee has accepted the design of Herr Kissling. The monument is to be erected at Altdorf. Kissling's model represents Tell in the garb of an Uri mountaineer, coming down, with his crossbow on his shoulder and his son at his side, from Bürglen. The pedestal is adorned with four reliefs, representing respectively the shooting at the apple, the leap from the boat, Gessler's death, and Tell's death at Schachenbach.

The foundation stones of a new English Congregational Church has been laid at Ffynnongroew, Mostyn. The church, which will cost about £700, will provide accommodation for 150 worshippers. The builder is Mr. Griffiths, of Prestatyn.

New Government buildings have been erected at Madrid, and special attention has been paid to the ventilation, which is carried out on the Boyle system.

A surveyor named Edward Holden, resident in Manchester, was sentenced on Saturday, at the Assizes in Liverpool, to twelve months' hard labour, for endeavouring to obtain from a corporal stationed at Gibraltar information in respect to the forts and batteries of Malta. A correspondence with some people in Paris was found in the prisoner's possession, and he was on his way to France when he was arrested. He was formerly in the borough surveyor's office at Bolton, and the technical knowledge he possessed insured him rapid promotion and responsible duties when he joined the Royal Engineers.

It is proposed to place in Salisbury Cathedral, opposite the memorial figure of Bishop Hamilton, a brass in memory of Dr. Liddon. The design has been prepared by Mr. G. H. Gordon.

Building Intelligence.

Blackford Hill, Edinburgh.—The plans of the new National Scottish Observatory have now been completed. and the erection of the buildings on Blackford Hill will be proceeded with immediately. It will be remembered that in 1888 the Earl of Crawford and Balcarres offered to the Government, for use in a National Scottish Observatory, the equipment of his own observatory at Dunecht. The Government accepted the gift, and it was decided, the Royal Observatory on the Calton Hill being altogether inadequate, to erect a new structure on a site of 3½ acres on the eastern slope of Blackford Hill. The plans have been prepared by Mr. W. W. Robertson, of Her Majesty's Board of Works. The buildings consist of an observatory proper and transit-house, placed along the north front of the site, with detached residences—one for the Astronomer-Royal and a double villa for the two assistants—on the south slope. There is also a gate-house at the entrance. The observatory proper will consist of a T-shaped building, with a frontage towards Edinburgh (the north) of 100ft. It shows towards the city an unbroken range of flat-roofed central buildings having a mean height of 30ft., and consisting of a principal story and a basement. These are flanked by octagonal towers of unequal size, crowned with large cylinders of copper—the larger tower, 75ft. high and 40ft. in diameter, placed at the east end; and the smaller, 44ft. high and 27ft. in diameter, placed at the west end. The design is Italian in style, with a decided admixture of Greek feeling. The stone employed is freestone, and the basement is built of rusticated ashlar work. The principal story of the central building is pierced with eleven windows, having carved jambs and lintels, and on the wall spaces between them are carved the signs of the Zodiac. Southward from behind the central building extends a wing 80ft. by 28ft. It consists of three floors. The basement is to be occupied by the heating apparatus, and rooms for the dynamos and accumulators in connection with the electrical apparatus. The principal floor will contain the library, the directors' room, ante-room, and computing-room. The top floor is to be occupied by a long apartment to be used in connection with the 15in. heliostat. At a distance of 80ft. west from the main observatory, and in line with the north-west front of it, is to be placed the transit-house, which is connected with the main building by a covered way. The cost of the building, including fittings, will be about £34,000, and the contract has been intrusted to Messrs. W. and J. Kirkwood, Edinburgh.

Bristol.—The Chapter of Bristol Cathedral have resolved to commence the restoration of the cathedral, the approximate estimate being £20,000. It is desired that the work shall not be carried out in piecemeal fashion, and an appeal will shortly be made to the citizens to provide the necessary funds. The scheme includes the restoration of the tower, which is a matter of urgency, the restoration of the Lady-chapel, the rearrangement of the choir (which involves the restoration of the elder Lady-chapel), and the provision of a new divided organ. The work will be carried out in accordance with the ideas of the late Mr. Street, and under the supervision of Mr. J. L. Pearson, R.A. Estimates have been received for the restoration of the room at the end of the cloisters, forming part of the old bishop's residence, and it is proposed to convert the apartment into a minor canons' vestry. The latter work is not included in the estimate of £20,000.

Chadmoor.—A new church at Chadmoor was opened on Wednesday week. It is Gothic in style, and is built of red bricks. The seats and inside roof timbers are of pitch-pine, and the choir stalls and reading-desk are of English oak, the pulpit being of Penkridge stone. The windows are glazed with lead quarry work and cathedral tinted plate-glass. The chancel is paved with encaustic tiles, which have been presented by the makers, and the aisle is of granated pavement. The total length of the building is 96ft. by 27ft. 6in. wide, the chancel being 30ft. by 22ft. There are also an organ-chamber and a choir vestry, each 15ft. 6in. by 10ft. 3in. The building is heated with hot water on the high-pressure system, and provides accommodation for 300 persons. The builder was Mr. R. Barton, and the work was carried out from plans prepared by Mr. S. Loxton, and under his direction, the contract price being £2,220.

Christ's Hospital.—Sir Henry W. Peek proposes the removal of this ancient foundation school to a site at Wimbledon, containing about 100 acres of freehold land, with a frontage of two-thirds of a mile to the common, and three other frontages extending over 800ft. It is calculated that the value of the present five acres in Newgate-street, moderately estimated at £600,000, would be sufficient to erect buildings for 1,170 children, together with the masters' houses, the infirmary, laundry, and other accessories, to supply all modern appliances, and to show a satisfactory balance towards the cost of permanent maintenance.

Edinburgh.—The building lately known as the Princess Theatre in Nicholson-street has been reopened, after conversion into a Salvation Army Citadel. The theatre was condemned by the city authorities on the ground that the ingresses and egresses were unsatisfactory. The building, which is now seated for 1,300 persons, has been entirely reconstructed. The interior was gutted, and a new floor laid down at the level of the street, while one gallery has taken the place of the boxes and gallery of the theatre; and the old stage has been replaced by a platform rising in tiers, with rooms and lavatories at both sides. A new entrance from Hill-place, 12ft. wide, has been provided, and a wide stone staircase has been constructed giving access to the gallery. In order to admit more light into the hall, the old roof of the building had practically to be replaced by a new one, a large part of which is made of plate-glass. The internal walls have been papered with a warm art pattern, and the woodwork has been stained and varnished. A new porch erected towards Nicholson-street has given more prominence to the principal entrance. The alterations and improvements have cost over £1,500. Messrs. George Beattie and Son, George-street, Edinburgh, were the architects for the alterations, and the principal contractors were John Muirhead and Son. Messrs. G. and W. Hendry executed the painting and decorative work.

Exeter.—The Albert Museum, the finest modern public building in Exeter, was built from the designs of the late Mr. John Hayward in 1866. The late Mr. Kent Kingdon—a quaint local light who had a great deal to do with the original erection—has left a sum of £6,000 towards extending the building. By his will, however, he makes it absolute that plans made under his directions by Mr. R. Medley Fulford—then an architect practising in Exeter—should be used, and the works carried out under that gentleman's supervision, providing he was still alive. Some time ago Mr. Fulford took into partnership Messrs. Tait and Harvey, and has since then left England and taken Holy Orders at Ballarat, in Australia, where he now is. The trustees have cabled the Rev. R. Medley Fulford, and on Saturday received a reply that he would return to England and personally supervise the carrying out of his plans. The reverend gentleman was originally a pupil in the office of the late Mr. John Hayward, and his father is the present venerable and learned vicar of the village of Woodbury, near Exeter.

Glasgow.—New bank buildings have been built at the corner of Argyll-street and West Campbell-street. The façades are of red sandstone, from Locharbriggs Quarries, near Dumfries, and Corsehill. The bank premises will occupy the principal portion of the street floor. The telling-room is 42ft. by 28ft. 6in., with Spanish mahogany counter and other fittings. The floor of the public portion will be laid with marble tesselated pavement, while the walls will be finished with dadoes of coloured marbles. At the end of the telling-room are the agent's room and the safes, with a stair leading to the basement, which will be fitted up with lavatories and additional safe accommodation. The first floor is being fitted up as a suite of offices for "Lloyd's Register." The upper floors are arranged for business premises and dwelling-houses. The whole premises are approaching completion, and will be ready for Whitsuntide. The buildings have been designed and erected under the superintendence of Mr. James Thomson, F.R.I.B.A., assisted by Mr. John Sim, clerk of works.

Haddington.—The restoration of the Old Church is nearly completed. The most objectionable feature of the former arrangement was the continuous galleries round three sides of the nave, the effect of which marred the fine proportions of the interior. The flooring has been lowered so as to expose the moulded bases of the old pillars. The galleries have disappeared altogether, and with them have gone the box-like pews and high wooden pulpit. An east and west gallery are provided in the restored church. The supporting beams rest on stone corbels with carved foliage, inserted into the nave pillars and walls. Both galleries are reached by massive oak stairs, and the east or organ gallery overhangs, as a canopy, the marble platform on which the Communion-table stands. The church, which will accommodate about 1,000, has been entirely reseated with open oak benches having moulded haffits. The passages are laid with encaustic tiles, while the remaining portion of the floor is laid with wood-blocks on a foundation of cement and asphalte. The special gifts include new pulpit, font, lectern, and Communion-table, all executed in Corncockle stone by Mr. W. Birnie Rhind, sculptor. The architects are Messrs. Hay and Henderson, Edinburgh. The cost, including the organ, will be £4,000. Messrs. W. and J. Kirkwood, Edinburgh, were the principal contractors, and Mr. Laird acted as clerk of works.

Jarrow-on-Tyne.—The new co-operative premises at the corner of North-street and Market-square were opened the other day. The premises cover an area of 5,227 sup. ft. They are four stories in height, and contain on the ground floor six shops, and on the first floor are flour and grocery warehouse and tea-room, work-rooms, and also a show-room. There are also cellars in the basement. The shop fittings are of mahogany and pitch pine, and the shop fronts and doors are of polished mahogany. The grocery shop, the largest, is 56ft. by 25ft. The lecture hall on the second floor is 84ft. by 36ft., and 25ft. high, and will accommodate 700 people. It has a vaulted plaster ceiling, divided into panels by moulded ribs. The building is warmed throughout by a low-pressure hot-water heating apparatus, fitted by Messrs. Dinning and Cooke, of Newcastle. The whole of the building is to be lighted by electricity. The building, which is of red Normandy bricks with Denwick stone dressings, is Renaissance in character, and has on the North-street side a clock tower, 65ft. in height, in which a clock to chime the hours and half-hours has been fixed by Messrs. John Dixon and Sons, of Derby. The cost is upwards of £7,000. Mr. Pringle, of Gateshead, is the contractor; Mr. George Gordon is the clerk of works, and the architect is Mr. J. W. Hanson, of South Shields and Jarrow.

Manchester.—The new buildings in connection with the out-patient department of the Manchester Hospital for Consumption and Diseases of the Throat and Chest in Hardman-street, Deansgate, were recently opened. The out-patients' department is nearly twice the size of the former building, which occupied a portion of the same site. The new waiting-hall is capable of seating 200 patients, and is lighted by an octagonal dome 30ft. high, which terminates in a turret for the extraction of vitiated air. Round the room are grouped nine consulting and examination rooms. The building has been erected by Messrs. Wilson and Toft, Hulme, from the designs and under the superintendence of Messrs. Pennington and Bridgen, at a cost of £2,500.

Southampton.—The new corporation baths on the Western Shore-road were opened a short time since. We published the ground plan in our issue of April 3, 1891. The baths are constructed of red brickwork, with terra-cotta dressings and ornamentations in the Italian style. The front elevation facing the Western Shore-road is 224ft. long, with two central towers 50ft. high. These towers are used, one for a smoke shaft, and the other for the reception of water-tanks. The end elevation has a depth of 72ft. The main front entrances are between the towers, separate for men and women. The private baths are ten in number for each sex, placed in the front part of the building, in two saloons 52ft. by 25ft. and 16ft. high, on either side of the entrance vestibule, provided with waiting-rooms, and arranged in two classes. The ceilings are curved and formed with zinc sheets, perforated for ventilation. At the end of each of the saloons space is provided for Turkish baths. The swimming-baths are two in number, and situated in rear of the private baths. The basins are each 75ft. long by 30ft. wide, constructed of Portland-cement concrete walls 2ft. 3in. thick, and faced with white glazed bricks with tiled platform all round. The baths are graduated in depth from 3ft. 3in. to 6ft. 6in., and a gallery is provided at the end. The roofs are of wrought iron, boarded internally, and surmounted by lantern lights. The baths are lighted by windows at the sides. Under the vestibule a basement is provided, in which are placed the boilers. Over the vestibule apartments are provided for the caretaker. The swimming-baths will be filled with salt water by gravitation, and the water will be filtered through a polarite filter. The contractors for the sea-wall were Messrs. Roe and Co.; for the buildings, Messrs. Morgan, Isted, and Morgan; for the iron roofs, Messrs. Roe and Co.; for the heating apparatus, Messrs. Bradford and Co., of London and Manchester. The ornamental ironwork has been supplied by Messrs. Macfarlane and Co. The buildings have been designed and erected under the superintendence of the borough engineer, Mr. W. B. G. Bennett, C.E, assisted by the assistant borough engineer, Mr. A. D. Greatorex. The entire cost will be £12,700.

Spital-square, E.C.—The Princess Christian will lay, on June 15th, the foundation stone of the rebuilt Home for Working Boys, in Spital-square. The site, which has been occupied by the home for 21 years, will be doubled in area, and the new premises, to house 80 boys, will be built from the designs of Mr. W. H. Seth-Smith, P.S.A., F.R.I.B.A. The upper part of the building will be arranged in dormitories, some open and some divided into cubicles, for the use of the elder boys, who will pay a higher rent in proportion. In the lower part of the house will be a dining-room, a meeting or reading-room, and a moderate-sized gymnasium, as well as kitchen, bath-room, lavatory, &c. The cost will be £6,000.

CHIPS.

The Dean and Chapter of Lincoln have decided not to proceed at present with the removal of Sir Christopher Wren's Library, in consequence of the need of immediate repair to the north-west tower of the minster, which is in a threatening condition.

The Bishop of Carlisle reopened and rededicated on the 7th inst. St. Mary's Church, Maryport, which has just been restored.

The formal opening of the Birkdale Courthouse took place last week. The building, one of the first works of the Lancashire Police Committee, has a frontage to Weld-road, near the Lancashire and Yorkshire Railway Station. It contains a police inspector's residence, rooms for married constables and single constables, charge office, and cells; while on the second floor are also magistrates' rooms, solicitors' consulting-room, and court for petty sessional business.

Dr. John W. Tripe, medical officer of health for the Hackney district, died last week at his residence in Richmond-road, Hackney, in his seventy-second year. He has filled the office of medical officer for Hackney district ever since the formation of the district 36 years ago, and was also its public analyst. He took a prominent part at the Congress on Hygiene and Demography in London last August, and was the author of several works on sanitary questions.

A sub-committee of the Glasgow Town Council have recommended the erection by the corporation of a public hall and galleries on a site close to the William-street entrance to the Glasgow-green. The city engineer has been instructed to prepare plans.

In the House of Commons on Thursday, the London Water Bill was read a second time without opposition. The Bill gives power to the County Council and the City Corporation to make private investigations in reference to the available sources of water supply for the metropolis, to endeavour to come to terms with any of the water companies, and to introduce Bills dealing with the supply of water.

An application has reached the Board of Trade for the appointment of an arbitrator to decide between the London County Council and the London Street Tramway Co. on the claims made by the latter as the price of the transfer of their undertaking. The London Street Tramway is the first of similar undertakings to fall under the operation of the Act.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. Passmore Edwards.

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Situations.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is One Shilling for Twenty-four Words, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., L., LI., LIII., LIV., LVIII., LIX., and LX. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

Received.—F. R. G. S.—M. B. and Co.—Robin Hood.—S. T. and H. Co.—J. R. M.—R. N. T. Co.

Correspondence.

THE A.A. AND R.A. v. THE R.I.B.A.

To the Editor of the Building News.

Sir,—The circular letter addressed to the profession this week by the officials of the A.A., begging for subscriptions to their precious studio scheme, to meet the deficiency of about £1,000 on the present expenses of their programme, seems to me exceedingly inopportune in the face of the evidence of disruption which Mr. T. G. Jackson's letter in this month's *A.A. Notes* has made manifest. Till the question raised by that manifesto has been cleared up, it is highly desirable that no further contributions should be given. At present it is by no means clear where those who have the whip-hand of the A.A. are driving to, though it is highly probable that the management may be riding for a fall. Hitherto the society, independent and self-supporting, healthy and strong, has flourished free of all external control, working more or less in harmony with the R.I.B.A., yet emancipated from its patronage. No sooner, however, has the approval of the Institute been obtained in favour of the new system at the A.A., coupled with a donation of £300 towards the cost, than another departure is to be attempted with a view to throwing over the Institute and its examinations in favour of the Royal Academy, under the leadership of some Arts and Crafty Guildites whose claim to be the only true representatives of architecture as an art is eminently absurd. No doubt the architectural schools at Burlington House sadly need remodelling, while architecture at the Royal Academy has long deserved a more adequate recognition; but before the A.A. is to be absorbed in any such undertaking, it would be well that we should clearly understand what is really intended, and an opportunity ought to be afforded us for discussing the matter. Vague inferences, such as Mr. Jackson gives in his letter, to which you properly referred last week, are, I dare say, well-intentioned enough on the part of our newly-elected A.R.A.; but past experience serves to suggest that the monopoly of painters which rules the roost at the R.A. will, in the end, do precious little for architecture, which they neither care for nor understand.—I am, &c., An Art Architect.

Sir,—Tell the young gentleman who does your "Wayside Notes" that I am *not* a woman. And it does not flatter me when he makes me out to be so supernaturally *young*. Unfortunately, I am a *man*, and not so young as I once was. "A new prophet has arisen,"—that is one playful allusion to poor me. "He has tacked a problem that puzzles many grey heads,"—this is another.

Confound it, Sir! if my head is not grey now (I presume the allusion is to the hair) it never will be!

I should have thought my record, even in the Building News, of some five-and-twenty years, might have convinced this obdurate young man that I have passed my twentieth year. But there is no convincing some people!

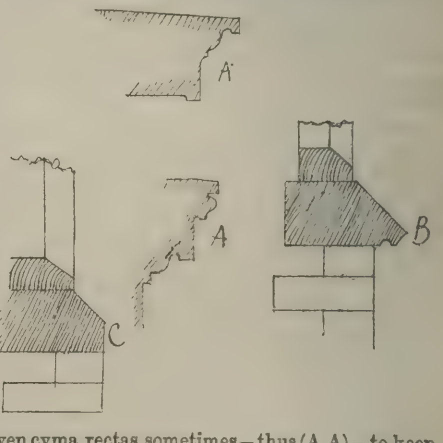
Get some knowledge under *your* hair, my good young man, before it is grey, like mine.—I am, &c., Edward Francis C. Clarke.

Hogarth Club.

DRIPS.

Sir,—It is a pity that so many parts of buildings have suffered premature decay, and streaked with black and dirt through lack of proper "drips" to conduct the rain-water to drop clear instead of running down the lower part of moulding, coping, and wall surface, even under window heads, into the inside of the windows and doors; this is more especially in the Classic styles originating in countries, I suppose, where it was not so necessary to provide for such frequent rains, &c., so the mouldings and projections have so few "drips," unlike the old buildings of our native land, in which most of the old mouldings have "drips," or formed so as to allow the water to drop clear, until the Renaissance styles, where cyma-rectas especially have no "drips," following the shapes of the ancient Classic styles or examples.

In my young time I did considerable work both in Gothic, Tudor, Elizabethan, Renaissance, and Classic styles, under an architect who would try and have a "drip" to all projections, even cyma rectas sometimes—thus (A A)—to keep faces cleaner.



I did many sills to mullioned windows generally in section thus (B), while this case of sills is an exception in our old Tudor and other Gothic buildings, the sills being of this well-known shape in stone (C), and I have had the job as here shown to let lead in many places to form a "drip" (same applies to copings sometimes, and also pier caps). Here we can generally see the evil of this, as at C, in the common plain splayed sills.

Such is the need of "drips," often overlooked. I know of a well-built mansion where lead "drips" had to be put under the coping and sills after some time; so that, wherever a projection should be a "drip," in the opinion of—Yours respectfully,

Broxbourne. Jas. Pulham.

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A window was dedicated on Saturday afternoon at St. John's, Longsight, Manchester. The subject is the Transfiguration.

Intercommunication.

QUESTIONS.

[10756.]—**R.I.B.A. Exam.**—In the final progressive examination R.I.B.A. the student is required to give, as one of his probationary works, "a subject of Classic architecture, shaded in sepia, Indian ink, or hatching, according to the rules of sciography." Can any reader inform me if the ordinary two columns and entablature of an order, as in the intermediate exam., but shaded, is meant, or whether one should give an entire elevation of some Classic building?—Q.

[10757.]—**Surveying.**—Perhaps some of your readers would kindly solve the following question, which occurred in a recent exam. paper on surveying:—"Set out 3 acres of land in a rectangle, the proportion of the sides being as 3 : 2."—Sargon.

[10758.]—**Smoky Chimneys.**—Having had considerable practical experience in schemes for preventing smoky chinmeys, I have read with interest the articles signed "F. Dye," and should like to know where in his experience the inlet ventilators for bringing air into the room has been most effective?—C. Wheeler.

[10759.]—**A Curious Question.**—Is it bad form, or is there any impropriety, in one having his crest or coat of arms inserted in the leaded glass of a window lighting the hall and staircase in a new mansion?—X.

[10760.]—**Specifications.**—Would some reader kindly inform me of the best book on specifications to study? Also a good book of plans, elevations, &c., of existing buildings, with working details.—Anxious.

CHIPS.

The erection is about to be commenced of a new church at Bank Quay, Warrington, which will be the fourth that has been provided in the borough during the past quarter of a century. The building will seat 400 persons, and will cost in all about £4,200.

At a meeting of the Herefordshire County Council on Saturday a pension of £180 was granted Mr. Cheiake, the retiring county surveyor, and Mr. H. Wakelam, of Garston, near Liverpool, was appointed his successor at a salary of £400 per annum. There were 84 candidates for the surveyorship, and in the voting on the three selected candidates, Mr. E. Evans, county surveyor, Carnarvon, was placed second.

Messrs. Palfrey Bros., plumbers, were fined £5 and costs at the Lambeth Police-court on Saturday for allowing the drains of a house in Gowlett-road, Camberwell, of which they were the owners, to be in a defective condition, and with an inadequate water supply.

The West Renfrewshire County Council at their last meeting adopted a scheme by Mr. James Wilson, C.E., for the drainage of Inverkip, and decided to invite tenders. Mr. Wilson was also intrusted to prepare plans for a water supply to Kilbarchen and Howwood.

A new Primitive Methodist chapel, erected in front of an old school-chapel, was on Saturday opened in High Park, Southport. The new chapel has cost £1,100, and it has been erected from the designs of Mr. Bolshaw, Southport.

A meeting of the Pitlochry Water Committee was held last week to open the tenders received for the construction of a reservoir at the foot of Bonervachie, on the mouth of the Pass of Killiecrankie, and the laying of pipes therefrom to Pitlochry for the purpose of increasing the water supply. After discussion, it was resolved that as the lowest offers received for the construction of the reservoir were very much in excess of Messrs. Leslie and Reid's estimate, to delay further consideration of the offers until the committee had a consultation with the engineers on the matter. The lowest offers submitted for the reservoir, pipe-laying, and pipes exceeded £3,000.

A special meeting of the local board of Southborough, near Tunbridge Wells, was held on Tuesday week to consider the absence from duty of the surveyor, Mr. Harmer. The chairman announced that the surveyor, who had absconded, had been suspended, and due notices had been served at his residence and on his sureties. It was decided to discharge Harmer and to advertise for a surveyor and sanitary inspector at a combined salary of £225 a year.

Extensive improvements are about to be made at the Leeds Town Hall, at an estimated cost of £8,000. The works will include new sanitary arrangements and ventilation.

The Restoration Committee of St. Nicholas Church, Rochester, have accepted the offer of a fire insurance company of a sum of £1,600 in respect of the damage done to the church by the recent fire. Messrs. Callund and Son, of Rochester, builders, have been intrusted with the structural repairs, their estimate being £1,050, and the reinstatement of the organ has been undertaken by Messrs. Walker and Son, of Tottenham Court-road, whose charge will be £550. Messrs. Callund have commenced their work, and will complete it early in July.

Legal.

CONTRACTS BY CORRESPONDENCE.

Although of course this is a general subject, yet owing to the growing habit nowadays of doing so much by letter and telegram amongst all who have to deal with house property, it is one of special interest to readers of this journal. The recent case of "Henthorn v. Fraser" (*Times*, 27th March), in the Court of Appeal, must for the future become a leading authority. There the point was whether a revocation of an offer received after an acceptance had been posted could have any legal effect? The facts were such as may any day occur again, and so the decision becomes one of much practical importance. The plaintiff, on 7th July, 1891, at Liverpool, handed defendant a letter containing his offer to take £750 for certain property within 14 days. The plaintiff took the letter to the defendant at Birkenhead, who, on the 8th July, at 3.50 p.m., posted a letter from there accepting this proposal. This letter was, however, not received by the defendant in Liverpool until 8.30 that night, and so after office hours. Upon the same 8th July the defendant posted from Liverpool, between 12 and 1, a letter cancelling and withdrawing this offer, which was received in Birkenhead at 5.30 p.m. The result was that the defendant's withdrawal of his offer reached the plaintiff before his acceptance had come to the hands of the defendant, but after it had been posted.

Now, the main rule of law by which all contracts by correspondence are construed is, that the person who has made an offer must be considered as continuously making it until it has been brought to the knowledge of the person to whom such offer was made that it is withdrawn. Indeed, without that principle as a basis, contracts by parties at a distance would be impossible. From the facts stated it appears that the defendant changed his mind, and withdrew his offer (in favour of some one else who would pay more) some hour or so before that offer was actually accepted by the plaintiff. But it is obviously useless to consider these mental operations of the parties as long as they remain known only to themselves. The posting of his letter by the plaintiff's solicitor was an acceptance, and as this took place before he received the plaintiff's withdrawal, the contract was complete at the moment of such posting, and therefore the revocation came too late. The Court of Appeal also held that where an acceptance by post is within the contemplation of the parties, it will be binding, even though the offer was not made in that way. The Court accordingly reversed the judgment of the judge below, and found in favour of the plaintiff, decreeing specific performance of the contract to sell their property, with costs of action and of appeal.

Fred Wetherfield, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

C. C. C.—Houses.—Road.—The best way would be to get the local authorities to state in writing the grounds of their objection to these houses being built, and quote the statutes upon which they rely. But of course they can compel adjoining owner to make the road afterwards in any event.

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Owing to the scantiness of unoccupied space in the Abbey, the Dean of Westminster has reluctantly declined to find room for the proposed monument to Mr. Lowell. Dr. Bradley has, however, suggested that the window in the Chapter House, that still remains plain, might be filled with stained glass as a memorial.

Memorial stones were laid on Saturday in connection with the building of the Primitive Methodist Sunday-schools at Idle, near Bradford. The new buildings, which front to Town-lane, and adjoin the chapel, will be in the English Renaissance style, and will contain an assembly-room and six class-rooms on each side, with two larger rooms and infants' room at the south or main entrance. All the rooms communicate with the assembly-room, which is lighted from both ends and from windows above the class-rooms, which are also separately lighted. Messrs. T. Howdill and Son, of Leeds, are the architects, and the contracts have been let as follows:—Mason's work, Mr. A. Thornton, and joiner's work, Messrs. H. and A. Thomas.

LEGAL INTELLIGENCE.

Too Good a House for the Estate.—Yeardye v. Brooks.—At the Devon Spring Assizes, on the 23d of March, Mr. Justice Day and a jury heard this claim for breach of a building covenant in respect of land near to the London and South-Western Railway Station at Ilfracombe. The land was conveyed to the defendant by Mr. Coleman, of Bristol, subject to certain restrictions with regard to the front elevation of the buildings to be erected thereon. These covenants were afterwards assigned together with other land to the plaintiff. In 1890 defendant erected a house without complying, it was alleged, with the covenants he had entered into. Defendant contended that there had been no assignment to the plaintiff, that there had been no breach of the covenant, and that if there had been it was with the full knowledge of Mr. Yeardye. The evidence showed that the class of house erected was superior to the others on the estate. His Lordship asked where the damage came in? Counsel said the house, being made larger than provided for in the specimen plans, shut out the sea view from the houses behind it. Mr. Yeardye, the plaintiff, said the house in dispute would shut out the sea view from the houses to be erected on "undeveloped land" which he owned at the rear. It was also evidently intended for a lodging-house, whereas the other buildings were all residential houses. His Lordship asked the difference. A lodging-house was certainly a residential house. Plaintiff further stated that the rents of houses in the neighbourhood had had to be reduced since the erection of the building complained of, and he estimated his total damage at £200 at least. In cross-examination witness said the whole of the houses in the neighbourhood were built for private residences. His Lordship: And this was too good a house for a private residence. Mr. J. N. Hancock, builder, of Barnstaple, said the house of defendant was unsightly, and obstructed the view of the premises above it. Defendant said the only deviation from the covenants in the house he had erected was that the roof was 18in. higher than the original plan, and a stack of chimneys had been carried 2ft. higher by order of the Local Board. The house was built for a gentleman's residence, and not for a boarding-house. Mr. Vallacott, architect, said that all that obstructed the sea view were four chimney tops. His Lordship said the jury must confine their attention to the front elevation of the house, and was there anything in that to which any reasonable person could fairly object? They need not trouble themselves about the rear of the building.—Verdict for the defendant.

What is a "New" Building?—At the Kendal police-court last week John Bateman Troughton was summoned for unlawfully erecting certain new buildings in Jenning's Yard without having given notices or deposited plans. Mr. D. C. Goddard, borough surveyor of Kendal, said the plans produced were submitted to him in November last, and approved by the Board. All the walls were new above the level of Jenning's Yard. Two steps used to lead down into the old premises, but the ground floor was now raised to a level with Jenning's Yard. If the plans had complied with the by-laws relating to new buildings, there would have been a site for one cottage only. Cross-examined: The materials of the back and side walls pulled down were bad. Mr. Stephen Shaw, architect, said he had had 25 years' experience. He considered the cottages new buildings, with the exception of three-fourths of the west wall. Mr. Thompson, on behalf of the defendant, said there had been an acquiescence by the borough surveyor in the action of the defendant. Mr. Joseph Bintley, the county surveyor for Westmoreland, and Mr. J. W. Howie, builder, said they considered the contractor had done right. Mr. W. Brockbank, the contractor, deposed that the wall was bad, and had to be taken down to the ground floor. The Bench dismissed the case.

Converting One House into Two.—At the Coventry Police-court on Wednesday week, William Henry Nightingale, White-street, was summoned under the Public Health Act for converting No. 36, Grey Friars-lane, into two houses, without giving notice, contrary to the borough by-laws. The offence was admitted. The Town-clerk said the offence was committed through defendant's neglect to notify the city surveyor, and to prepare proper plans of proposed alteration. Before the division the house was fitted with thorough ventilation; but now that it had been converted into two houses, which were standing back to back, the proper ventilation had disappeared—no provision had been made for air space. The Bench, on defendant's promise to reconvert the houses into one dwelling immediately, inflicted the mitigated penalty of £2 10s. and 14s. 6d. costs.

Building Lines.—The London County Council v. Cross.—(Queen's Bench Division, April 12, before Mr. Justice Denman and Mr. Justice A. L. Smith.)—This case raised the question as to buildings erected "beyond the general line of buildings," the particular difficulty being as to how the "line of building" is to be got at. The London County

Council in October last made a complaint before justices sitting at Hampstead against Mr. Cross for erecting a building beyond the general line of building in Barraud-road, in Hampstead, without leave, contrary to section 75 of 25 and 26 Vict. c. 102, the Metropolitan Local Management Act of 1862. The respondent made two points—that the subject of complaint had not arisen within six months before the complaint, and that the house was not in Barraud-road. The justices decided both points in his favour; but stated a case—that he began to erect the house before April 27, 1891; that the certificate of the architect as to the general line of building was given on August 6, 1891; and that the complaint was made on October 28, 1891. On the first point the respondent contended that the matter of complaint was the commencing to build before April 27, 1891. The appellants contended that the matter arose when the superintending architect gave his certificate as to the general line of building, and not before. Judgment was delivered on Tuesday in favour of the appellants, but on somewhat different grounds. Mr. Justice A. L. Smith, in his judgment, said: There has been a remarkable difference of judicial opinion as to what constitutes the offence created by section 75 of the Act, whether it is committed by a building owner building *de facto* beyond the general line of building, or whether the offence is his building beyond the general line of building as decided by the superintending architect. "The Plumstead Board of Works v. Spackman," however, went to the House of Lords, and the conflict of authority was then set at rest. I am of opinion that the appellants' contention is right—that there is no offence within section 75 of the Act of 1862 until the architect has determined what is the "general line of building," and consequently, as the six months did not begin to run until the architect had given his certificate, the complaint was in time. Then, as to the question whether the house is in Barraud-road, the architect's certificate was that it was there, but the justices held that they were not bound by it, and found that the house is not in the road. In my judgment the architect's certificate was conclusive, and the point has been determined by the judgment of the House of Lords in "Barlow v. the Vestry of St. Mary Abbotts, Kensington." Mr. Justice Denman also gave judgment to the same effect, though on somewhat different reasons. He agreed that the judgment must be for the appellants. As to the first point, the complaint was not for beginning to erect, but for erecting beyond the line, and he thought it impossible to say that this act was not within the six months, as the building was only carried as high as the first floor in April, and was "nearly finished" in June, and therefore the magistrates were wrong in dismissing the complaint as not within six months. On the other point he entirely agreed with his learned brother. Judgment for the appellants.

Breach of Building Bylaws: a Nice Point.—At the Blackpool Police-court, on the 5th inst., Milnes Hall, of South Shore, was summoned for a breach of the building bylaws. The case for the corporation was that Mr. Hall had built buildings in Clare-street without submitting plans and sections to the sanitary authorities. It was true that some time ago certain plans were submitted, but not by Mr. Hall. Mr. Wolstenholme, the borough surveyor, corroborated. Cross-examined: The house was built in accordance with the house plan; but the yard space was not so. The notices submitted were by Mr. W. H. Dean, who was a builder in the town. Re-examined: The Building Plans Committee were anxious to put a stop to such practices. Defendant was further charged with having defective rear space. The Bench imposed a fine of 10s. and costs in the first case, and 40s. and costs in the second.

In re J. Ryder.—A meeting of the creditors of Mr. James Ryder, builder and bricklayer, Abbey-field, Abbey Hey, Gorton, was held at the Official Receiver's at Manchester last week. The statement of affairs showed liabilities £12,475 0s. 8d., of which £9,957 10s. was secured. The assets amount to £1,854 10s. The debtor having no offer, it was resolved to wind up the estate in bankruptcy.

Architects' Fees for Partially Executed Work.—At the Colchester County Court, on the 1st inst., Mr. J. W. Start, architect, Colchester, sued Mr. W. C. Austin, farmer, of Ardleigh, for £20 8s. 4d., balance of account. Plaintiff prepared plans for a farmhouse and other buildings for defendant. The plans were approved by the defendant, and tenders were obtained. Defendant took some exception as to the amount of the tenders, and he said he should not at present build the house, but that he would proceed with the other buildings, cottages, &c. These were built. Mr. Start sent in his account, but for a considerable time no notice whatever was taken of it. He claimed 4 per cent. on £373, the amount of the cottages which were erected, and 2½ per cent. on the estimated cost of the house. His Honour held that the charges were very fair and reasonable, and gave judgment for plaintiff, with costs.

Alleged Scamped Corporation Contracts.—Hull Corporation v. Turner and Others.—At the Leeds Assizes, before Mr. Justice Grantham and a special jury, this case was heard on Thursday, Friday, and Saturday in last week. The plaintiffs were the Mayor and Corporation of Hull, and the defendants Thomas Turner, Joseph Sangwin, James Harding, and Thomas Thacker. The action was brought to recover £7,000 damages for breach of contract. The Corporation advertised for tenders for the construction of a sewer for the eastern portion of the town. They divided the work into five sections, and in 1888 the defendants Turner and Sangwin obtained the contract for the fifth, the tender being for £6,281 16s. 2d. for 4,000 yards. The principal complaint was in regard to the lining of bricks, which, it was alleged, was so bad as to make the sewer absolutely useless. No fewer than 600 yards had to be remedied by the Corporation, and 400 yards had been remedied by the defendants themselves, notwithstanding a certificate of completion given to them. The plaintiffs further complained that the borough engineer, who reported that the work was going on satisfactorily, had been systematically deceived. The defendants Harding and Thacker were the sureties, and the plaintiffs claimed to be entitled to sue not only the contractors but also the sureties, because they became answerable to the Corporation for the due fulfilment of the contract. Evidence in support of the plaintiffs' case was given by Mr. George Trowill, clerk of the works; Mr. Martin Samuelson, engineer to the Humber Conservancy Commissioners; and Mr. Thomas Fenwick, civil engineer, of Leeds. Counsel for the contractors contended that there had been no fraud on their part, and that the defective workmanship was owing to the negligent oversight of Corporation officials. It had never been suggested that the defendant Sangwin had been a party to the fraud alleged, and it was argued that Turner was not responsible either for what had occurred, which, if attributable to any one, was attributable to the rascality of some of the men, who seemed to have entered into some sort of conspiracy to scamp the work. The defendant contractors were both men of good reputation, who had, by their own endeavours, risen from the position of workmen to their present position. Even since the completion of the contract in question the defendants had been intrusted with other work by the Corporation. On behalf of the sureties it was urged that there was really no action, because the contract had been completed, the certificate given by the engineer, and the contractors paid. The work had passed into the hands of the corporation, and had been used by them. His Lordship said the answer to the certificate was that it was obtained by fraud, and was therefore void. The defendant, Thomas Turner, was called, and stated that he never saw bad materials used, and did not know during the progress of the contract that the work was being scamped, and knew nothing of signals being given, as alleged, when the inspector was coming. Cross-examined, he told the committee that in his twenty-seven years' experience he had never seen a sewer better constructed—so far as he had seen it. When it was discovered how badly the work had been done, he was very much shocked. He inspected the parts laid bare, and found that the work had not been done as it ought to have been. They re-executed 400 yards of it at their own expense. Joseph Sangwin, Turner's partner, also stated that he never suspected that any scamping was going on. His Lordship, in summing up, said that the only satisfactory thing in the case was that it was now getting over. It was a very important case, and one which it was the duty of the Corporation of Hull to bring. Without exception it was one of the most horrible exposures of the way in which the work was done for some of their great corporations that he had ever been a party to. Whether they looked at it from the point of view of the borough engineer, who began it, and who, he supposed, prepared the plans; from the point of view of the clerk of the works, employed by the borough engineer; or of the contractors and other witnesses, one and all, it seemed to him to be bad, hopelessly bad. The question was whether or not there was fraud, because that the work was bad, and that it was a disgrace to civilisation that such work should have been done, was admitted. The only doubt was whether the defendants were liable for the admittedly bad work. Certainly it was a remarkable thing that work should be done in that scandalous way, and no one get any benefit from it being done so but one set of people, and yet, according to them, they had not the slightest suspicion that it was being done; and they were incompetent to give any assistance in arriving at a conclusion as to how this work was badly done. His Lordship addressed a series of questions to the jury, which were answered as follows:—Was the contract complied with? No.—Was the work scamped and fraudulently done? Yes.—Was the corporation of Hull cheated by the way the work was done? Yes.—Ought the defendants to have known that the work was being scamped and fraudulently done? Yes.—Were the certificates of the work done obtained by fraud? Yes.—Was it by the fraud of the defendants? Yes.—Was there an omission on the part of the corporation properly to superintend the work? Yes.—Did this lead to scamping of the work? Yes.—Was there wilful default or connivance by Trowill; if so, were the defendant contractors a party to it? No evidence. On these findings his Lordship gave judgment for the plaintiffs as against the defendant contractors, the amount of damages to be determined by an official referee in the event of the parties being unable to agree. The case as against the sureties, his Lordship added, would be further argued before him in London.

In Re H. W. Iles.—Henry William Iles, auctioneer and surveyor, against whom a receiving order has been granted, has furnished a balance-sheet showing liabilities £2,697, with an estimated surplus in assets of £6,089. The debtor states that he commenced his present business in 1884 with about £50 capital, at 75, Mark-lane, removing in 1889 to 14, Devonshire-square, E C., where he has carried on business down to the date of the receiving order. The Official Receiver asserts that in 1884, previously to commencing business, being then described as a general commission agent, secretary of a public company, and retired builder, he was adjudged bankrupt, his unsecured liabilities then amounting to £5,969, and his estimated assets to £59, and under those proceedings he obtained his discharge in August, 1885.

Liability for Rebuilding Party-Wall.—Wigg v. Lefevre.—In this case, heard in Queen's Bench Division on the 7th inst., before Mr. Justice A. L. Smith, the plaintiff, as building owner, sued the defendant, the adjoining owner, under the Metropolitan Buildings Act, 1855, 18 and 19 Vict. c. 122, to recover £75, being one moiety of the cost of rebuilding a party-wall, which had been pulled down and rebuilt by the plaintiff under a dangerous structure notice served upon him by the London County Council. The plaintiff is owner of No. 97, Curtain-road, Shoreditch, and the defendant is lessee for No. 99, under a lease for 35 years from June, 23, 1876, at a rent of £60 per annum. In December, 1888, the defendant sublet No. 99 to Messrs. Poulton and Nicholson for a term of 14 years at a rent of £90 per annum. The question was whether the defendant was rightly sued under sections 3, 73, and 97 of the Metropolitan Buildings Act as the "owner." Mr. Ernest Pollock, for the plaintiff, argued that the action was rightly brought against the defendant, who was the adjoining owner liable to contribute to the expense of rebuilding a dangerous structure under the Act. In "Erle v. Maughan" it was held that the tenant of adjoining premises could maintain an action against his landlord for proportion of expenses of rebuilding a party-wall. That showed that the action was maintainable by the building owner against the landlord. A person who is in receipt of rent from a sub-tenant is the owner of a party-wall, within the meaning of the Metropolitan Buildings Act, 1855—"Hunt v. Harris." The earlier case of "Mourilyan v. Labalmondiere" had been overruled by the latter cases. Section 97 did not prevent the building owner going against the person entitled to the rents and profits under section 3. Mr. Channell, Q.C., for the defendant, contended that the facts in "Mourilyan v. Labalmondiere" were the same as in this case, and it was decided that the landlord, who had let his premises for a term of 21 years, was not liable for expenses incurred under the Act. In "Hunt v. Harris" the owner was held liable because there was no other one person in receipt of the whole rents and profits. The under-tenants were only in possession of parts of the premises, and did not come within section 3. The mere fact that they were entitled to a notice before the property could be touched did not bring them within the definition of owner. The scheme of the Act was to deal with one person, but they were all to pay ultimately by way of contribution. Mr. Justice A. L. Smith, in giving judgment, said it was an action by plaintiff against defendant to recover a moiety of costs of rebuilding a party-wall. The question was, Who had to pay the moiety of the expense, the defendant or Messrs. Poulton and Nicholson, the sub-lessees? The sections of the Act under which the party-wall machinery worked were sections 69, 71, 72, and 73. Who was the owner or occupier? It was said that the owner was the person in receipt of the whole of the rents and profits, and that defendant was such person. But it was pointed out that all sorts of persons might come within that clause—the original owner of the fee, any lessor, or any intermediate lessee. It was clear that there must be some limitation to the definition of that word "owner." Section 97, sub-section 1, said "the owner immediately entitled to possession of such premises." Was the defendant the owner immediately entitled to the possession of such premises? That was the question he had to decide. If defendant was, then the plaintiff was right; if not, but Messrs. Poulton and Nicholson were, then defendant was right. What was the position of Messrs. Poulton and Nicholson? They were lessees of a term. The defendant had only possession expectant upon the expiration of Poulton and Nicholson's term. The defendant, therefore, was not an owner immediately entitled to possession. That was his construction of the statute. He would next deal with the cases. "Mourilyan v. Labalmondiere" was exactly in point. There the question was, Who was the building owner under the Metropolitan Buildings Act, 1855? Crompton and Hill, JJ., held that the landlord was not the owner, but that the lessee was. That case was a direct authority for the construction he put upon the statute. The case of "Erle v. Maughan" did not touch this case, as no question arose as to whether the defendant was the person immediately entitled to possession. He did not think that Labalmondiere's case had been overruled by that of "Hunt v. Harris." His judgment, therefore, was for the defendant, with costs.

In re John Hughes.—At the Birkenhead Bankruptcy Court, on the 5th inst., before His Honour Judge Wynne Ffoulkes, John Hughes, 38, Victoria-road, Tranmere, lately carrying on business as a builder, applied for his discharge in bankruptcy. From the Official Receiver's report it appeared that the bankrupt had forwarded to him assets which had enabled him to pay a dividend of 8s. 10d. in the pound. The bankrupt, who was illiterate, had not kept any books. His Honour said the Bankruptcy Act took a serious view of the omission to keep books, and he did not think he had any discretion to grant a discharge, which would be suspended for two years.

What is Mortar?—At the Southampton Borough Police-court, on the 28th ult., Ezekiel Beaton, builder, of Forster-road, Bevois Mount, was summoned for an alleged breach of the by-laws of the Southampton corporation, by using improper mortar in the bonding of walls in a certain house in Duke's-road. The borough surveyor (W. B. G. Bennett) stated the circumstances of the case, and was corroborated by A. D. Greatorex, assistant borough surveyor, and by J. Brierley, the borough analyst, who said the constituents of the samples did not constitute good mortar. In his opinion, as a chemist, he considered the proportions of good mortar to be one-third of good burnt lime and two parts of clean sharp sand. The first sample was 26 per cent. short of the proper standard. The analysis of the second sample showed 23 per cent. below. The sample produced was of a similar character—very friable, with wooden chips and grass in it. The defence was that the mortar was only used for inside work; but defendant was fined 20s. and costs.

PARLIAMENTARY NOTES.

Plumbers' Registration Bill.—The House of Commons Select Committee on the Registration of Plumbers Bill heard evidence on the 5th inst. on behalf of the National Association of Master Builders. The president of the Association, Mr. J. C. White, of Liverpool, submitted that the proposed legislation was an unnecessary interference with the freedom of a large and important branch of the building trade, would increase the cost to the public of an already expensive section of that trade, and take the means of subsistence from a large number of good, honest plumbers, many of whom would shrink from the ordeal of an examination. If, however, the Bill must pass, he urged that no power should be given to the Council to tax the trade beyond the amount of the registration fee; that more members of the Council should be chosen from local trade associations, and fewer from bodies not intimately connected with the trade; and that a longer interval should be allowed for those long connected with the trade to claim registration. On the other hand, Mr. William Henry Cowlin, of the firm of Messrs. Cowlin and Sons, builders, of Bristol, representing the Bristol Master Builders' Association, said he was in sympathy with the chief objects of the Bill. He criticised the system of examination, his view being that a man who, by passing an examination in actual plumber's work only, became registered, was much more likely to be employed to carry out drainage works than the master builders, in whose hands the work was at present.

On Saturday a stained-glass window was fixed in the north aisle of St. Mary's Church, Balderstone. The subject is the Washing by Mary of our Lord's Feet.

Mr. S. G. Gamble having resigned the post of Borough Surveyor recently, on his appointment as second officer of the Metropolitan Fire Brigade, the Grantham Town Council received eighty applications for the vacancy. Out of that number three candidates were selected, and attended a meeting of the council on Tuesday. They were Messrs. Joseph Evans, of Wolverhampton; Thos. W. Franks, West Bromwich; and Frank Bagshawe, Harrogate. The first-named was unanimously appointed. The post is worth £200 per annum. Mr. Evans has been engaged as chief assistant to the borough surveyor of Wolverhampton.

WATER SUPPLY AND SANITARY MATTERS.

Bude.—An inquiry was recently held at the Falcon Hotel, Bude, before Mr. S. J. Smith, C.E., Local Government Board inspector, as to an application of the Stratton sanitary board to borrow £3,600 to carry out works of water supply for Bude and Stratton. Mr. Anson, C.E., explained the scheme prepared by him for the rural sanitary authority, under the Bude Canal Abandonment Act of last year, which proposed to utilise the water from the reservoir of the Bude Canal Company. The water had been submitted to the public analyst and proved perfectly satisfactory. The reservoir was about eight miles from Bude, and contained about 80 acres of water. A 5in. pipe would be laid down as far as Stratton, and a 4in. pipe from Stratton to Bude. The normal population was about 2,000. Hobbacott Down, on which the reservoir is situated, was 364ft. above Bude, and was the highest point. Two filters would be provided at Hobbacott Down, covered and lined with concrete, holding 60,000 gallons each.

Cairo.—The International Commission for studying the drainage of Cairo have examined 30 schemes presented to them, and rejected all in favour of one elaborated by themselves. They especially commend, however, three projects as embodying in their general outlines the right system. These were presented by Messrs. Michau and Donaue, a French firm; Mahmoud Fehmy, an Egyptian; and Mr. John Price, an Englishman, the two latter engineers in the Government service. The commission consider that Mr. Latham's scheme, presented two years ago, has the disadvantages of costliness and of requiring numerous stations in the heart of the city, where the sewage would collect and undergo agitation. The commissioners describe the sanitary condition of the city as deplorable. The annual death-rate is over 46 per 1,000. The plan recommended by the commission is that the entire drainage should be carried in one system of drains, flowing by gravitation to a single point, where it would be pumped to the necessary elevation and forced through iron pipes until it reached land which it might profitably irrigate. The estimated cost is half a million sterling. The Government will perhaps be able to invite tenders next November, and, if funds are provided, to begin operations in the following April. Two years later the greater portion of the system should be in working order.

The Tansa Lake Waterworks for Bombay.—The Viceroy of India formally inaugurated, on March 31st, the new works of water-supply for Bombay by connecting the existing mains with the new great main, which brings the water from the huge reservoirs formed by embanking the Tansa Lake. The construction of this embankment, which is one of the largest in the world, and of the mains and conduits through which the water flows to the city has taken seven years, and has cost the Bombay Municipality about 15,000,000 rupees. The works are capable of supplying 31,000,000 gallons daily. The scheme was designed by Major Tulloch, and has been carried out, with some modifications, by Mr. Clerk, C.E. The physical difficulties were enormous, and the work involved the construction of a masonry dam two miles long, a lake of nearly six square miles in area, 55 miles of ducts, 27 miles of iron mains, four miles of tunnels, and nearly a mile of iron girder bridges, costing altogether about a crore and a half of rupees. By far the greater part of this gigantic engineering work was carried out by Messrs. Walsh, Lovett, and Co., of London and Birmingham, including the whole of the conduits, earthworks, and tunnels, iron bridges, and aqueducts, as well as the complete laying of 50,000 tons of 48in. cast-iron mains. Messrs. Glover were the contractors for the great masonry dam, Messrs. Walsh and Lovett executing the works from that point on to Bombay.

Mr. Crowther, the architect to Manchester Cathedral, is preparing the design for a memorial over John Collier's ("Tim Bobbin") grave in Rochdale parish churchyard. The memorial will be completed by Whitsuntide.

The House of Commons Committee passed, on Tuesday, the Preamble of the Bill for the Extension of the Sheffield Railway to London, subject to provision being made for re-housing the working classes displaced, and decided to meet again on the 28th inst. to consider the recommendations of the Local Government Board and the Office of Woods and Forests.

Mr. John Crump, a well-known architect of Philadelphia, died a fortnight since at the age of 65. In addition to the active practice of his profession, Mr. Crump for many years conducted the Colonnade Hotel, perhaps the best and most noted hotel in the City. Among his principal works are the Union League Club in Philadelphia, the Chestnut-street Theatre, the Chamber of Commerce, and the Hospital of the University of Pennsylvania.

Our Office Table.

Sir Frederick Leighton makes an appeal for aid in removing Alfred Stevens's masterpiece, the Wellington Monument, from its present cramped and ill-lighted position in a side chapel of St. Paul's to the spot it was specially designed to adorn, beneath one of the arches of the nave, and further, to complete the memorial from the artist's original design by the addition of the equestrian statue, for which Stevens's model is still preserved. There will be little difficulty, we should hope, in accomplishing the former project, the cost of which is estimated at but £1,000, and which has the cordial support of Dean Gregory and his Chapter, Mr. F. C. Penrose, the surveyor of St. Paul's, Mr. Plunket, the First Commissioner of Works, and the present Duke of Wellington, and when once the monument is fairly visible funds will doubtless flow in for its completion.

The somewhat sudden death has been announced of Mr. Edward H. Burnell, F.R.I.B.A., of 32, Bedford-row, W.C., which occurred on Tuesday, the 5th inst., at his residence, 15, Orsett-terrace, Hyde Park. Mr. Burnell carried on for many years an extensive practice as a surveyor in the metropolis and elsewhere. He was the senior member of the Surveyors' Association, his diploma of membership (No. 80) dating from July 20, 1868, and for many years its secretary. He had been a Fellow of the Institute of Architects since 1877. Only nine months ago he retired from his appointment to the Skinners' Company on the grounds of failing health, after having filled that office for nearly thirty years to the complete satisfaction of the company, who, on his retirement, unanimously voted a large retiring pension, which, unhappily, he has not long lived to enjoy. By his kindly manner and strict integrity of character, Mr. Burnell had always enjoyed the respect and confidence of his professional associates, and his loss will be deeply deplored by them, as also by a large circle of private friends.

During some recent excavations in Endsleigh-street, N.W., in connection with the deepening of the main sewer, workmen in the employ of Mr. Neave, contractor, came upon remains of a mammoth and other prehistoric animals at a depth of about 22ft. from the surface. The animals must have died at the spot where the remains have now been found, and the dark, loamy soil in which they were embedded has yielded on examination many seeds of contemporary plants. Mr. Clement Reid, F.G.S., of the Geological Survey, has been able to determine the presence in the loam of about twenty species. These show that the land here at the time was of a marshy nature.

The corporation of Newcastle-under-Lyme have memorialised the Mayer Trustees to permit the marble memorial to the memory of the late William Samuel Mayer, J.P., to be removed to Newcastle, the corporation undertaking on their part that it shall be placed in a suitable situation in the new Municipal Buildings. The monument is one that the late Mr. Joseph Mayer had executed by the Italian sculptor, Fontana, in memory of his father and mother. It is a work of art of a very high character, and cost over £500. Originally, it was intended to be erected in St. Giles's parish church at Newcastle-under-Lyme; but some difficulty arose, and the proposal was not carried out. The Mr. Mayer whom it commemorates was the first mayor of Newcastle appointed by the burgesses at large. There is every probability that the trustees will accept the proposal now made.

One recent sanitary authority, speaking of walls, observes that "wall-papers should not last too long," that flock papers are great collectors of dust, and expensive papers are apt to be retained where a common one would be changed with advantage. Sanitary or so-called washing papers can be cleaned or dusted, and are to be preferred. He also advocates distemper, which is the best for bedrooms; though for the bedrooms of the working class in large towns limewash is healthier than paper. "Lime-washed rooms," he says, "require free ventilation, for the lime takes carbonic acid from the air and exchanges it for some of the water held in combination. For every 22 grains of carbonic acid thus absorbed, nine grains of water should theoretically be given off. The gradual result is that the limewash becomes whiting, and a certain amount of size is therefore required to fix it." No doubt limewash is healthier than paper, but we imagine very few even of the working classes would like it so well as paper.

The quarterly meeting of the South Hants and Isle of Wight District Council of the Registration of Plumbers was held at the Municipal Offices, Southampton, on Thursday evening, the 7th inst., Mr. H. I. Sanders occupying the chair. The report of the examiners as to the third examination of candidates for registration was submitted by the hon. secretary, Mr. W. Matthews, and stated that eleven candidates presented themselves for examination, all being operatives: of these, six failed, and five passed. The practical work was generally better, but the written examination was still very poor. The report was adopted, on the motion of Mr. Doggrell, seconded by Mr. Comport, and Mr. Matthews was appointed hon. secretary.

The height of buildings in Chicago is proposed to be limited to 150ft.; that upon any street or lot of ground abutting upon any street, the width of which is not more than 80ft., no building shall be erected of a greater height than 125ft.; and that no building exceeding 100ft. in height shall be erected upon or abutting any street which is not more than 40ft. wide. When the building is erected with frontages upon two or more streets of different widths, its height is not to exceed the average of the maximum heights which are permitted. Thus a building erected having two frontages towards streets the width of which are 40ft. and 80ft., the height of such a building is not to exceed 112½ft. If a building is set back, an increase of height is to be permitted in proportion to the aggregate increase of width of the street so made, provided it does not exceed 150ft. These rules do not apply to towers, spires, domes, &c., whose area does not exceed 15 per cent. of the ground area of building.

Trade News.

WAGES MOVEMENTS.

Cork.—The Builders' Association of this city have acceded to the memorial of the United Building Trades, and after the first Monday in August will reduce the working day by one hour in the morning, making the total time worked for the week 54 hours. The same number of hours are to be worked every week all the year round, both in town and country, by all trades, where artificial light can be used; a uniform rate of 3s. per week will be paid as country money, and the use of machine-prepared work will be the same as in Dublin, Belfast, Limerick, and Waterford.

CHIPS.

The dissolution of partnership is announced us between Messrs. Jones and Bond, of Bristol, architects and surveyors.

A London correspondent states that the Liberals will run Mr. Silvanus Trevail, M.S.A., County Councillor for Truro in the Cornwall council, as Parliamentary candidate for the Launceston division.

The voting for the election of a secretary of the Amalgamated Society of Engineers has resulted as follows:—Anderson, 17,975; Mann, 17,037; Glenny, 727, giving Mr. Anderson a majority of 211 over the combined totals of his two opponents.

The School Board for Rochester has appointed Mr. G. E. Bond, M.S.A., of that city, architect for the new schools to be built in Gordon-road, Strood.

On Friday Mr. J. A. Crowther, borough surveyor of Nelson, was appointed by the corporation of Bootle surveyor of that borough. The salary attaching to the office is £350 per annum. There were 93 applications for the office, rendered vacant by the appointment of Mr. W. N. Blair as chief surveyor to St. Pancras Vestry.

A memorial window has been placed in the Methodist New Connexion Chapel, Armley, during the past week, executed by Mr. W. Pape, of Leeds. The subject is "The Anointment of Our Saviour."

The annual meeting of the Sheffield Society of Architects and Surveyors was held on Tuesday evening, when a paper was read by Mr. W. H. Bidlake, M.A., of Birmingham, on "Timber: its Growth and Characteristics."

A new nave, north aisle, and west porch are to be erected in connection with St. John's Church, Kidderminster, at an outlay of £4,565.

Holloway's Ointment.—Relaxed and sore throat, diphtheria, quinsey, coughs, bronchitis, and most other pulmonary affections will be relieved by rubbing this cooling Ointment into the skin as near as practicable to the seat of mischief. This treatment, so simple and effective, is admirably adapted for the removal of these diseases during infancy and youth.

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The most extensive Stock of every kind of Wood in Planks and Boards, dry and fit for immediate use.

TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

Bethnal Green, E.—For improving the lighting of rooms in the infants' department of the Wilmot-street school, Bethnal Green, for the London School Board:—

Davis Bros.	138	0	0
Kirby and Chase	87	0	0
Corfield, S. H.	75	0	0
Gibb, D, and Co.	73	10	0

Brecon.—For Callwen Church. Messrs. W and T. Williams, Talbot House Brecon, architects and surveyors.

Thomas and Watkins, Swansea ...	£1,800	0	0
Thomas, E., Neath	1,719	0	0
Jenkins. B., Brecon	1,650	0	0
Dowland, W., Abergavenny ...	1,610	0	9
Price and Deakins, Knucklas ...	1,500	0	0
Rees, D., Ystalyfera (accepted) ...	1,400	0	0
Williams, W., & Sons, Trefeinon*	1,350	0	0

* Less wall-stone and haulage.

Brighton.—For erection of mission hall and school, for Bute-street Mission. Mr. W. H. Nash, 42, Ship-street, Brighton, architect. Quantities supplied:—

Allfrey, W.	£1,448	0	0
Taylor, W.	1,295	0	0
Wilkinson, A.	1,274	0	0
Sattin and Evershed...	1,250	0	0
Freeman, V. P.	1,226	0	0
Lockyer, A. E. (accepted)... ...	1,220	0	0

All of Brighton.

Burton-on-Trent.—For laying down electric plant, for the public supply of electricity:—
Hammond and Co., Bishopsgate-street Within (accepted).

Dalston, N.—For erecting new w.c.'s for the Wilton-road School, Dalston, for the London School Board:—

Davis Bros.	£83	0	0
Kirby and Chase	75	0	0
Williams, G. S. S., and Son, Richmond-street, Barnsbury (accepted)	74	0	0
Mowlem, J., and Co., on a schedule	—		

Coventry.—For the Coventry public baths. Messrs. Harold T. Burgess and Spalding and Cross, joint architects. Quantity surveyors, Messrs. F. G. W. Buss and G. Fleetwood, 15, Furnival's Inn, W.C.:—

		A.
Balaam Bros., London	£18,999 ...	£949
Stephens, F. N., Aston	18,600 ...	1,170
Gould and Brand, London	18,179 ...	762
Wingrove, J. T., Northampton ...	16,978 ...	987
Reid, Blight, and Co., Plymouth ...	16,935 ...	899
Lowe, T., and Sons, Burton	16,550 ...	960
Allen, J., and Sons, London	16,417 ...	995
Smith, G. F., and Sons, Leamington ...	16,290 ...	970
Hill, C. G., Coventry	15,076 ...	824
King, C. W., Cheltenham	13,500 ...	790

A.—For foundations being carried down to a lower level if found necessary.

Crediton, Devon.—For new frontage to banking premises for the Devon and Cornwall Banking Company, Limited. Mr. Geo. Soudon Bridgman, M.S.A., of Torquay and Paignton, architect:—

Berry, W. P., Crediton (accepted)...	£492	0	0

Dunchideock Church, Devon.—For the restoration of rood-screen, for the rector and restoration committee:—

Read, H., St. Sidwells Art Works, Exeter (accepted)	£231	0	0
Hems, H.	225	0	0

Fidler's Ferry.—For laying in the Mersey Aqueduct Tunnel, at Fidler's Ferry, a 12in. pipe, for the Vyrnwy water supply committee of the Liverpool city council. Mr. G. F. Deacon, engineer:—
Cochrane, H. H. and A. H., London (accepted on schedule of prices) about £750.

(For connecting up the Vyrnwy main on the Lancashire side of the Mersey with the tunnel pipe, Messrs. Cochrane's tender has been accepted at £480).

Hereford.—For the supply of retorts for the gasworks committee of the city council:—

Gibbons, B., junr. (accepted) ...	£74	19	11

Herts.—For the erection of new parish rooms at Wormley, Herts, for the Rev. F. W. Greenstreet. Messrs, Newman and Newman, 31, Tooley-street, London Bridge, architects:—

Archer, Cheshunt	£441	0	0
Heint, J. A., Broxbourne (accepted)	413	14	0

Idle.—For the erection of a Willey House, for the Idle New Mill Company, Ltd. Messrs. Jowett, Kendall, and J. Harper Bakes, M.S.A., Calverley Chambers, Victoria-square, Leeds, architects. Quantities by the architects:—
Mason's work:—Hobson, S., and Son.
Joiner's work:—Barker and Illingworth.
Plumber's and painter's work:—Padgett, M.
Plasterer's work:—Hollings, F.
Slater's work:—Thornton, T. and A.
All of Idle and Eccleshill.

Kingsbridge, Devon.—For proposed new banking premises and post-office, for the Devon and Cornwall Banking Company, Limited. Mr. Geo. Soudon Bridgman, M.S.A., of Torquay and Paignton, architect:—

Berry, J. P., Plymouth	£3,350	0	0
Hooper, G., Kingsbridge	3,340	0	0
Shellabear, G., Plymouth	3,230	0	0
Finch, J., Plymouth	3,157	0	0
Rabbich and Brown, Paignton ...	3,115	0	0
Drew Bros., Paignton	2,912	0	0
Webber, H., Paignton (accepted)	2,906	0	0

Leeds.—For three houses in Armley-road. Messrs. Swale and Mitchell, 98, Albion-street, Leeds, architect:—
Bricklayers', masons', and concreters' work:—
Thompson, W., and Sons, Skinner-lane.
Carpenters' and joiners' work:—
Hague, C., Kingston-road.
Plumbers' and glaziers' work:—
Cromack, A. B., Prospect Works, Armley.
Plasterers' work:—
Branton, R., Lovell-road.
Slaters' work:—
Atkinson, W., Whitehall-road.
Painters' work:—
Robinson, J., Kirkgate.

Leominster.—For constructing a 4ft. 6in. culvert in connection with the water-extension scheme under the railway, for the town council:—

Mackay (accepted)	1,620	0	0

Liverpool.—For the supply of glazed pipes and junctions for sewerage work, for the city council:—
Dalton and Co., Lambeth (accepted).

Liverpool.—For the supply of 2in. and 3in. cast iron pipes, for the home water committee of the city council:—
Stewart, D. Y., and Co., of Glasgow (accepted) 102s. 6d. per ton.

Liverpool.—For repairs and new furniture at the town hall, for the city council:—

Rumney and Co. (accepted) ...	£543	11	0

London.—For providing and fixing heating apparatus on the low-pressure hot-water system (exclusive of radiator), for new schools now in course of erection for the London School Board:—

(*a*)—High-street, Plumstead:—			
Wenham and Waters, Ltd.	£430	0	0
Wontner Smith, J., Gray, and Co....	420	0	0
May, J. and F....	407	0	0
Purcell and Nobbs	392	0	0
Cannon, W. G., London-road, S.E.*	388	10	0
(*b*)—Chisenhale-road, Bow:—			
Fraser and Fraser	790	0	0
Dawson, R., and Co., Ltd.	498	0	0
Wenham and Waters, Ltd.	435	0	0
Wontner Smith, J., Gray, and Co....	418	0	0
Jones and Attwood	416	0	0
Cannon. W. G.	398	10	0
Crane, R., Binfield-road Clapham*	373	0	0
(*c*)—Honeywell-road, Wandsworth Common:—			
May, J. and F.	495	0	0
Purcell and Nobbs	474	0	0
Crane, R.	462	0	0
Potter & Sons, South Molton-street*	423	0	0

* Accepted.

London.—For tiling to the Chancery-lane Safe Deposit extension, Chancery-lane, W.C., for Mr. Thomas Clarke. Mr. William A. Burr, M.S.A., 65, Chancery-lane, W.C. architect:—

Doulton and Co. (accepted)	£244	0	0

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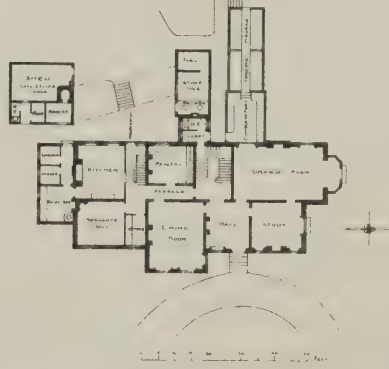
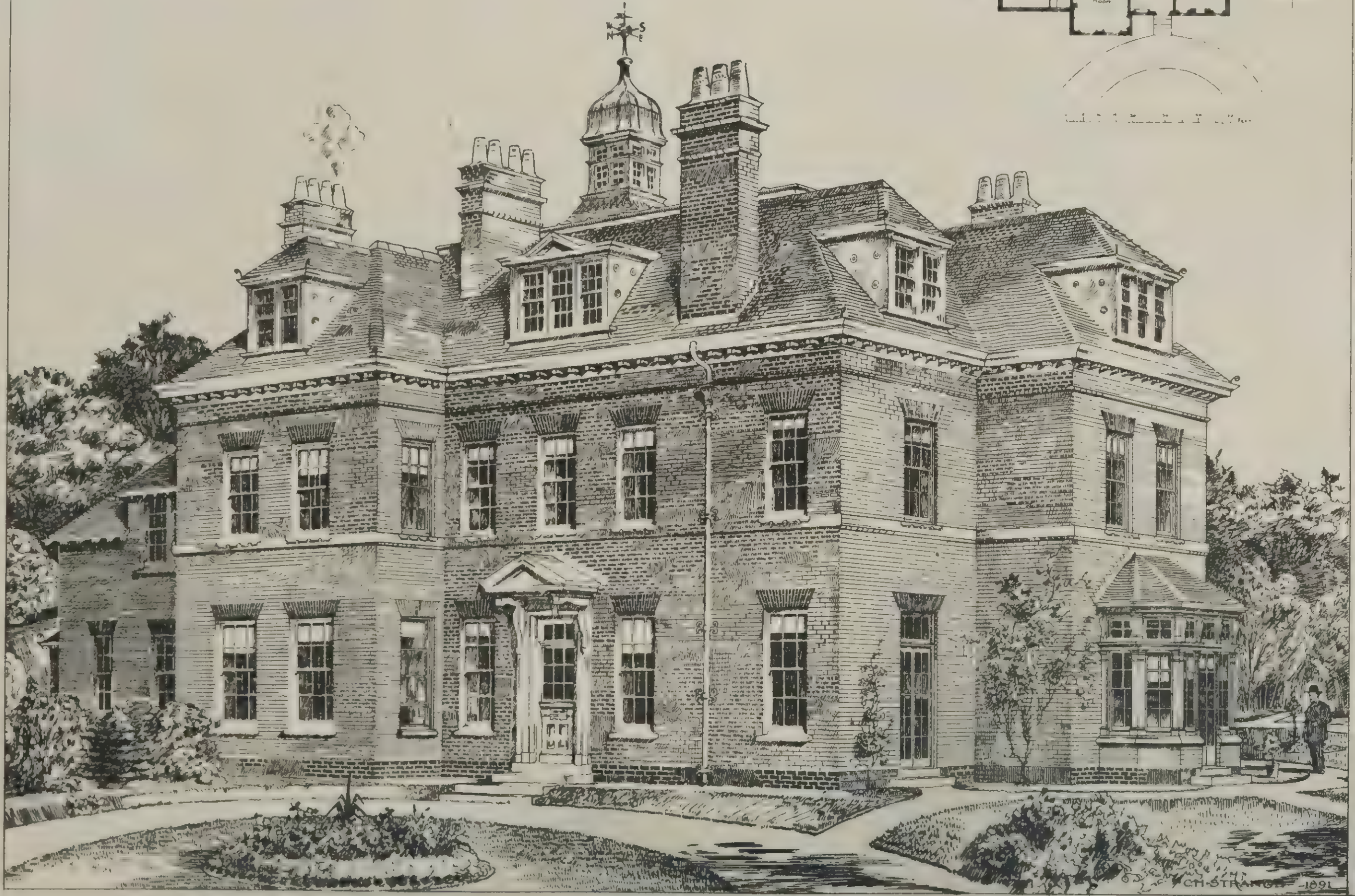
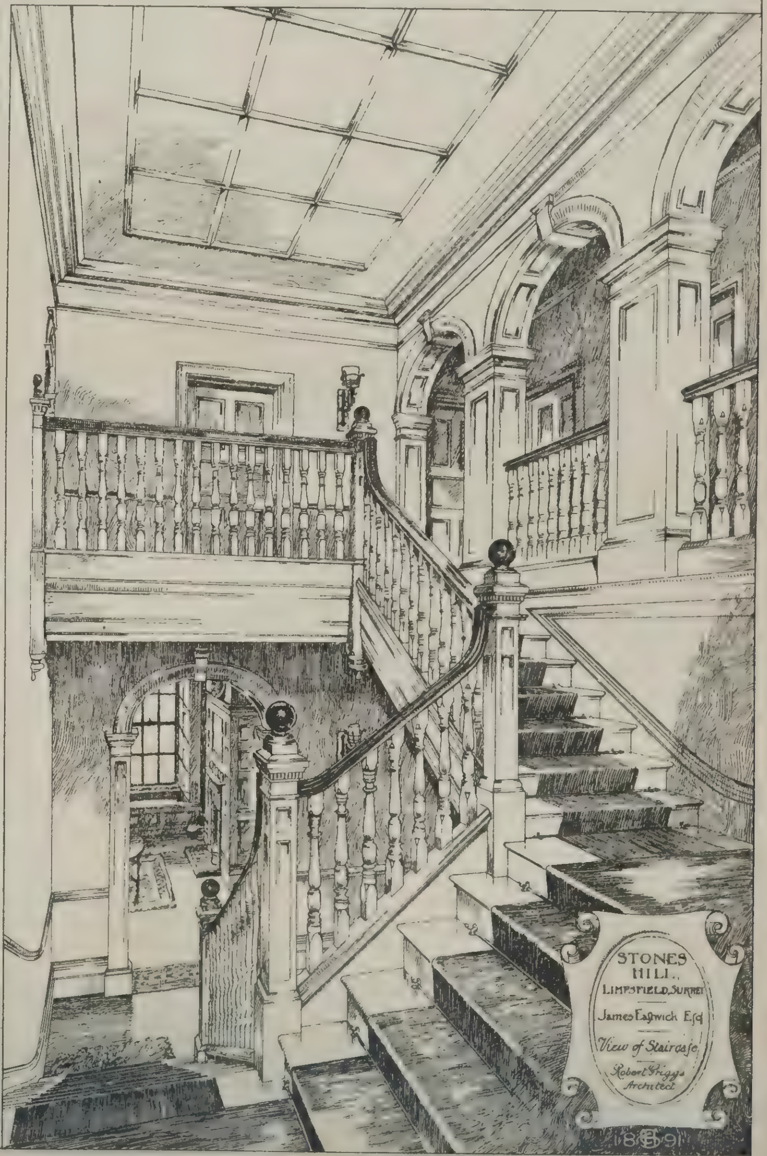
for James Eastwick Esq^re

Robert Griggs, Architect.







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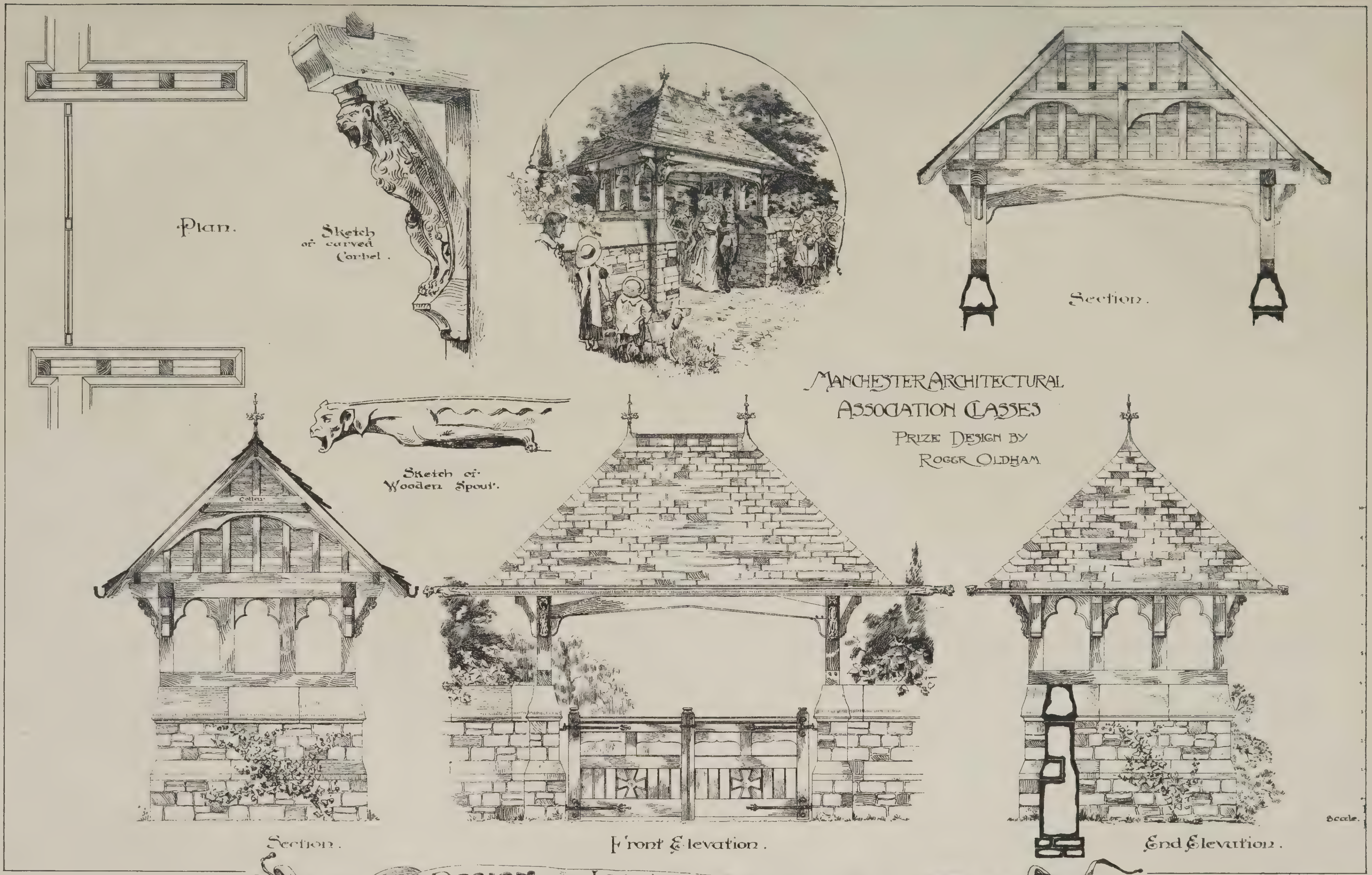
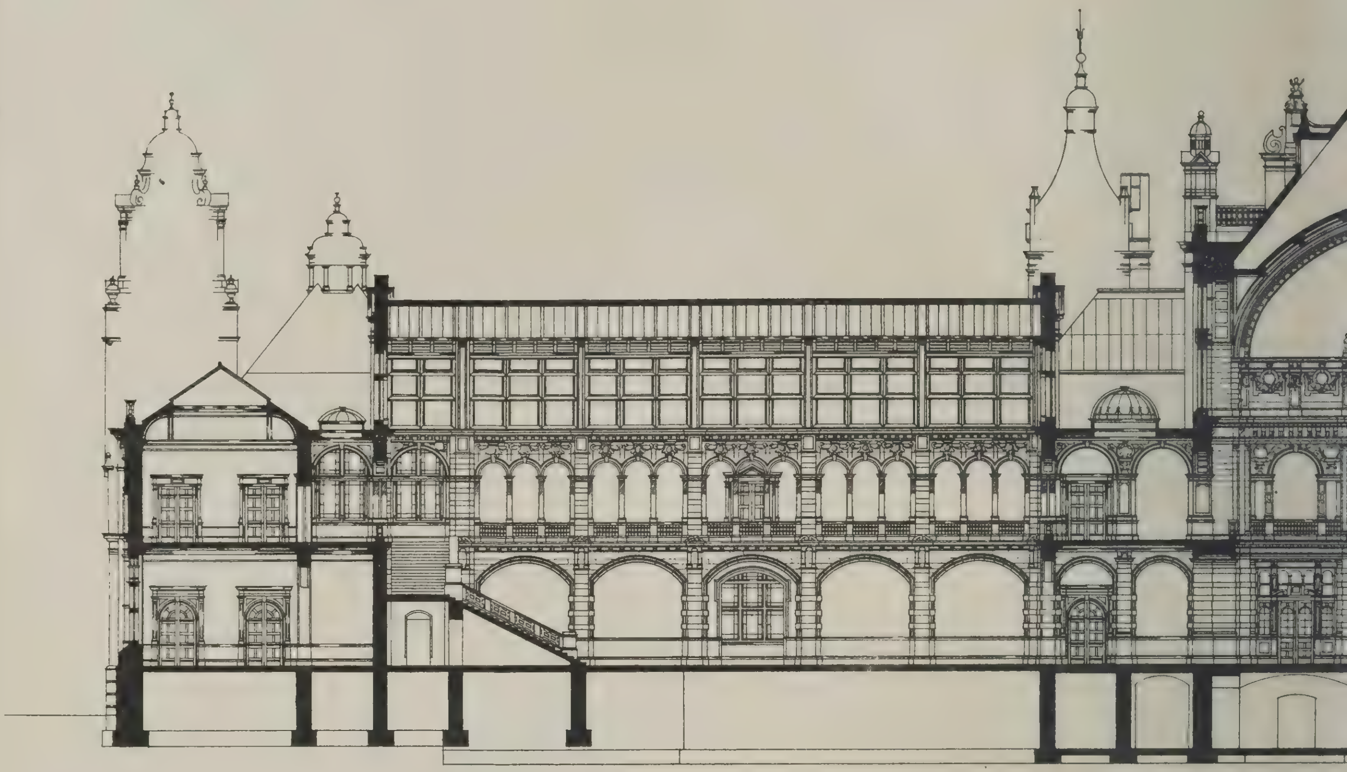


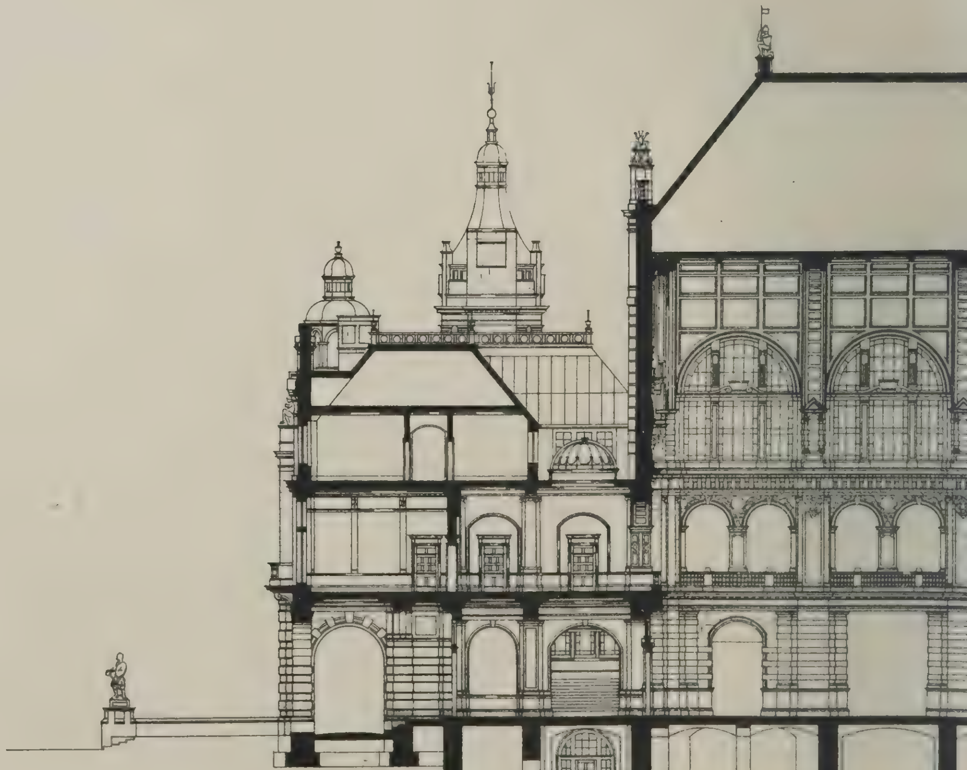
MANCHESTER ARCHITECTURAL ASSOCIATION CLASSES
PRIZE DESIGN BY
ROGER OLDHAM

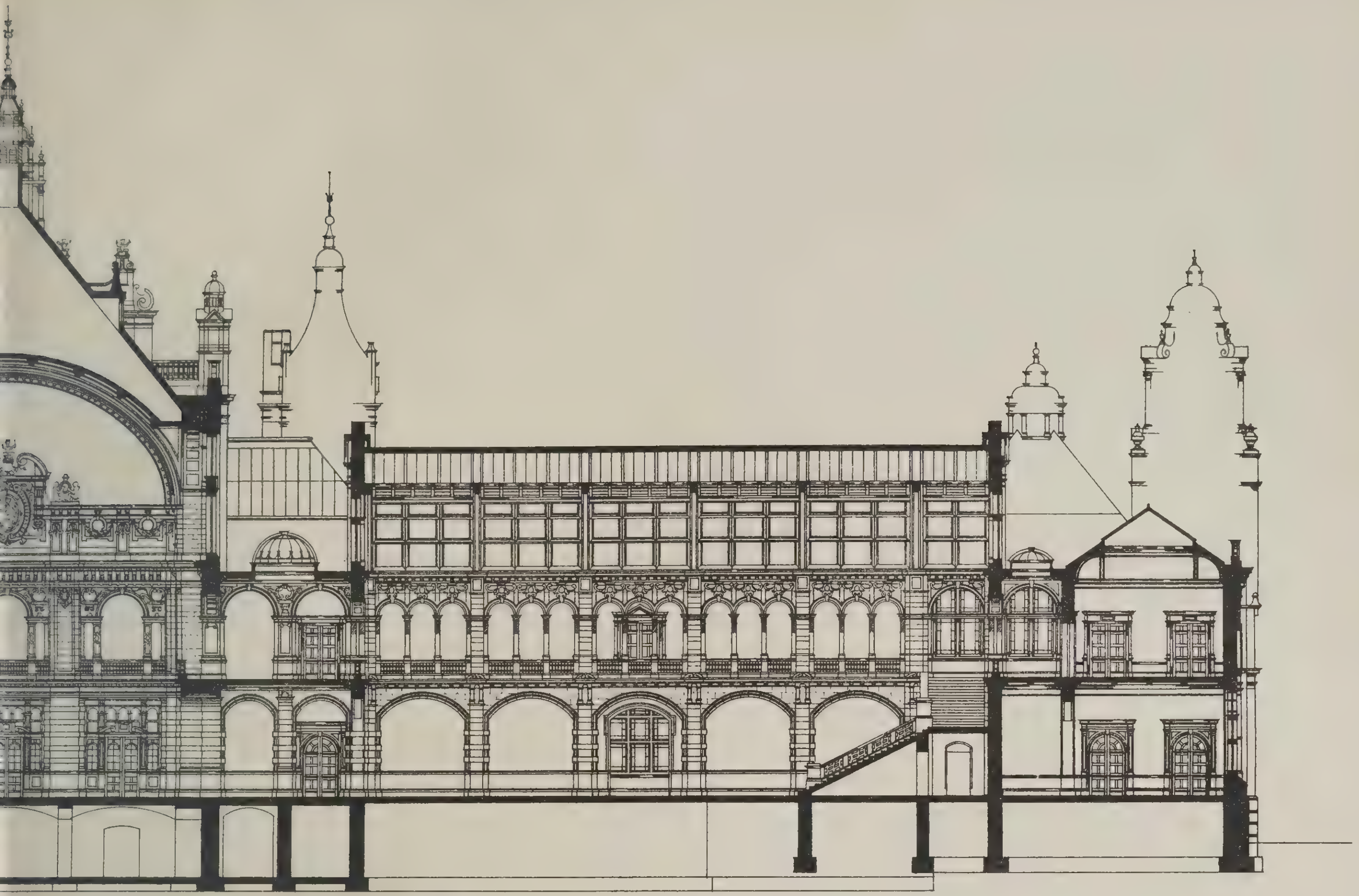
DESIGN FOR LYCH-GATE TO A COUNTRY CHURCH.

J. Akerman Photolith London

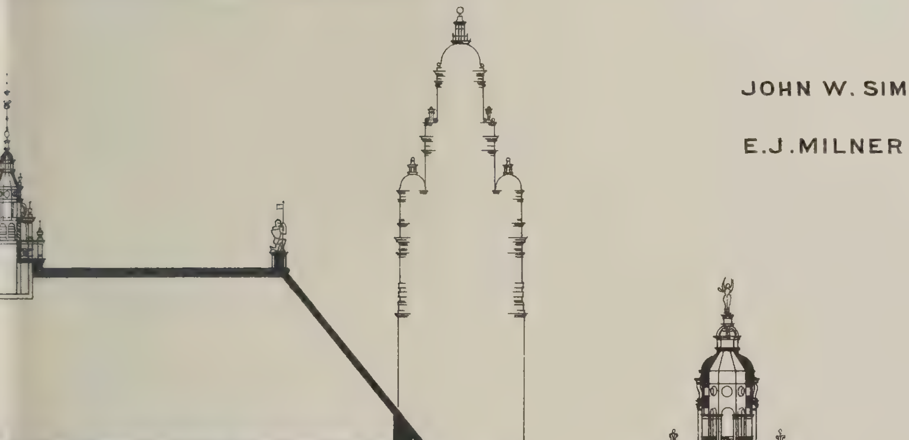


THE GLASGOW ART GALLERIES & MUSEUM, KELVINGROVE, GLASGOW.





JOHN W. SIMPSON }
E.J. MILNER ALLEN } ARCHITECTS.



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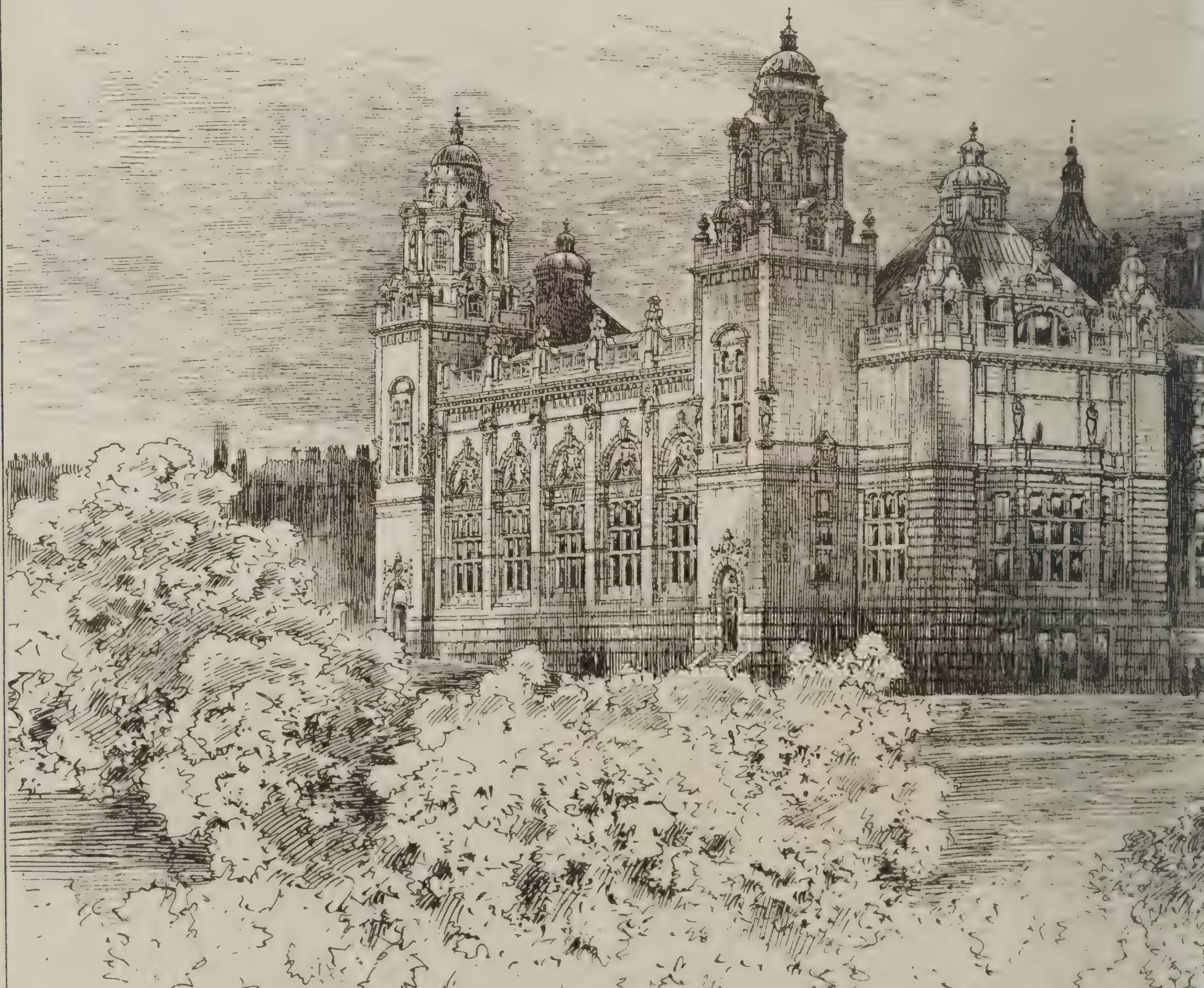
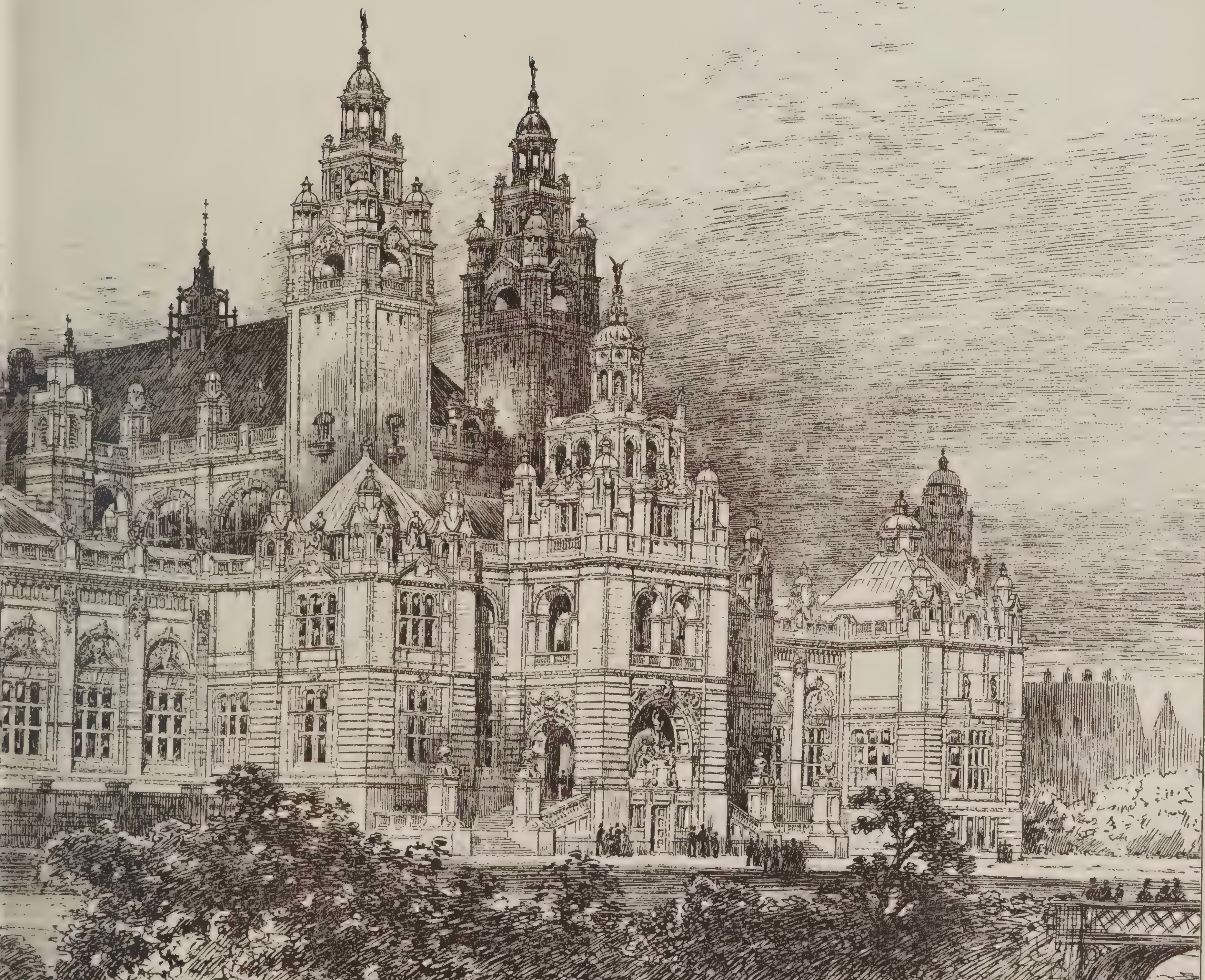
THE GLASGOW ART GALLERIES & MUSEUM, KELVINGROVE, GLASGOW.

JOHN W. SIMPSON
E.J. MILNER ALLEN
ARC



The Perspective View

ECTS.



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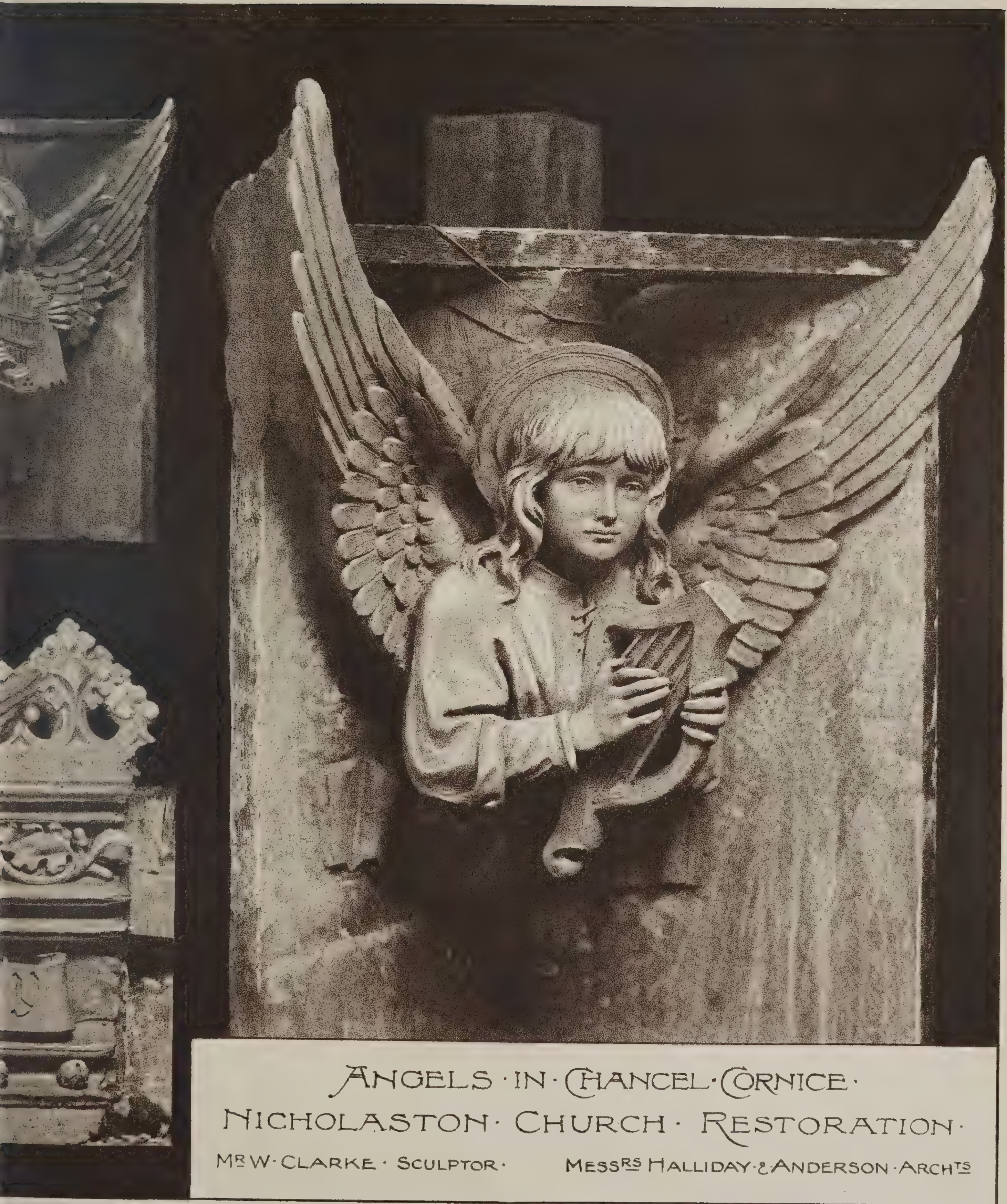

Angels · in · Chancel · Cornice ·
Nicholaston · Church · Restoration ·
Mr W · Clarke · Sculptor · Messrs Halliday · & Anderson · Archts

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THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXII.—No. 1946.

FRIDAY, APRIL 22, 1892.

ARTISTIC PLANNING.

AN artistic plan in modern England is something of a rarity. We might go further, and say that a great many people, and even a great many architects, seem unable to realise that it is even a possibility. They plan their own buildings, or see those of others planned, with so little regard to any points except convenience and cheapness of construction, that they forget architecture depends quite as much on general form as on detail. And this forgetfulness is not confined to the mere business man in architect's clothing. The architect proper too often suffers from it. Not long ago there was an animated discussion as to the share which planning ought to have in deciding competitions. Broadly speaking, the utilitarians magnified, and the artists minimised, its importance, for the simple reason that neither the one party nor the other had it present to their minds that a plan could be artistic at all. They were all, or nearly all, thinking of arrangements which begin and end with bare convenience. To the disputants on one side, convenience was an all-satisfying end in itself; to those on the other side, it was necessary, but not sufficient—a thing of the body, which they wanted to get done with, that they might go on to things of the mind. But with two or three striking exceptions, no one seemed to realise that, even in planning, it is possible for the spiritual to permeate and transform the material.

Artistic planning is commonly, but not necessarily, an outgrowth of monumental construction. No doubt if a man has it in him to invent artistic plans, he will do it, whatever may be the materials he is using. But he will be most impelled to do it when his construction is most solid and permanent. Hence if, for the moment, we confine our attention to churches, we shall find the most striking examples amongst those which are either vaulted or domed. The *chevets* of the great French cathedrals will suggest themselves at once. So will a type like that of the Duomo of Florence, and, on a less ambitious scale, that of the nave and crossing at Ely. St. Paul's, as built, and, still more, St. Paul's as first designed by Wren, have notably artistic plans. Many of his minor churches, with St. Stephen's, Walbrook, at the head of them, are remarkable in the same way. The Renaissance churches of Venice show, in many instances, a similar spirit. It is seen conspicuously in what remains of the very ancient Church of San Lorenzo Maggiore at Milan, and in such buildings as St. Sophia and the small Church of St. Sergius at Constantinople. It may, perhaps, be said with truth that artistic planning had its home and origin in the East, and that in the palaces of Persia and the mosques of India it has scarcely lost its vitality yet.

Beauty of plan may be intended chiefly for internal effect, or for external effect, or, in other cases, for both. It serves both ends, commonly in churches and halls, which consist, in the main, of one apartment. In these its excellence is especially manifest, because the whole motive of the design can easily be traced. In a structure consisting of many moderate-sized apartments, such, for instance, as a house, it is more difficult, at least in the inside, to appreciate grace of general arrangement. Even here it makes itself known as the building becomes familiar to us; but it does not make the instant impression which results from it in a single grand interior. It is, or may become, more noticeable in the external view of domestic works. But it is not in houses, or even in churches or halls, that artistic planning counts for most on the outside. Its great successes here are in towers and spires. Some of these are in English Gothic, some in the Classic of two hundred years ago; still more are in Mediæval and post-Mediæval examples on the Continent, and not a few in the products of Mohammedanism further East.

Here in England our Gothic towers are mostly square. As a rule, they rely far less on plan than on detail. Yet, even in the severest types, we may detect certain refinements in the arrangement, to which they owe very much of their excellence. Take, for instance, the characteristic 15th-century tower of South-west Devon and Cornwall. Decoration, very often, it has none. There are buttresses, it is true—but no pinnacles, no canopies, almost no window-tracery. It is the very opposite of the elaborately-fanciful Somersetshire tower of the same period; and yet how strong, how dignified, how impressive! It looks well from all points; it does not seem too narrow when you stand opposite a side, nor too wide when you stand opposite an angle. In both cases, too, its outline diminishes upwards enough, and not too much. How is this managed? Chiefly by the artistic planning of the corners. The buttresses are not the diagonal ones, so dear to the Perpendicular church-builders of the Eastern Counties. They stand, two at a corner, at right angles to the sides, as usually happens in earlier styles. Yet there is a difference. They do not meet and form an ∟ at the angle. They do not even nearly meet, as often happens in thick-walled towers of prior date, with a little square bit of wall fitted into their re-entering angle—which bit of wall dies out by offsets in the upper stages. No; they are moved quite away from the angle of the tower, which runs down between them, with a width of two or three feet, or perhaps more. The effect of this is, that in an oblique view the buttresses hardly appear to project beyond the angle of the tower, except in the lowest stages, and so this little bit of artistic planning conquers a difficulty which tower designers have felt in all ages, and feel still. But another difficulty remains. In the oblique view, a buttress thus set far back from the corner disappears altogether as its projection lessens near the top, and above this point the tower, if left absolutely square, would not therefore seem to diminish as it should do. To prevent this, the tower angle itself is boldly chamfered off in the uppermost stage—and so, in a very simple, and yet very practical, way, a result is produced which is eminently satisfactory.

This last is only an elementary specimen of what can be done by mere arrangement of plan. In towers, above all things, plan is of supreme importance, and no amount of skill and ingenuity has been thought too great to be spent on it. Turn from this unpretending product of a poor and remote district to places where both skill and money were abundant, and see what could be done in the way of tower planning there. Let us look, say, at the great tower of Antwerp Cathedral. Up to the top of the belfry stage the general form is square. There is a buttress in the middle of each face, and a pair of buttresses, at right angles to each other, at each corner. As these buttresses rise they become both lighter and more complex. The back part of them runs up as a vertical pier; and on the face of this pier comes the front part of the buttress, looking almost detached from it. This front part begins with an oblong plan; it then changes, successively, as it rises, into two different polygons, and it finishes at last in a square set diagonally, which terminates in a pinnacle of the same form. The back part of each buttress or pier goes up straight to the tracery parapet which runs round the tower just above the heads of the belfry windows; but instead of dying out there, the parapet mitres round it. This terminates the first or square stage of the tower. Next come the more complex ones of the lantern or super-tower. First, and tallest of these, is the octagonal stage. The octagon, however, is not placed in the ordinary way, with four of its faces parallel to the four faces of the square tower below. It is set anglewise, with four of its angles just behind the angles of the quadrangular story beneath it, and the other four just over the buttresses which are in the centre of each tower-face. Here are seen the special use of these last features. They bind the whole composition together, and connect the upper and lower parts together in a way which, without them, would have been very difficult to manage. The composition is further bound together by the four great pinnacles which rise over the corners of the square sub-tower. These go nearly as high as the top of the octagonal stage, and are connected with it by several light flying buttresses. These plans, too, are a marvel of ingenuity. Cruciform at the base, they change higher up to a more complicated cruciform plan, having a polygonal centre with four square pinnacles set diagonally. Their last stage is still more difficult to describe, and its effect still mainly depends on its form of plan. There are two more stages to the tower above the great octagon, each more complicated in plan than those below—so much so, indeed, that without drawings their form can hardly be explained. But through the whole of the tower, as of many others, artistic planning is the most vital and fundamental characteristic. Next to this in importance is the management of the heights—the general proportioning, that is, of elevation to plan. The detail is striking enough; but, especially in a distant view, it is the least of the three great elements which make up this wonderful design.

Such works as this are not erected every day or every year; but the same sense of the graceful and the picturesque in planning, from which it sprang, may do much to redeem the most ordinary building from entire commonness. The man who wants to spare his brains will doubtless muddle through his difficulties of design, as he has long done, by the aid of rolled-iron joists, used in season and out of season. This is easy, but it is not art. The architect, on the contrary, will fit himself to solve the problems of the day by ascertaining how these or similar problems have been solved in the past, not that he may repeat those identical solutions, but that he may be able to invent fresh things, and not be in danger of re-inventing things that were invented and abandoned hundreds of years ago. To know what has been done is usually the best preparation for devising something that has not yet been done, and to learn what has been done in artistic planning is one of the most useful and most interesting occupations of the architectural student.

AN ARCHITECTURAL PROBLEM.

IN these days of commercial activity, when space and utility are more essential than solidity and architectural beauty in the structures we rear, we cannot be surprised if the engineer has not somewhat impaired our sense of art, by the introduction of structural methods unknown to our forefathers. What with all kinds of iron flooring, columns, stanchions, fire-resisting appliances and materials disposed in the most economical forms, architectural effects can be very seldom realised. Take, for example, the large city warehouses, retail shops, banks, stores, and other buildings of mercantile importance. Very little room is left for walls, engaged columns, handsome vestibules, staircase halls, or internal architectural decoration. The building stands on a series of iron legs or stilts, tied together by iron girders and cross beams on the first-floor level, sometimes the iron framework is carried up two or more stories, a mode of erection, by the way, coming into repute in the large American cities like New York and Chicago, where iron skeletons or frames are put up and filled in between the vertical supports and horizontal members by partition work. If there is any architecture at all according to traditional modes, it is left to the superstructure thus perched on iron legs, or rather to the façades. Sometimes an attempt is made to give character to the ground story by large arched openings or windows, as in the new City Bank, Ludgate-hill, where the basement is built of solid masonry, with wide arched openings in the sides and in the rear, while the interior will form a large open space for the bank clerks or cashiers. What would our forefathers have thought of these skeletons of ironwork and floors, as we see them now erecting in all parts of London, especially in the City? All this work is strictly engineering; it does not require any architectural aid except to define where each stanchion or iron column is to be placed, and where the main beams are to be put. The architect's work *par excellence* is to encase the structure, to design a front, or two or three fronts, in some taking style of Renaissance of red brick and terracotta. Now, we say that this mode of building is not strictly architecture; it is rather engineering construction. But if merchants and tradesmen will have large warehouses and shops in confined sites, the architect has no other alternative than to provide these iron structures, or invent something better. To iron or steel he must go, and if he is anxious to impress his art on this kind of structure, he must begin to rely more on his own resources than on the iron merchant or engineer. His only other alternative is to set up as the architectural designer of façades or cases of brick, terracotta, or stone. So long as he follows precedent he is hopelessly wrong: some copy of a Flemish Renaissance façade is chosen, windows and gables are introduced which express a totally different interior design, for they have in the original proceeded from the requirements of a plan in which separate rooms divided by cross walls existed. Only a few architects essay to express the character of the interior, a large, lofty apartment requiring an equal distribution of light, with side windows between piers. The custom of selecting fronts of old town-halls and palaces for buildings of a totally different purpose, erected for commercial uses, has rendered the architect's mind oblivious of any difference suggested by internal arrangement: so the error is repeated. Then, those who set precedent at naught are likely to do better if they did not so often fall into the trap of leaving the construction to somebody else—generally the engineering contractor, who settles the design before the elevations are prepared—a far more sensible way, if the architect has any idea as to the shape the building ought to take, and studied both the ironwork and masonry together.

It will be said there are few ways of making iron construction tractable. Columns and beams must be cast or rolled into certain forms or sections, and to make them architectural we require to add to their bulk, or encase them in some material. But did not the introduction of brick and the arch vault impose upon the Roman architects the same difficulties? Was not the change from trabeate architecture, with its massive entablatures resting on close-set columns, to the vault system, repugnant to the taste of those who had adopted for centuries the Greek methods? Yes, it will be answered, but the bricks could be used in large masses like stone, and the arch and vault were capable of artistic combinations; but iron cannot be so employed, unless we sacrifice the principle of economy. It would be wasteful and unnecessary, for instance, to group together a number of iron pillars, or to cast a girder in the form of a solid entablature. Yet the architect ought not to be disheartened. The early iron-girder floor has undergone many changes; the iron beams can be introduced to give rigidity, and yet preserve a level ceiling, as in the "improved flat-brick fireproof floor," and other kinds in which specially-moulded bricks are used, which protect the lower flanges. For factories, hospitals, and large buildings, the architect has the choice of several systems of flooring, like those of W. H. Lindsay, Neal and Co., Mark Fawcett, &c., in which trough girders are used, or a species of corrugated metal, or tubular-shaped lintels of fireclay fill the spaces between the iron beams, and produce strong, compact and fireproof floors. In column design he has several varieties to choose from; among these the built-up forms of wrought-iron in which angle, channel-shaped and other sections are bolted together to give rigidity and strength. What a decided improvement, structurally and æsthetically, this composite form is upon the old round column, hollow or solid! Even the engineer could do something to make this form architectural. We might not despair of seeing columns of this kind moulded, or even fluted, to fulfil the place of Corinthian columns, without any waste of material or strength. The ordinary double angle or Z-shape is capable of forming several combinations of value; but in rolled iron there are many sections built up by riveting together angles, plates, channels, which form segments of a column of any size. Some of these sections admit of filling in with brick or terracotta, or of being encased. The design of the iron capital, and the means of connection with beams and columns above, are questions which deserve the attention of the architect. Hitherto the engineer has had his own way in these details. Why? Because the architect has not taken any interest in these matters. Drawings and specifications of iron construction are left to the engineer or manufacturer. The ornamental details are largely restrained by his hand.

Then as to iron roofs, how much there is that could be improved if only the profession set themselves to the task; but here again the details, the connections, the modes of riveting, the calculations for strength, are points which keep the specialist of iron in possession. The architect is afraid to think, because of the penalties which, according to the poet, fall on those who "meddle with cold iron."

There are other directions in which modern invention has rather dulled our artistic sensibilities. The vault in its many varieties of groining for covering space has been rather shelved by the employment of iron trusses. How few churches are now vaulted in brick or stone? Stone as a material, and stone-cutting as an art of the first importance, have suffered by the introduction of materials that are capable of being cast and moulded, like concrete, terracotta, and brick. The facilities afforded by mechanical invention for moulding brick have almost done away with the stonemason's craft in its higher branches of constructing groined vaults, domes, and arches. Ornamental brick and terracotta have taken the place of carving. Machinery and machine-turned out joinery have placed an obstacle in the way of artistic woodwork. In these great branches of manufacture and craftsmanship the architect has also lost his influence. How he can regain his position is the question of the hour which calls for his earnest and first attention.

The question has the greater interest when rival parties in the profession are taking very distinct and opposite views of the proper method of educating the architect. Those who wish to instruct him in the principles and theory of art and science in a systematic course are alive to the many technical requirements that are now to be met, and they attempt to reach art through knowledge. Others, including, it must not be forgotten, many of the most eminently gifted artists in the profession, advocate a totally different system, as they seek to develop the artistic susceptibilities of the candidates, and to make art the first and foremost qualification. It will be for the future to determine which mode of training or instruction is calculated to give the highest results with the many new elements we have described.

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INSTRUCTIONS TO ARCHITECTS.

OCCASIONALLY we hear of professional men taking their instructions from those who have no intention of remunerating anyone for the services rendered, but simply seek to make a beginning for some scheme, or to float a company. These employers must not be regarded as adventurers who desire to make something of another's labours, but as business men having only in view some scheme which they hope to develop. It may be an architect is asked to prepare a plan for covering an estate with villas, or for some special building like a theatre, an hotel, a skating rink, or gymnasium, to show what can be done for a given amount of subscribed capital. There are many young or enterprising architects who are pleased to associate their names with an undertaking of this sort. The advertisement is worth something. "J. Jones, Esq., F.R.I.B.A., &c., architect," appears on the prospectus of the company in connection with the names of directors, including some of the leading notabilities of the neighbourhood. Such an advertisement cannot fail to draw attention to the position and ability of the said Mr. Jones. If he has been invited to assist in the formation of the scheme, he is generally supposed to be honoured; in all probability, he has offered his services to the embryo company. At least, it is thought that, if the company does not succeed, the architect or engineer's name and reputation have received an impetus. The architect who sued the other day for his fees for preparing plans for a theatre at Liverpool at least did not look at the transaction in the light we have imagined. To him the instructions given were business. The facts we have reported. Mrs. Mead owned land in Everton Valley, and instructed the plaintiff, Mr. J. C. Williams, so he alleges, to prepare plans for the erection of a theatre on the land in question, the building to accommodate 2,000 persons, and to cost not more than £11,000. It appears that before this instruction the plaintiff had made sketches for another individual, Mr. Kiernan, the promoter of the company, and the defence set up was that no instructions were given by the defendant lady, but that Mr. Kiernan wished to float a company to build a theatre, and the defendant was only brought into the matter because her land was required. According to the very bare report given of the case, it would appear that the lady defendant was interested in the company's scheme, and in the sort of building to be erected; but that she had not the remotest idea of becoming responsible for any plans that might be prepared, as previous sketches had been made for the promoter of the company. The evidence given for the defendant confirmed this view, and the jury found for her. Now, a very large number of designs are prepared by architects on very vague promises, made by members of a committee or by some promoter, without any intention of being personally responsible. Indeed, without knowing how the proposed scheme is likely to take, it would be preposterous to make any definite agreement with an architect who was willing to prepare designs. Very little would be undertaken in any scheme without some mutual understanding of this kind. The instructions are generally verbal, and contingent upon the carrying out of the work, though, if the scheme falls through, the architect or engineer, not knowing the legal position, may be tempted to sue for his fees some person who has taken an active part in the business. Just as the drowning man catches at any straw, so the architect, after making plans for a building which is not carried out, often attempts to fasten responsibility, especially if he has been put to expense, on some individual. This happens often in building estates, in the promotion of hotels, baths, winter-gardens, piers. Considerable skill and labour are expended in making preliminary surveys, much money out of pocket is advanced in the employment of clerks, examination of foundations, preparing Parliamentary plans, journeys perhaps to the Continent to inspect buildings of a similar class, all of which expenses incurred may be hopelessly thrown away if some agreement is not made that they shall be refunded.

There is a danger in suing the wrong party. In the case to which we have drawn attention, sketch plans had been prepared for the promoter of a theatre, under what conditions is not stated. Subsequently other plans were prepared under alleged instructions from the owner of the land. But why should the first set of sketches have been of less value than the second? We hear nothing further of the preliminary sketches; but for whomsoever they were made he was, on the face of it, the responsible party, at least one would have thought so. The decision ought to be a reminder, at any rate, of the legal position of the architect when dealing with a corporation or a committee. It is a known rule of law that corporations can only contract under their common seal, and that any instruction given to an architect by a mayor or town clerk, or by a committee, is worthless to enable him to recover his fees, if they should be inclined to dispute or take advantage of their corporate position. Yet many architects take their instructions from committees who, as individuals, do not bind themselves to anything. The making of an agreement under seal is therefore absolutely necessary to insure the payment for services. In dealing with companies, the architect or engineer ought to see that the directors or agents have been authorised to obtain his services. But in the case of a company about to be floated, any instructions the architect receives must come from a promoter or some individuals who convene a meeting for the purpose. The retainer under such circumstances is generally of a verbal character and doubtful. The individual who takes a leading part in the scheme is careful not to make himself liable, while the architect is often easily led into the acceptance of a position that may bring him honour, though not profit.

COMPETING IN THE DARK.

[COMMUNICATED.]

THE dual competition system, at Glasgow and in several previous cases, has had one rather odd result. For the majority of the competitors, it has led to a competition in the dark. They have sent in their drawings, and they have received them back; but how near they came to success it has been impossible for them to know, and equally impossible for anybody to tell them. Even the assessor himself would be unable to enlighten them, for though he has seen every design, he is ignorant of the authors' names. This is not by any means an ideal state of things. With an assessor so absolutely and deservedly trusted as Mr. Waterhouse, no one, of course, will dream for a moment of its leading to any unfairness in selection. But while we should utterly repudiate the idea of its having done this at present, it is very easy to see how, in other hands, it might do so at a future time.

The special way in which the dual competition system has recently been worked is this: The designs are sent in without any mottoes or distinctive marks. With each design is inclosed the author's name, in a sealed envelope. As the designs arrive, each, together with its envelope, is marked by a separate number. The assessor then goes through the drawings and makes a selection of those whose authors are again to compete, and this time finally. So far, there is no fault to be found. But at this stage the whole of the designs should be thrown open to public inspection. Their authors want to know, the architectural Press wants to know, and the public, as far as they feel any interest in such things, want to know why these particular designs were selected, and why others were rejected. They wish, in short, that a selection which concerns a great many people should be made in broad daylight, and should be open to fair criticism and discussion. In all probability the assessor wishes the very same thing. It is not his fault—it would rather seem to be the fault of somebody who has a certain mistrust of him—that he cannot let all the world judge for itself of the fairness with which he has done his work. So, instead of having the designs publicly exhibited, either with or without their authors' names, they are quietly returned to their separate destinations, and no one, except the five or six selected competitors, has the slightest idea as to whereabouts he stood with regard to the others.

Two motives seem to have first suggested this peculiar system, which of course did not by any means originate at Glasgow. One seems to have been a desire to prevent the assessor from favouring his own personal friends. "If we trust the selection of an assessor"—the far-seeing committee-man might naturally say—"what is to prevent him from picking out a few competitors whom he knows and wants to help?" And if the same committee-man were asked how the assessor could recognise them, he would probably reply, "Why, by the mottoes, of course." The inference would be that mottoes should be forbidden. A further precaution would be the adoption of a uniform size of stretcher, and a regulation style of mounting, and having got these, the far-seeing committee-man would sit down content, feeling assured that the assessor was satisfactorily blindfolded. At any rate, these are the conditions which now prevail. The assessor (unless we are misinformed as to the working of the system) is not supposed to know whose designs he has selected in the first competition, even after he has selected them! He must be blindfolded to the very end, or the far-seeing committee-man could not trust him. Yet the far-seeing committee-man must be, at bottom, a person of a very innocent and confiding disposition. For if an assessor were ever dishonourable enough to league himself with some favoured competitor, it is plain enough that no such precautions as these would ever baffle him. He would not be puzzled in the least by the absence of mottoes, or the uniformity of stretchers, or by any other device that ingenuity could devise. There are a myriad ways of making a competitor's plans recognisable. A mere splash of ink, or the splintered edge of a stretcher, would be quite enough, if we can once get over the difficulty of imagining an assessor who would stoop to fraud and trickery. There is only one real precaution possible—the precaution of absolute publicity. Let the whole thing be done above board, and let all the world have a fair chance of seeing what schemes have been chosen in the first competition, and what schemes have been rejected; let the names of the architects selected in that competition be published at the same time. Everyone will then be able to judge of the fairness of the award. At present no one can judge of it. If at Glasgow, and in previous competitions under the same assessor, no one questions its fairness, this simply shows the absolute confidence which is reposed in him. But the day may come when some other assessor, perhaps equally fair, may not enjoy equal confidence. His award may be called in question, and he may find it no easy matter, after all the drawings have been returned, to establish its justice. Now, therefore, is the time—while no wrong has been done, and while no scandal has arisen—to point out how dangerous the system is under which our great competitions have lately been conducted. It is a system under which an assessor could, if he liked, put the carrying out of some most important work into the hands of any competitor whom he might previously arrange with, and it is a system under which he could do this with almost absolute impunity. He would only need to select in the first competition the favoured design, and, say, five others quite inferior to it. No one else, at least no one with adequate training, would have ever seen the rest of the drawings in that competition. They would be returned to their authors, and, with few exceptions, would be heard of no more. No one could say, therefore, that the six selected ones were not the best. The final award in the second competition, which would give the building to the favoured competitor rather than to any of the five worse than himself, would evidently look fair enough; so that a safer fraud could hardly be conceived of. Nothing of the kind, we may be very sure, has happened yet; but it is enough to condemn the system to show that it would allow such a thing to happen, or even to be suspected of happening. Let us get out of the darkness, and walk in the light of day.

The suspicions of the far-seeing committee-man have not, however, been the only motive for keeping the first stage of a double competition in the dark. There has been another, which looks, on the face of it, more cogent and more reasonable. It has been supposed that if the half-dozen or so of selected competitors were allowed to see each other's designs, or even the designs of their less fortunate brethren, they would instantly begin a process of "cribbing." Everyone would carry off every point that was worth having in the rest of the schemes, and nobody's ideas would be safe. Architects know, however, that this is not so easy as it looks. Stolen ideas do not fit. "A dexterous plagiarist can do anything," says Sir Fretful in "The Critic." "Why, sir, for aught I know, he might take out some of the best things in my tragedy and put them into his own comedy." It was the character of Sir Fretful to exaggerate possibilities of this sort, and the evil he feared is rather remote. Singularly enough, the most striking instance of it which has recently been heard of amongst architects took place in one of the competitions we are now discussing. At Sheffield, an important point of arrangement, embodied in a design by Messrs. Flockton and Gibbs in the first competition, is stated to have been recommended to, or imposed on, all the competitors in the final one. The case was discussed at length in the BUILDING NEWS when it happened, and we need not go into the merits of it here. It is enough to say that this occurred when competitors were prevented from seeing each others' drawings, and that nothing worse would be likely to occur if they were all thrown open to view. In fact, such things would come to pass very seldom, and most seldom amongst those designs which had the most chance of being finally selected. A good design has a certain unity of feeling about it. You cannot fit into it, without mutual ruin, something which belongs to a different type of feeling, any more than you can fit one of Constable's landscapes to one of Turner's skies. The chance of plagiarism in a competition of this kind would therefore be small, and, moreover, the assessor, in making his final award, could easily minimise it.

On the other hand, competitors would have very much to gain by the immediate exhibition of all the preliminary designs. The exhibition should be compulsory; that is, it should be a condition in the "Instructions" that all designs should be exhibited. Where, as at Sheffield, it was optional—and where, if we remember rightly, only the rejected, and not the selected schemes also, were to be shown—it is no wonder that many competitors did not care about it. Without the selected designs such an exhibition is a farce. Competitors want to see whereabouts they stand, how far they succeeded, and why they failed. We are told on high authority that unless competitions have an educational value it is hard to see what the use of them can be. As to that, opinions may differ; but we shall all agree that competitors should at least be rewarded by learning all they can. On the "keep-it-dark system" they can learn next to nothing. Fancy a rifle competition in which none but the half-dozen men at the top were allowed to know what score they had made! There would not be much rifle practice in that, and there is not much architectural practice in these dual competitions as now conducted.

We may be told in reply that every competitor will see at the end why he was beaten: for the accepted design, and probably the other selected ones, will then be published. *Will* he see it then? He might, perhaps, see it if he had before him, in an unaltered state, the half-dozen sets of drawings which the assessor chose in the first competition. But it is not these that are published. It is the final schemes, revised and improved by several months' more care and study,—and altered, it may be slightly, it may be entirely, from the preliminary sketches. And this leads to another and very important point, belonging specially to the Glasgow competition. Competition instructions are of various types. The ideal type is that in which the promoters say exactly what sort of accommodation they want, and then leave competitors unfettered as to the mode in which it is to be provided. Then there is the fussy, officious type, in which the promoters go on further to write a kind of combined description and specification of the building they should like,—as if they had seen it in a vision, and hoped, by giving detailed particulars, to get it sketched on paper and laid before them. The Glasgow "Instructions" belonged to a third type. Here the promoters' ideas seemed to be somewhat unfixed. They wanted art galleries, a museum, a school of art, and some other things, which were pretty clear and definite. But, above all and as the chief feature in their building, they wanted a central hall. Further on they called it a central or music hall. They gave an idea of its floor area, required special attention to be paid to its acoustics, and stated that it must give easy access to all parts of the building. In answer to a request for some further information as to the intended use of this part of the building, the honorary secretary wrote as follows: "The central hall is to be used for concerts. It is quite likely that it may, on occasion, be used for public functions, such as receptions or banquets." Now, everyone knows, more or less, what are the necessary arrangements pertaining to a great hall intended for concerts. Such a hall, if the concerts were ever to pay, must have been capable of being shut off entirely from the museum and galleries on each side of it. It must have an elaborate system of entrances and exits, leading to and from the different parts of the house. It must have dressing-rooms and waiting-rooms and retiring-rooms, suitable for a great chorus and for *artistes* of the highest class. It must, of course, have a great orchestra and stage, and probably a great organ also. If the museum and art galleries were not to be closed to the public at all times when a concert was going on, some means must be devised by which people could get round, or over, or under the central hall when it was in use for musical purposes. Without this, one-half of the building would be absolutely cut off from the other. Then cloak-rooms and refreshment-rooms, and staircases and lobbies, and ticket-offices all had to be provided in their proper places, and arrangements had to be made by which the central hall, at ordinary times, could form part of, and freely communicate with, the building in general.

The problem was about as complicated and about as puzzling as an architect often has to deal with. It would be most interesting to know, what on the "keep-it-dark system" we never shall know, how various unsuccessful competitors endeavoured to solve it. No doubt they, like some others who only obtained the instructions and did not compete, turned eagerly to the plan of the accepted design which you published last week. Finding none of the features of a great concert-hall about it, they naturally went on to the description, and there they read as follows: "The central hall is not intended so much for vocal concerts as for instrumental music, and the better music is heard in the courts of the museum, and the picture-galleries, staircases, and corridors surrounding the hall, the more nearly will the building meet the object of the promotors!!" Then why, in the name of all that is fair and reasonable, could not the promoters say so at first? Did they change their purposes before the final competition? If they did, on what principle were the six designs selected? Were they the six that would have provided the best concert-hall, or six that were, by chance, so badly planned for a concert-hall that the singing would have been heard all over the building? Or, again, were some competitors informed, and others not informed, that it was not a concert-hall at all that was wanted, but merely a place for a band to play in? If the six designs that gave the best concert-hall were selected, there was no ground for complaint on the part of the rejected. We earnestly hope it was so. On either of the other suppositions a very grave injustice has been done, which the appointment of a universally respected assessor has been powerless to prevent. The only thing that can really prevent injustice, and the suspicion of injustice, is full publicity. Let us have no more preliminary competitions with closed doors. There have been more than enough of them. We are sick of darkness: let us get back to broad daylight again.

C.

"BUILDING NEWS" DESIGNING CLUB.

A SMALL POST-OFFICE FOR A COUNTRY TOWN.

During the past few years the work of the General Post has increased immensely, and now very many small country places have more or less suitable buildings erected as post-offices. The larger number are very ugly, and by no means always conveniently contrived for the purposes for which they were erected. Official architecture generally is poor and devoid of interest, while on those occasions when the local man is employed, the result not infrequently is almost worse. Things, however, are improving, even in the matter of post-office buildings, and now and then we are enabled to illustrate examples of the better sort. Whether or not the chosen designs in our club competition to-day show how much better buildings intended for post-offices may be treated remains to be seen. We are not so sure that they indicate any very marked improvement; but we give them for what they are worth, and have no doubt they are an improvement, in style of elevation and plan, upon a good many post-offices actually erected about the country. The following were our conditions issued to competitors:—"A small Post Office for a small country town. The site to be in the main street, with a frontage of 25ft. flush with adjoining shops. The depth of the land available for the building is 50ft., and no back approach. The houses on either side are three floors high, including the ground floor, and run back 25ft. from the frontage line. The post-office side walls are party-walls, and light can only be obtained from the back and front walls. The accommodation is to provide a good public office, with conveniences for the ordinary telegraphic business, parcel post, and banking departments, on a limited scale. To the rear of the public office is to be located a sorting-room and waiting-space for a messenger and three postmen, and w.c. and lavatory. Two upper floors to afford accommodation for the postmaster and his small family. Kitchen, &c., may be on the ground floor, but the post office must be kept entirely apart, save the postmaster's door, from the house into the office. The private door to the house must be on the right-hand side of the front, with a passage 3ft. 6in. wide. The residence to comprise a living-room, a parlour, and three bedrooms, with a w.c. and bath-room. Style suitable for red brick and terracotta dressings sparingly used. Scale, 8ft. to the inch. Plans, elevations, sections, and sketch."

"Smilash the Goth" ranks first, "Vulcan" comes second, and "Nil Nisi Bonum" third. The façade of the first design is dignified and official-looking, with ample windows, and somewhat picturesque in style. The perspective hardly does the elevation sufficient justice, and "Smilash" serves no good end by drawing so very roughly, not to say carelessly. As to his plan, there is much to praise him for, and the arrangements speak for themselves. It would be an objection, of course, to bring coals up the main stairs, and thence through the kitchen and scullery. The little lift off the winders of the staircase below would be of small use, and the absence of a dust-place is a great fault. The public office, having no open fireplace, would need heating by hot-water pipes. No provision is made on the drawings for the furnace-chamber. It could, however, be readily managed. "Vulcan's" design has a better plan in some respects than elevation, though the landings are cramped, and the details of the ground-floor arrangements look crowded and ill-considered. For example, those using the public desks at the rear of the office would stand in their own light. The hatchways in and about the telegraphic clerk's office, coupled with the doorway, combine to hamper ready service. There is no coal-place whatever. Externally, the ground-floor treatment is bald, and above, the square clock case on brackets looks clumsy. The upper stage is pretty in its frieze-like quaintness. "Nil Nisi Bonum" places his doors with an arched window in between, similar to the last-named competitor, but they have cornices and pilasters, while to the first floor, on massive trusses, ranges a solid-fronted balcony. There is no clock, bu the Royal Arms are sculptured under semicircular pediment between the first-floo windows. The plain-faced shaped gable t the elevation gives breadth of treatment; bu the drawings would be better if they were les flashily executed. The plans show study, i spite of serious faults. The entrance to th public office opening on to a blank wall is on of these, and the waste of space in passageway some of which are very dark, is another objec tion. The landing upstairs, too, is wastefu Coals and dust are located for in the basement the back; but as no entry can be contrived fro the rear, all approach must be from the fron "Unitate Fortior" gives us a bold, simp elevation, hardly expressive enough of its inte tion, and with an entrance porch which is ve unsuitable for a public building. The dwarf w and squat balustrade look most out of pla

The plan is needlessly curtailed, but the rear elevation is very pretty, with as good a treatment as the front, which was scarcely necessary. "Nimrod" is unequal in his composition; indeed, the upper part is so superior to the lower, that we fancy he must have had help in dealing with the former. The three top windows under the main cornice, and the shields and swags between, are very effective. The ground-floor stage is ungainly and poor to a degree. The plan is not eminently satisfactory; but the isolation of the kitchen and scullery, &c., to the rear beyond a central area is an ingenious feature. There is a doubt as to how headroom is obtained so quickly under the first-floor flight of stairs; anyway, it would be close work to manage it. "M'Ginty" is neat, and his front elevation has the merit of balance and repose, without aimless efforts after effect. His plan strives after economy, and thus the accommodation is more restricted than in the chosen plans. We find the living part of the house more spacious in its mode of treatment than some of the costlier proposals. This is a good feature in "M'Ginty's" essays; but his staircase would be excessively dark down below. "Q. E. F." merits praise. He has made the windows of his building upstairs very ample. That to the public office is not too large, but it seems to want a cornice or some other finish than the bald girder over the opening. The doorways match, and the skyline is marked by two plastered gables. The plan is divided into two by an inclosed area over the waiting-room. From this area the staircase obtains light. "Q. E. F." will do better than this, we fancy. "Black and White" is more ordinary, and his best part is the ground-floor stage, neatly designed with moulded doorways and windows. His building would suffer from darkness in the middle part, the instrument-room and postmaster's private office being dependent upon borrowed light. "Supervision" spares space for a garden at the back, but his office is not of a very convenient shape, neither is the elevation particularly good. The drawings, too, are poor. "Yorkshire Tradition" tries to be original, and marks his public entrance doorway by two winged beasts supporting a canopy. The general façade lacks concentration, and to be effective needs revision. The plan is ingenious, though far from free of faults. The first-floor landing is too small. "Black Prince" can hardly be said to have been happy in his office front, and his plan is crude and wanting in study. The elevation of the ground-floor windows does not agree with the planning. "B" in a circle comes next with a design which looks fairly well in perspective drawn in brown ink. His plan has little to recommend it. His staircase is absolutely dark. "Hardwick" is clever in his plan, but aims too high in the scheme of work contemplated in such a small office by making, for example, more of the banking department than is necessary. The sorting-room is of the right shape, and the arrangement beyond the office looks practical. We are not fascinated by the elevation. "Symbol" makes his design look restless from lack of plain wall space, the windows being too equally spaced out over the façade. The plan is a practical one. "Clansman" overdoes his design greatly; but his elevation evinces a sense of proportion, though the view displays an entire absence of knowledge of perspective. Two little areas give light to the ground floor, which is ingeniously contrived in spite of the loss of space in the second passage by the side of the office. The kitchen is on the ground floor. "Westward Ho!" is a curious planner. The elevation aims at novelty, and distinction is given to the public entrance as contrasted with the private door. "Dum Spiro Spero" takes great pains, and works out his design very carefully. This is a good thing, and he will improve in his endeavours on these lines. We cannot say we admire his design so much as his industry. The private entrance put on one side of the strongly emphasised archway is very ugly, and the elevation as a whole is overdone. The side passage to the sorting office takes up valuable space, and prevents the postmaster from having full control of the employés, who could run in and out at will. "Sweet Auburn" is neat, but his building is not official looking. "Mars" is better in this respect; but spoils his chance by a very crude plan. "Amor Patriæ" misses the mark by rendering his façade like two houses in a row. The office would hardly be a convenient one, either. The drawings show that pains have been taken. "Sphinx" draws his view most carelessly, which is a pity, as the other drawings are much more worthy of him. The plans, however, do not bear inspection. Just fancy a "w.c." cut out of the corner of a dining-room! "Pastime" writes all over his elevations, and prints thereupon the materials intended. This is folly. His façade has merit and some degree of freshness. His plan is cramped. "Jamrach" is improving. "Nodrah," "Hawthorn," "Graham," "La Cigale," "Excelsior," "Goblin," "Wyandotte," "Jocelin," "Excelsior" (Oldham), "Old Postage Stamp," "Compass Box," "Sector," "Jam," "Zingarella," "Alpal," and "Juvenile." "Morocco" came in late.

KELVINGROVE ART GALLERIES, GLASGOW.

AS we briefly announced last week, the executive committee of the Association for the Promotion of Art and Music in the City of Glasgow met on the 13th inst. at Hutcheson's Hospital, Ingram-street, to make their final award in this competition. The following final report from Mr. Waterhouse was read:—"I have given my most careful consideration to the six designs sent in for the final competition for the Art Galleries and Museums, &c., in Kelvingrove, Glasgow, and have come to the conclusion that I ought to recommend No. 30, by Messrs. J. W. Simpson and Milner Allen, of London, for the first place, as, in my opinion, combining the greatest number of excellences, not the least of them being that the exterior elevation would not be effected by those portions of the design which may be left to the future. I have received material assistance from Mr. Whitson, of Messrs. Douglas, Hunter, and Whitson, in checking the cubic contents of all the different designs, and the prices attached thereto by their respective authors. This examination has been satisfactory, as showing that, on the whole, the competitors' calculations have been carefully and conscientiously made, though it appears that in every design a slight increase might be anticipated in that portion intended to be executed for the £120,000." The committee, after an hour's deliberation, intimated that they had accepted the plan sent in by Messrs. J. W. Simpson and Milner Allen, 10, New Inn, Strand, London. Each of the architects who took part in the final competition receives one hundred guineas, except in the case of the successful competitors, whose premium merges in their commission of 5 per cent. for carrying out the work, the commission being computed on the estimated amount of £120,000.

Mr. Simpson, the successful architect, claims to be a Scotchman, and commenced business in London eleven years ago. His father is the architect to the School Board for Brighton, and his grandfather was the Rev. Robert Simpson, D.D., minister, Sanquhar, N.B. The *Glasgow Herald* says: "The total amount of Messrs. J. W. Simpson and Milner Allen's estimate of the cost of the buildings is £154,398, and it is on this sum that their commission of 5 per cent. will be calculated. But Mr. Whitson, of Messrs. Douglas, Hunter, and Whitson, who measured the plans on behalf of the committee, estimates the total cost at £170,320, being nearly £16,000 more than the sum stated by the architects. If the east and west quadrangles are not covered, the total cost as estimated by the architects will be £120,000, the measurer's estimate being £7,000 more. Messrs. Simpson and Allen's estimate includes a sum of £15,000, which is set down as the cost of the accommodation for the Art School, which will not be required, provision being made for the school to remain where it is at present. The space intended by the architects for the use of the Art School, consisting of the basement floor along the whole front of the building, will, however, be utilised as a museum. The honorarium to be paid to Mr. Alfred Waterhouse, R.A., as assessor to the committee, is 400 guineas."

The whole of the designs have been on public view in the Corporation Galleries in Sauchiehall-street since Wednesday in this week. Illustrations of the accepted design were given in our last issue, and also this week. Design No. 9, by Messrs. Malcolm Stark and Rountree, is Palladian Classic in style. The chief façade—that to the River Kelvin—has as its chief features a portico of six Corinthian columns, supporting a sculptured pediment and flanked by towers. To the right and left of this portico the frontage line of the main building is brought forward by a curved colonnade, forming a shallow crescent. These crescents might, we think, have been treated more boldly, with advantage to the effect. In the centres of each of the four cardinal faces of the building are well-marked vestibules and entrance halls. The grand portico on the river front leads through the entrance hall to the central hall, which measures about 110ft. by 75ft. in the clear, and is placed on the bisecting lines of the site from north to south. A corridor 12ft. wide connects the central hall with the museum courts and the art galleries, and would permit of the central hall being used apart from the rest of the building. A balcony is placed at the end of the central hall, approached by the grand staircases in entrance hall. Suites of art galleries are conveniently placed on the ground floor in communication with each other, 34ft. wide, and all top-lighted. In addition to these, four top-lighted galleries for art exhibits are placed on the upper floor. The art galleries, besides having a general entrance from Kelvingrove Park and Sandyford-street, have a special entrance from Gray-street. This entrance also serves as an exit from the central hall. The museum courts and galleries are grouped together on the ground floor to the west of the central hall, and have also a special entrance from the front. The refreshment rooms are placed on the ground floor overlooking the Kelvin; they consist of general refreshment-room, dining-room, and serving-room. The offices in connection with the administrative department are placed in, and enter from, Gray-street; they consist of a suite of three rooms, with library attached. The school of art is also placed in Gray-street. It contains, on the ground floor, first and second elementary rooms, modelling-room with clay storeroom, teachers' room, and cloakrooms; and, on the upper floors, antique rooms, life classroom, and other class and store rooms.

The design of Messrs. Treadwell and Martin, No. 25, is Early Renaissance in character, with some Elizabethan features. A massive tower four stories in height, and finished with domical pinnacles and a central gable on each face, marks each corner of the nearly rectangular site. The projecting blocks of buildings are emphasised by high-pitched gables, which hardly seem in accord with the lower angle given to the continuous glass roofs of the galleries. The fenestration on the ground floor has semicircular heads, and is divided by mullions and transoms. There are no windows above except in the projecting wings, but the wall surfaces are broken into by niches for statuary. The plan seems exceedingly good. The central or music hall, ranging north and south, measures 124ft. by 84ft. in the clear. On either side this is flanked by a museum hall, 132ft. by 80ft., and wide museum galleries extend all round. The refreshment and dining rooms are placed on the right and left of the main entrance and are top-lighted. The school of art is located in an annexe on the west side, separated by an isolating vestibule.

Of Messrs. Honeyman's and Keppie's alternative designs, one, No. 40, is Classic in character, severely treated on the exterior; the other, No. 48, is in a free treatment of Early French Renaissance. In the first, or Classic, design the grand hall, as in the one selected, occupies the centre of the site. On either side, running north and south, are corridors lighted from the roof, intended for the display of sculpture. These corridors are separated from the hall by a lofty arcade, and are practically side aisles so far as the hall extends. They also open directly into the fine-art galleries on the west side and the museum central hall on the east. The museum occupies the whole of the ground on the east side, while the art galleries occupy part of the ground floor and the whole of the upper floor on the west. To the left of the main entrance in the south front is placed the administrative department, which has a separate entrance, and next to it, facing west and north, is the school of art, also with separate entrance. Four staircases are provided for access to the upper floor, and the plan is so arranged that the visitor can go round the whole suite of rooms on either floor or round each department separately. The most prominent features of the exterior of this design are two porticoes at either end of the central block, which rise to a height of 80ft. above the floor level. The wings are considerably lower, so that the entablature runs in an unbroken line from the one to the other, a distance of nearly 300ft. No towers or other features breaking the sky-line are introduced. It was stated that the cost of this design could be kept within the prescribed limit without any material alteration. In No. 48, Messrs. John Honeyman and Keppie's French Renaissance design, the main hall occupies the centre of the buildings, is lighted from the roof, and is flanked on the ground floor by corridors, and on the first floor by picture galleries. These corridors communicate on the south with the vestibule which forms the main entrance to the buildings. Access to the buildings is also gained on the north from an open loggia. To the east is placed the museum, which on the ground floor occupies the whole of the ground, the galleries being arranged round a glazed court, which rises through the two stories. On the first floor the museum galleries also range round this court, and give access to it by balconies and galleries. The main hall has placed at each corner four towers, which rise in the form of campaniles to a height of 180ft. The administrative department is to the west of the vestibule on the south side of the building, the restaurant and dining-rooms occupying a similar position on the north side. The school of art occupies the ground floor at the west of the building. The picture galleries are to the west of the main hall, and occupy the space above the administrative department, restaurant, and school of art. Besides these there are picture galleries east and west from the corridors at the side of the main hall. The four staircases giving access to the first floor are open, and enter both from these galleries and the hall corridors, as well as from the other departments of the building. The plan is so arranged that the portion costing £120,000 could have been done without materially affecting the outside appearance, and the cost of the completed buildings would have been under £150,000.

Mr. T. M. Deane's design, No. 17, is a bold Gothic one. The interior is boldly treated, and recalls Mr. Waterhouse's Natural History Museum. The axis of the central hall is placed east and west, and not north and south as in the other competitors' designs. The central hall measures 145ft. by 75ft., and at either end is a covered museum court, 100ft. by 65ft. Large arches of masonry span the central hall, and above these the roof is glazed. The school of art forms an isolated block, projecting from the north side of the parallelogram covered by buildings, access being gained by two corridors.

CARPENTRY AND JOINERY.—XLIII.

SKIRTINGS AND PLINTHS.

A SKIRTING is the wooden bordering which is put around a room, one edge of which rests upon the floor, or is inserted into a groove in the floor made for its admission; and the other edge forms a stopping place for the plaster, or else is the joint-line with the dado or wainscot, if such there be.

Some of the reasons for its use are, the floor of the room requires periodical washing, and this would injure the plaster if it reached to the floor. The chair legs striking against the plaster would break and knock it off. Besides other reasons which might be adduced, a final one may be stated. A skirting or plinth is just as essential to complete the artistic effect and outline of a room as is a cornice, and corresponds pretty much with the base of a column and plinth if required, just as a cornice does with its capital. Some skirtings are very primitive—nay, even rustic—in their outline.

Fig. 285 gives the simplest outline of anything serving as a skirting, and is used sometimes in barns and granaries. It is taken out of a piece of 3in. or 3½in., square in section, cut diagonally, and has the inclined face planed. It is spiked down to the floor, no plugging or other provision being made in the walls, and if the floor is uneven, it is roughly fitted to it. The flooring in such cases is usually at least 1½in. thick. Should there be a joint between the walls and this skirting, it is usually filled with plaster or cement; but the walls are not plastered, being either lime-washed or just left with the joints *pointed*. Sometimes a cement skirting is used instead of this.

Fig. 286 gives four outlines of common skirtings as used in ordinary cottage property; they serve the purpose for which they are intended, and range from 4in. to 7in. and 8in. wide, and from ¾in. to 1¼in. thick. These skirtings are prepared either by machinery or hand-worked, according to the locality. In regard to their fixing, commencing at the doorway, a length is cut to fit between the architrave and the wall at the opposite end; a good fit is made against the architrave, then the piece of skirting is placed in the position it would occupy and *scribed* to the floor; this is done by noticing how far the bottom edge is from the floor where the space is greatest, and setting a pair of compasses—small ones used for this purpose; they must not *spring*. When the compasses have been adjusted to this space, with one leg moving along the floor, the point of the other leg traces a line on the skirting. It will be easily seen that this line traced on the face of the skirting is parallel to the floor if the scribing has been properly performed. With a plane or *rip saw*, or even an axe, the wood between this line and the bottom edge is removed, so that the bottom edge has for its line the one made by the compass leg, and this will be found to fit the floor exactly.

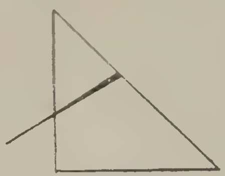
Fig. 285.

It is customary to bevel the edge in working it to the scribing line—that is, it is made a little *bare* or *slack* to the inner or back side. It will thus fit down to the floor more closely.

The grounding for skirting has been dealt with early in this series of articles, and so does not require to be treated of again. The skirting is now placed in its proper position, and, if needs be, a wedge driven in at the end to tighten it against the architrave when it is nailed to the *grounds*. In doing so, the joiner lays a piece of a board, say, 2ft. 6in. or 3ft. long upon the top edge of the skirting, one end, and the other end rests upon the flooring of the room. The joiner presses upon this board with one knee, and so keeps down the skirting close to the floor while he nails it.

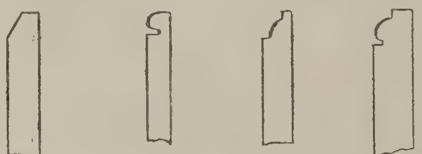
Fig. 286.

Fig. 287 shows the scribing of the skirting endwise to fit the face of the piece of skirting the fixing of which has just now been described. Three sections out of the four are shown, and these are sufficient to illustrate the method. These scribings occur in an *internal* angle.

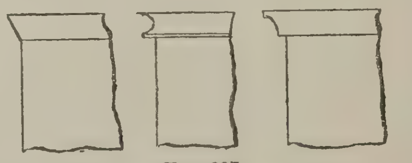
Fig. 287.

Let it be supposed that in following round the room which is being skirted, the next piece occurs between the party-wall and the chimney-breast; this would be what is termed an internal angle. A piece of skirting the required length is cut; be sure you have taken your length correctly, allowing, of course, sufficient to scribe it endwise. A *mitre-jack* or *square templet* is now used to mitre the moulding at the end which is to be scribed, and then you mitre the moulding of the skirting down either with a chisel or fine saw. When the moulding is thus mitred, the outline to fit the moulding or bead on the piece already fixed is seen, and with small chisels, gouges, and saw, or any one of these as required, you take away what is not needed in order to get an outline, such as is shown in Fig. 287, according to the respective skirting used. A panel saw is generally used to cut that portion of the scribe which abuts against the plane or straight surface of the skirting. The square is used to guide the pencil or drawpoint in marking the line to cut by in this part of the operation, and the panel saw is used preferably because of the fineness of the teeth, and also there is no *back*, as in the tenon saw, to hinder the blade from getting right up as far as is required. When the end scribe is made it is tested by placing it against the piece already fixed, or a short piece of the skirting is sometimes used for this purpose.

The scribing of the bottom edge to the floor is now attended to, and this is done in a similar way to that described for the first piece, and when done the piece is fixed by nailing to the grounds, a wedge being driven in at the end to keep it tight against the first piece, and the short piece of board being used to press it down to the floor as before.

We now come along the breast with the skirting, one end of which will reach out to mitre with the piece along the front. The angle at the junction of the piece in front of the chimney-breast, and that along the recess is an external angle, and in every case the skirting in such a position should be mitred its full depth at this angle, which will avoid the showing *end*-grain, which is objectionable in either painted or any other class of work; but all internal angles should be scribed. Very often, where two pieces meet at an internal angle thus, if they are placed in position and a mark drawn on the face of the piece to which the other has been scribed, then taken out again, they may be nailed together from the back side, which very materially assists the joiner. If the angles of the room are not right angles, then due allowance should be made in scribing at the corners, and also the intersection of the thickness of skirting should be taken for external angles. Should the angles be very acute or obtuse, then it might be well to make a templet to fit instead of the ordinary square templet (mitre jack) so as to get the scribe outline more exactly at the corner; but this will only be necessary in extreme cases. If the floor is at all uneven, it would be better, instead of beginning at the doorway with the skirting, to put up the first piece across the ends of the flooring boards, as the pieces with the run of the boards will be more easily fitted to the floor. Thus far, single-faced skirting has alone been dealt with, and presents very little difficulty in fixing, a little practice will be sufficient for even an apprentice who has learned to use the tools readily.

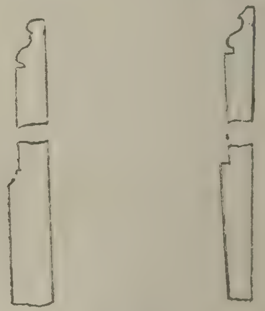
Fig. 288.

The only other point requiring any notice is the fitting the ends of the pieces at each side of the mantelpiece. Usually when the skirting is put on at first, the grates and mantels are not set, and the skirting at each side is left long for safety, then when the grate and mantel have been set, the skirting is fitted to the mantel at the proper length.

If there are any intricacies about the fireplace where the skirting abuts, a temporary piece is fitted so as to mark the piece with; but if no such occur, then the rule and bevel or square will be enough for marking it, and as it is mitred at the end opposite to that abutting against the mantelpiece, it may be fitted to gradually.

It very often occurs that the only nailing that can be done with these pieces is simply at the mitre, and a nail *drifted* into the floor; but if it can be more securely done, by all means do it. Double-faced skirting is somewhat like a double-faced architrave, inasmuch as it has a sunk face.

Fig. 288 gives two examples of double-faced skirting. This may be from 9in. up to 12in. and

13in. deep, and may be taken out of 1in. or 1¼in. thick. The example on the right-hand side shows how that with the grounding arranged for the back of this skirting being bevelled, it may be taken out of 1in. thick, and yet show the same when fixed as if got out of 1¼in. Of course, the front face must be perpendicular.

The only difficulty with this skirting will be that stated, having the grounding arranged to suit, and this is done by having a piece, say 2ft. 6in. or 3ft. long, one end of which is bevelled same as the back of the skirting, and in putting up the grounds, this is put edge on the floor, and the bevelled end applied against the ground (sodger) to see that it fits. It need hardly be stated that the ground will project more at the bottom than the top; of course, in putting in the plugs (dooks) to nail the grounds to this, a bevel-ended guide will serve equally well. Care will be required at the angles with this class of skirting.

As an extra precaution the skirting should be laid against the grounds, and if it is found when tested that it is not perpendicular on the face or outside, then mark opposite any ground, or grounds, where there is this defect, and just cross-plane a little off the back of the skirting to suit, and when all is ready nail fast. The example on the left-hand side may be easily passed over. It is taken out of parallel timber, so that the grounds are put up perpendicular.

All these skirtings, as a rule, are prepared by machinery, so that even if the sawing has been irregular, the moulding machine will be likely to rectify it. The small scotia at the sunk face will require to be attended to in *scribing*.

It would be much better, if a large quantity of such skirting is to be put on, to prepare a mitre-jack (square templet) for the purpose of marking the intersection at the angles.

Fig. 289 shows the plan and elevation of the square templet. It will be noticed that the elevation or sectional view is intended to fit in as closely as possible to the face of the skirting—the more closely the better. The plan or top view is that of the *saddle-piece* at the top, and which rests upon the upper edge of the skirting. This square templet may be placed in position at the end of the skirting, and a line traced down the face to guide in sawing; or the square templet may be held upon and against the skirting with the left hand, and with the right a panel or tenon saw may be used in cutting down the skirting at the required place, being guided by the templet. When this sawing is done, the outline of the scribing is seen, and the various superfluous parts may be taken away with saw, chisels, and gouges; the gouges used for the purpose are scribing ones; those of this class are *ground inside*, and, of course, sharpened in the same way. When the scribing has been done, it should be tried so as to see whether it is a proper fit, and if any alteration is required, well, make it. It will be obvious that skirting of this class will require an architrave with a capping to it sufficiently broad to allow for the projection of the skirting, or the architrave must be attached to or rest on a block, which will serve the same purpose. Examples of architrave blocks have been given in dealing with architraves.

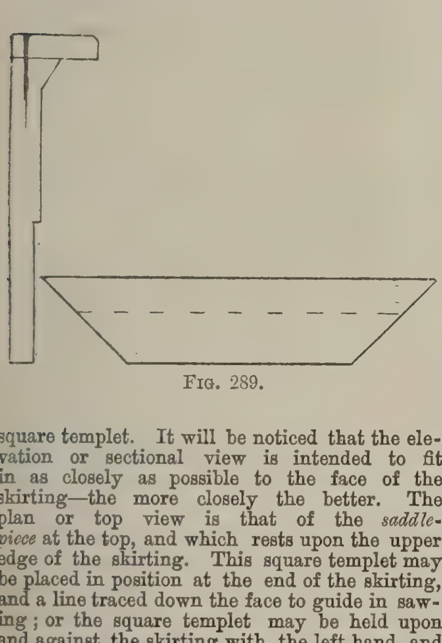

FIG. 289.

But, in addition, such a skirting might be continued round the pilasters, if the doors and windows were finished with such, or in case of any recesses in the walls of rooms for furniture which might have pilasters in front, round these pilasters the skirting might be continued.

Across window backs such skirting is seldom continued; a plain plinth corresponding with the bottom face of the skirting, or other simple plinth, is put up.

THE ART OF THE LOW COUNTRIES.

A MEETING of the Dundee Institute of Architecture, Science, and Art was held on the 14th instant, when a lecture was delivered by Mr. W. M'Kay, R.S.A., Edinburgh, on "The Art of the Low Countries." At the outset the lecturer said in two at least of the fine arts—painting and architecture—the Low Countries were a treasure-house hardly second to Italy itself. Certainly no part of the world contained such a mine of artistic wealth within so narrow a compass; nor had any lands exhibited such a full measure of artistic activity in the development of painting as did Belgium and Holland during the first half of the 17th century. He would state at the outset that he treated the subject from the painter's point of view. It was reserved for the Flemish and Dutch artists fully to demonstrate that the painter's art had a sphere of its own, and that harmonious arrangement of line, chiaroscuro, and colour were more than nobility of subject or elevation of sentiment. The Flemings and Dutchmen were colourists from the beginning, and it had been a matter of surprise that many learned critics should have arisen under the grey skies of the North. It was amid the splendour of the early Courts of Burgundy that Flemish art suddenly appeared. The lecturer then divided into three periods the extraordinary manifestation of Northern art, which, like the history of the countries where it took place, dazzled them with its multiplicity. The first period began about 1410 with the advent of the Van Eycks, when painting leapt from a subordinate place to the forefront of the arts, and closed with the death of Memling. After describing the "Mystic Lamb," the masterpiece of the brothers Hubert and Jan, Mr. M'Kay said what struck one first, perhaps, was that, like all early painting, their works owed comparatively little to chiaroscuro, in the modern sense of the word. Not that they were wanting in a vigorous light and shade. The vision of the Van Eycks was far too keen to miss one of the elementary aspects of nature, and by which she gave relief to objects presented to the eye. But the artistic sense had not yet awakened to the marvellous uses to which the envelope of light, as it had been called, could be applied. In the hands of the great painters of the 16th and 17th centuries it was what romance was to the story-teller—an element swathing hard facts with a nameless charm, concealing or revealing, suppressing or emphasising, and giving an infinitely additional play to the brain and hand of the master. The drawing of the Van Eycks was firm and incisive, the arabesque or linear design large and dignified, the colour full and sonorous. They lacked the masterly brushwork of later art; but their methods were those from which alone the marvellous handcraft of the later Flemish and Dutch masters could have sprung, for the principles that underlay that technique—the most expressive in the whole range of art—were everywhere present in embryo in the works of the Van Eycks. Flemish art had all along been opulent; the painters seemed positively to revel in things costly. Netherlandish art, even when treating of sacred themes, are more secular than sacred, and ministered more to luxury than to religious emotion. The methods of the Van Eycks soon spread throughout Europe, but with the exception of Van der Weyden little was known, and few works remained of their immediate followers. Van der Weyden's work differed in some essential respects from that of his predecessors. He was not a colourist in the same sense as the Van Eycks. Whilst his colour arrangements were harmonious, the colour itself lacked quality and "vibration," and the execution was heavy and blunt compared with that of the older masters. Coming to Memling of Bruges, he said one would have expected to find some difference in method and treatment. But both method and treatment remained the same. Was there no difference, then? Much; but it was a difference of temperament rather than of method. Memling added the sense of beauty to the realism of the Van Eycks. Passing briefly over the work of Thierry Bouts and Geerhardt David, the lecturer came to the second period of Flemish art, extending from Quentin Matsys to Otto Vacnius. This period did not abound in great names. It was a transitional period, because most of the artists of the time were strongly influenced by foreign methods, which they were unable as yet fully to assimilate. Matsys, the greatest name in the period, never left his native soil. He was a staunch Fleming, both as to sentiment and method. Meantime, the native element was kept alive mainly by the practice of portraiture, and a brief *résumé* of the chief portrait-painters was then given. As they marked the waning of the early realism, it might well have seemed that the best days of Flemish art were over. At the close of the 16th century they found a school, numerous and enthusiastic, with no great man amongst them, but informed on all the art wisdom of the South—a school, moreover, in which the native element was not dead, but only slumbering. The time had come, and the man was not long wanting, when with the opening of the 17th century appeared one who was to carry Flemish art to its highest development, who was to write on his glowing canvases all the gathered knowledge of the South with the native vigour of the North—the most Flemish of the Flemings, Peter Paul Rubens. The third and greatest period, Rubens and Vandyck, the lecturer merely touched upon, and remarked that it would require a special lecture to itself. Photographs illustrative of several of the paintings to which the lecturer had referred were exhibited and much admired, and at the conclusion Mr. M'Kay was, on the motion of the chairman, awarded a hearty vote of thanks.

NOTES FROM EDINBURGH.

THERE are evidences here, as elsewhere, of some depression in trade, which as yet has not told upon the building trade, or not to any great extent. Fortunately, there are no strikes, making matters worse, and the present state of matters may be only a temporary ebbing of the tide.

Some large undertakings are still in progress and others preparing for commencement. The McEwen Hall is not yet roofed in; the carpenters are busy laying the timbers of the dome, and the frames for glazing the cupola are on the ground; but it will be some time before they are fixed, and everything else is at a stand till the roof is completed.

Some disappointment is felt, and not unreasonably, with alterations to be made on the old County Buildings to meet the requirements of the County Council. When the Improvement Commission of 1826 opened up the thoroughfare of George IV. Bridge, the coarse rubble wall of the back of the County Buildings was exposed to view, forming a conspicuous eyesore, which has ever since been severely criticised. The site, being at the corner, makes an unhappy contrast with the buildings on the opposite side of the street, and which are designed in the Elizabethan style with good ashlar frontage — commended highly by the late R. Chambers as the best piece of street architecture then existing, and forming a happy link of connection between the old tenements of the High-street or Lawnmarket.

Suggestions for improving the County Buildings were natural, and a design by Hamilton, the architect of the High School, has been engraved. The design, however, did not commend itself as very suitable, either on the ground of its appearance or economy. The late Mr. Bryce is said to have made a design to harmonise with the Sheriff Court Buildings, to the south, of which he was the architect.

It has fallen to the lot of the County Council to provide more accommodation and better arrangements for their business. These have been provided by their architect, Dr. Anderson, and involve a complete metamorphosis of the offensive frontage. The expenditure, which is about £20,000, seems large enough to allow of something better being done to improve the south front than is now proposed. The great defect of the design is obviously the monotony of such an extensive and lofty frontage, unbroken by projections, save that of a small circular staircase—which, however, only intensifies the lack of emphasis in other portions of the edifice. The masonry, of course, is much improved, and crowned in part with open balustrade above the cornice, and something better will replace the rough rubble wall which now bounds the pavement. But this is not architecture of a character to meet the necessities of a site for a building occupying such a prominent position in the city. The architect in his report says truly enough that the Greek style is impracticable for an elevation with so many windows. But this is the case only with the full-blown peristylar decoration of the temple—and the public may well be sceptical as to the architect's despair of making something better, with the Greek style. It is not necessary to carry out all the ponderous details of the east or north frontage; and yet, something of that character, crowned with the present blocking course—cornice and honeysuckle frieze—to give emphasis to the extremeties, would preserve the unity of style, which is lost in the proposed improvement.

The glory of the Calton Hill consists in its curious collection of specimens of monumental architecture. Of these, the Observatory is notable as a combination of the Gothic tower and the Classic monument, the former dominating, and looking not unlike the watch tower of some Mediæval astrologer. The Astronomer Royal for Scotland and Professor of Astronomy in the University will, by-and-by, exchange these meagre and unsuitable quarters for others more worthy of his science, and with immensely better appliances for pursuing his researches.

The new establishment is provided to accommodate the apparatus given by Lord Crawford to Scotland, and the town council have given a site on Blackford Hill sufficient for the Observatory and dwelling-houses for the Astronomer and his assistants. From its elevated position the new Observatory will be a conspicuous feature, and the principal elevation will look northwards to the city. The style is Italian Rennaissance, and the architect has to prepare for some unusual requirements, making provision for two such things as equatorial telescopes. The most striking feature of the design, as a whole, is its extreme simplicity, and it will no doubt take its place as one of the most successful instances of happy combination with the natural landscape. The site is not a level one, being on the eastern slope, but the difficulty is surmounted by the basement story. Anything like picturesque or irregular detail would have been lost in such a site; but the long and somewhat low elevation of the main portion of the edifice, with its two substantial towers at either end, will have a very good effect. These towers are octagonal, built to carry the revolving telescope. The larger is 75ft. in height and 40ft. in diameter, the topmost stage constructed on a cylinder of copper, in which the telescope is housed, with some complicated method to secure steady revolution. The other tower, at the west end, though on higher ground, will be about a third lower than the other, but will still command the sky on every side, with exception of the portion cut off by its larger neighbour. Further up the hill, and in the same line, is placed the transit house, and access provided by a covered way. A projection in the southern slope of the hill contains a building of three floors, the basement having the heating apparatus and electric dynamos, &c. The main floor provides for a large library and other rooms, and the top story is reserved for other departments where light is an essential. Electric light will be installed in all the principal apartments of the Observatory. The design, which has been provided by Mr. Robertson, of H.M. Board of Works, will cost, as estimated, £34,000, and no doubt embodies all the best appointments for its purpose.

Nothing appears to be left now to complete the equipment of St. Giles's Church but the erection of statues in the niches of the reredos. All the available spaces outside, formed by the projections of the main building, have been built upon, and to the advantage of its external appearance. The latest, recently finished, provides a ladies' waiting-room and lavatory on the north-east of the north transept. The most notable characteristic of this addition is the doorway, which reproduces the design of an old example, once the door to the vestry from the interior. It has a low centred arch, with some Late Gothic carving, and is more curious than pretty. The details of parapet and the solitary buttress of this addition are lighter, and the windows are square-headed—a divergence from the massive style of the other additions, which is unfortunate, and the architect has placed a niche, with canopy and crocheted finial, over his doorway, where one would hardly look for an ornament of this description. These particulars, however, will be less noticeable soon, when the stone takes on the dark mantle characteristic of Auld Reekie.

A great addition will shortly be made towards completion of the sculptured decoration of the National Portrait Gallery. The statues of Malcolm Canmore and Queen Margaret have been already placed. To these will be added James VI., the last King of Scotland, with the Regent Moray; Queen Mary, with John Knox and at least two others of her day, have been provided for. J. R. Findlay, to whom the gallery owes its existence, has contributed all the sculpture decoration of the central doorway—a scheme of very elaborate kind. This feature of the building has no relation to the construction, and is designed to break up the uniformity of the long unbroken line of windows. It is of shallow projection, and the lines of the gable, skew with the buttresses, run up into the first floor, dividing the façade into two equal parts. There is thus a large amount of wall space between the door and window over available for sculpture at present. The niches for statuary and panels for sculpture in lower relief have somewhat incoherent outline and arrangement, which the finished work will do away with. There are three large panels just over the door, which are to have the recesses filled with figures of nearly all the arts and sciences. Another very large panel is placed in the tympanum of the gable, about 15ft. by 7ft. in height, for which a life-size figure of Scotland, crowned, with Industry to the right and Religion to the left, has been commissioned.

Edinburgh has recently lost two eminent sculptors—Sir John Steele and Mr. Rhind—the latter lived just long enough to hear that he had been elected an Associate of the R.S. Academy under its new *régime.* Mr. Honeyman, of Glasgow, and Mr. H. Blanc and Mr. Browne, of this city, have also been elected associate architects, which gives promise of architecture being better represented in the council. The Society of Scottish Artists is shortly to have an exhibition opened in the galleries of the Academy.

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THE CONDITIONS CONSTITUTING UNHEALTHY OR INSANITARY HOUSES.

At the last meeting of the Society of Medical Officers of Health, a paper was read by Dr. Willoughby on the Conditions constituting (1) an Unhealthy Area, (2) a House Unfit for Human Habitation, (3) and Unhealthy or Insanitary Houses; or the circumstances under which the (1) Housing of the Working Classes Act, Part I., or (2) Part II., or (3) the Public Health Acts respectively, should be applied. His intention was, he explained, to ascertain the views and practice of others, and thus to arrive at a clear conception of what was to be understood by each of these expressions, and agreement as to the best line of action in dealing with the several classes of insanitary property. He defined an unhealthy area "as one in which (1) the majority of the houses were unfit for human habitation, or (2) were so arranged that reasonable ventilation was impossible, or (3) were incurably damp, or (4) the ground beneath which was saturated with sewage." Among irremediable defects rendering a house unfit for human habitation without entire reconstruction were: (1) "rotten and mouldy" houses, in which the damp was most evident near the ground and on the party-walls, not being caused by defective roofs or gutters, and frequently haunted by diphtheria; (2) houses in blind or labyrinthine alleys, back-to-back houses without forecourts or overshadowed by lofty buildings (though there were back-to-back houses which he could not conscientiously condemn); and (3) houses with old and defective brick drains, the ground beneath which was saturated with the sewage of successive generations, generally to be recognised by the presence of rat-holes in the floors and walls. Houses unfit for human habitation to be dealt with under the Housing of the Working Classes Act, Part II., if in groups, or the Public Health Act if single, were those in which (1) the conditions just described existed, (2) houses so dilapidated as to be past repair, and (3) in which the structural defects as regards the admission of light and air, drainage of the basement, the position of the water-closet, &c., were such that their removal, though physically possible, would involve a prohibitory expense. The ideal plan of house-drainage required in certifying houses of the better class, with disconnection of the soil-pipe, a separate ventilating pipe at the head of the drain, and inspecting chambers at either end, was out of the question in those occupied by the great majority of the middle and lower classes; but practical security against the entrance of sewer air might be obtained by using the soil-pipe as the upcast ventilator, and interposing between the house system and the sewer a small stoneware interceptor, with a siphon beyond it. The great difficulty in the case of small houses without areas or forecourts was to find a place for even the smallest interceptor, while, without a manhole, exploration of the drain involved breaking up the ground. He suggested an arrangement by which interception, ventilation, and facilities for exploration and flushing could be secured for an entire block or street section of a score of houses at the minimum cost, while all drains beneath the houses would be avoided. He would carry a common drain in the rear of each section from the footway of one cross street to that of the next, into the sewer of which it would discharge. There would be a manhole in the footway at each end, with provision for ventilation, as in houses of the highest class, save that, access being from the street, it would be under the control of the sanitary authority. Into this would be led from the houses on one or both sides the separate drains, ventilated by their soil pipes, and uninterrupted by siphons, &c. He proposed that all the houses in a section of a street be supplied through pipes from a large common concreted cistern, erected somewhere in the rear, in a brick chamber, accessible only through a door, the keys of which should be kept by the sanitary inspector and the turncock. In the discussion which followed the reading of the paper, Dr. Tatham, of Manchester, and Dr. J. F. J. Sykes, of St. Pancras, severely criticised the provisions of the Housing of the Working Classes Act, especially as to appeals, arbitration, and compensation. Dr. Kempster stated that an arrangement for the combined drainage of rows of houses, with automatic flushing almost identical with Dr. Willoughby's and controlled by the sanitary authority, had been carried out on the Shaftesbury-park estate.

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CHIPS.

The restoration of the Church of St. John the Baptist, Toxteth Park, Liverpool, was commenced last week. Messrs. Thornton and Sons, of Liverpool, are the contractors.

Alterations are about to be made at Marlborough House for H.R.H. the Prince of Wales. All possible precautions will be taken against fire, and Messrs. Mark Fawcett and Co. have received the order to construct the floors with their special fire-clay tubes, the same as are now being used at the new National Portrait Gallery.

The recent additions to the Jedburgh parish church, which include chancel, vestry, organ-chamber, chancel furniture in oak, and stone and alabaster pulpit, were formally dedicated on the 7th inst. The works have been carried out by Messrs. Brunton, Jedburgh, to designs by Mr. P. Macgregor Chalmers, architect, Glasgow.

Messrs. Reed, Blight, and Co., Limited, contractors, of Plymouth, have been selected by the London County Council to carry out the alterations and additions to Manor House, Claybury Asylum, Woodford, Essex. The following tenders were received:—Potter, £9,962; Faulkner, £9,789; Doyley and Co., £9,362; Reed, Blight, and Co., Limited, £8,995; and Peters, £8,697.

An artesian-bored tube well, yielding 120,000 gallons per day continuous pumping, has been completed for the town of Rugeley, in little over four weeks. The depth is 152ft. and 5in. in diameter. After passing a few feet of alluvial deposits the conglomerate beds were reached, from which the water is obtained. The town of Burnham, near Taplow, is having similar work carried out, also by Messrs. C. Isler and Co., of London.

Mr. Robert Mortimer, of Fimber, near Driffield, a well-known antiquary and geologist, was found dead in his bed on Tuesday week. The deceased, who was 63 years of age, had assisted at the opening of hundreds of tumuli on the Yorkshire Wolds, following up the work of Canon Greenwell, Dr. Thurnham, and Lord Londesborough. The remains from these burial-mounds, including weapons of primitive war, husbandry, and ornament, are collected in the Mortimer Museum in Lockwood-street, Driffield, which ranks second to none in the country in the extent of its relics of the early races inhabiting the northern part of Britain, in addition to a vast collection of archæological specimens, brought together by Mr. Mortimer. In 1886 he published an archæological map, 5ft. by 3ft., of ancient British entrenchments and tumuli around Fimber.

CONTENTS.

Artistic Planning ... 557
An Architectural Problem ... 557
Instructions to Architects ... 558
Competing in the Dark ... 559
BUILDING NEWS Designing Club ... 560
Kelvingrove Art Galleries, Glasgow ... 561
Carpentry and Joinery.—XLIII. ... 562
The Art of the Low Countries ... 563
Notes from Edinburgh ... 563
The Conditions constituting Unhealthy or Insanitary Houses ... 564
Our Illustrations ... 565
Wayside Notes ... 584
Obituary ... 584
Prices.—XXXV. ... 585
The Remains of Ancient Rome ... 586
Efflorescence on Brickwork ... 586
Bristol Cathedral ... 586
The Surveyors' Institution ... 586
Building Intelligence ... 587
Architectural and Archæological Societies ... 587
Competitions ... 588
Correspondence ... 588
Intercommunication ... 588
Legal ... 589
Legal Intelligence ... 589
Water Supply and Sanitary Matters ... 590
Our Office Table ... 590
Meetings for the Ensuing Week ... 591
Trade News ... 591
Statues, Memorials, &c. ... 591
Tenders ... 592

ILLUSTRATIONS.

GLASGOW GALLERIES AND MUSEUM.—PROPOSED BRITISH GALLERY, LONDON.—CHURCH OF ST. SAVIOUR, NEWTOWN, DORSET.—SEXEY'S TRADE SCHOOL, BRUTON, SOMERSET.—DESIGNS FOR A SMALL POST OFFICE AND POSTMASTER'S HOUSE FOR A SMALL TOWN.—PUBLIC BUILDINGS AND SHOPS AT COLWYN BAY.—FONT IN BRAMFORD CHURCH, SUFFOLK.

Our Illustrations.

THE GLASGOW ART GALLERIES AND MUSEUM SELECTED DESIGN.

CONTINUING our illustrations of this great work, we give to-day the principal elevations. The following particulars are furnished by the report accompanying the selected architects' design:—The great hall has been made absolutely central, being planned on the bisecting lines of the site from north to south and east to west. From this hall the great courts open, surrounded by suites of galleries. Apart from this, provision is made for using either the central hall or one of the gallery-wings, apart from the rest of the building. A balcony and promenade has been added on the upper floor. The suites of museum and art galleries being grouped around the two main courts permits of an arrangement of the exhibits which would be interesting and pleasing in itself, besides the intrinsic interest of the objects displayed — a great advantage over the usual dreariness of exhibition galleries. Somewhat more floorage space is provided in the museum than was asked for; but it is obtained at little more than the cost of the glass roofing of the main courts. The school of art will be found arranged with careful regard to the latest requirements. North light is obtained throughout. Ample means of communication and exit will be provided both for ordinary and special occasions. Two hydraulic lifts rise from the receiving and packing department to the various galleries, and will be found useful in supplying and removing the chairs to and from the great hall. The refreshment department occupies a convenient central position, and though quite distinct from the museums and galleries, is readily accessible from any part thereof. The office requirements in connection with this department are carefully studied. The construction is to be fireproof throughout. It is proposed to adopt a system of combined heating and ventilation throughout the building, fresh air being introduced in basement ducts, warmed over batteries of steam-pipes, and injected by means of a fan into the various galleries and rooms, downward extraction being provided for the vitiated air, which will pass away by the main extraction shaft. The buildings are to be built of brick, the exterior, and some parts of the interior, being faced with stone. The walls of the museum galleries are to be plainly finished in plaster, and those of the picture galleries boarded. The floors are intended to be principally in granolithic or mosaic. The exterior has been treated as an astylar composition on severely Classic lines, but with Free Renaissance treatment in detail. It is confidently anticipated that it will prove in execution not unworthy of its position and the city of Glasgow. It has been the endeavour of the authors to realise a dignified and suitable treatment of the suggestions of the executive committee. The total amount of the estimate is £154,398 6s. Messrs. Simpson and Allen are the architects. We gave their perspective view and sections with plan last week. Next week we shall illustrate the other designs.

PROPOSED BRITISH GALLERY.

THE drawings published in this number illustrate the Art Gallery as proposed to be built by Mr. Tate as a gift to the nation, together with his valuable collection of modern paintings. The entrance to the principal floor is by a broad flight of steps (having figures on each side, "Painting" and "Sculpture"), into a large vestibule, with offices on either side. The general entrance to the galleries (after passing the vestibule) leads into a large arcaded hall, with a gallery round. The roof over the hall would be a cupola glazed with ground and figured plate glass, all the columns, walls, &c., being in British marbles, the floor in the centre in large marble slabs, and the parts under the gallery in marble mosaic. In the centre of the hall is a fountain. This hall and adjuncts would be exclusively devoted to sculpture, while the galleries round could be used for the exhibition of miniatures and other small pictures. All works of art would be brought in at the back of the building and under the large gallery, for which purpose a good receiving-room is provided, as also cleaning and store-rooms, lifts being in accessible positions to convey the pictures and sculpture to the principal floor; a tramway is also formed to convey the heavy works from one side of the building to the other, and to the lifts. There are also the private and public staircases; the latter continue up to the principal floor, and also to the first and second floors and gallery round hall. At the sides are lavatories for men and women. These are externally placed, and are thoroughly well ventilated; corridors also on either side of staircases lead to special rooms. Varieties of marbles (with gold introduced into some of the principal positions) would form the decoration of the sculpture hall. The picture galleries (in upper parts) would be decorated with painting of the Pompeian style, and with a good warm colour for background of pictures; the skylights single, blinds being provided to regulate the light. The floors of galleries would be of concrete, with iron girders, and the top surface finished with oak parquet, while the roofs would be of iron, and fireproof doors at places to divide galleries into sections. The number of galleries is as follows:—Two 75ft. by 40ft., two 70ft. by 35ft., two 50ft. by 35ft., two 40ft. by 40ft., four 30ft. by 35ft. (these could be used as special rooms), one grand gallery 130ft. by 40ft. On the first floor is provided the gallery round the large hall, approached from the two staircases, and with two galleries for pictures. On the first floor also are the council-room, secretary's office, cloak-room, lavatories, &c., while above would be two rooms for clerks. The style is Classic, with refined mouldings of Greek feeling and ornament sparingly introduced, the chief study being to get a good skyline, proper massing, good proportion, and a well broken front, with carving and figures of the best character. The crowning feature (at the base of the cupola) is a bronze group of figures illustrative of British art. The building would be faced with stone in two colours, with polished granite columns to the principal entrance. Mr. Sidney R. J. Smith, F.R.I.B.A., is the architect.

CHURCH OF ST. SAVIOUR, NEWTOWN, DORSET.

MESSRS. ROMAINE-WALKER AND TANNER are the architects of this church, but no further particulars have reached us respecting the same.

SEXEY'S TRADE SCHOOL, BRUTON, SOMERSET.

THIS school, which has just been erected from plans prepared by Messrs. George J. and F. W. Skipper, F.R.I.B.A., architects, was opened on Tuesday, the 19th inst., by the Rt. Hon. the Earl of Cork and Orrery (Lord Lieutenant of Somerset). Prior to the opening ceremony, a distinguished company sat down to luncheon at the invitation of the governors, including the Earl of Cork, Sir Richard Paget, Bart., M.P., Mr. Henry Hobhouse, M.P. (to whose indefatigable exertions as chairman of the governors the school owes so much of its success), Mr. T. O. Bennett, and other county gentlemen interested in the new educational scheme. This technical school for boys has been recently founded out of the old endowments of Sexey's Hospital, under a scheme of the Charity Commissioners, with aid from the Somerset County Council. It is intended to provide a sound technical and commercial education for the sons of farmers and tradesmen. The school had been successfully started about 12 months ago, with Mr. Knight as head master, in premises in the town of Bruton, pending the erection of the new buildings, for which an attractive and healthy site was purchased adjoining the main road from Bruton to Castle Cary, about half a mile from Bruton and Cole railway stations. The school buildings consist of a master's house, having dining, drawing-rooms, and study, besides kitchen offices and outbuildings on the ground floor, and five bedrooms on the first floor. The school proper contains spacious, well lighted and ventilated schoolroom, class or lecture-room, master's common-room, lavatories, and cloak-room, the latter with arrangements of hot-water pipes so as to dry the wet clothes and boots of the scholars coming from a distance. A separate wing contains chemical laboratory, well equipped with benches, hoods, and combustion closets, all of the most modern description, and specially approved by the Somerset County Education Committee. There is also a library and museum, besides workshops for manual work in wood, mechanics, &c. Arrangements have been made to enable boys coming from a distance to dine comfortably, and to spend the interval between lessons in wet weather in recreation, &c., under cover. The instruction, besides that usually given, will be of a practical nature in technical subjects, and will be given in the garden and field as well as in the schoolroom; wherever possible, the teaching is from objects rather than mere verbal descriptions. A few free places are reserved as scholarships for promising boys who have been for at least three years at a public elementary school of a parish within four miles of Bruton. The East Somerset Agricultural Society's scholarships of the value of £10 a year for three years are tenable only at this school. The school has been accepted as one of those which county scholars may attend. The county scholarships are of the minimum value of £15 a year for three years. The building has been constructed of Sheephouse stone quarried in the neighbourhood, and for internal walls with stone quarried on the site (the quarries being left open for use of scholars for geological study); the freestone dressings to doors, windows, and chimneys have been of Doulting stone throughout; the roofs are covered with slates. The cost has been upwards of £3,000. The general contractors are Messrs. J. and L. Francis, of Castle Cary, whose work throughout has been carefully and well performed.

"BUILDING NEWS" DESIGNING CLUB: A SMALL POST-OFFICE FOR A COUNTRY TOWN.

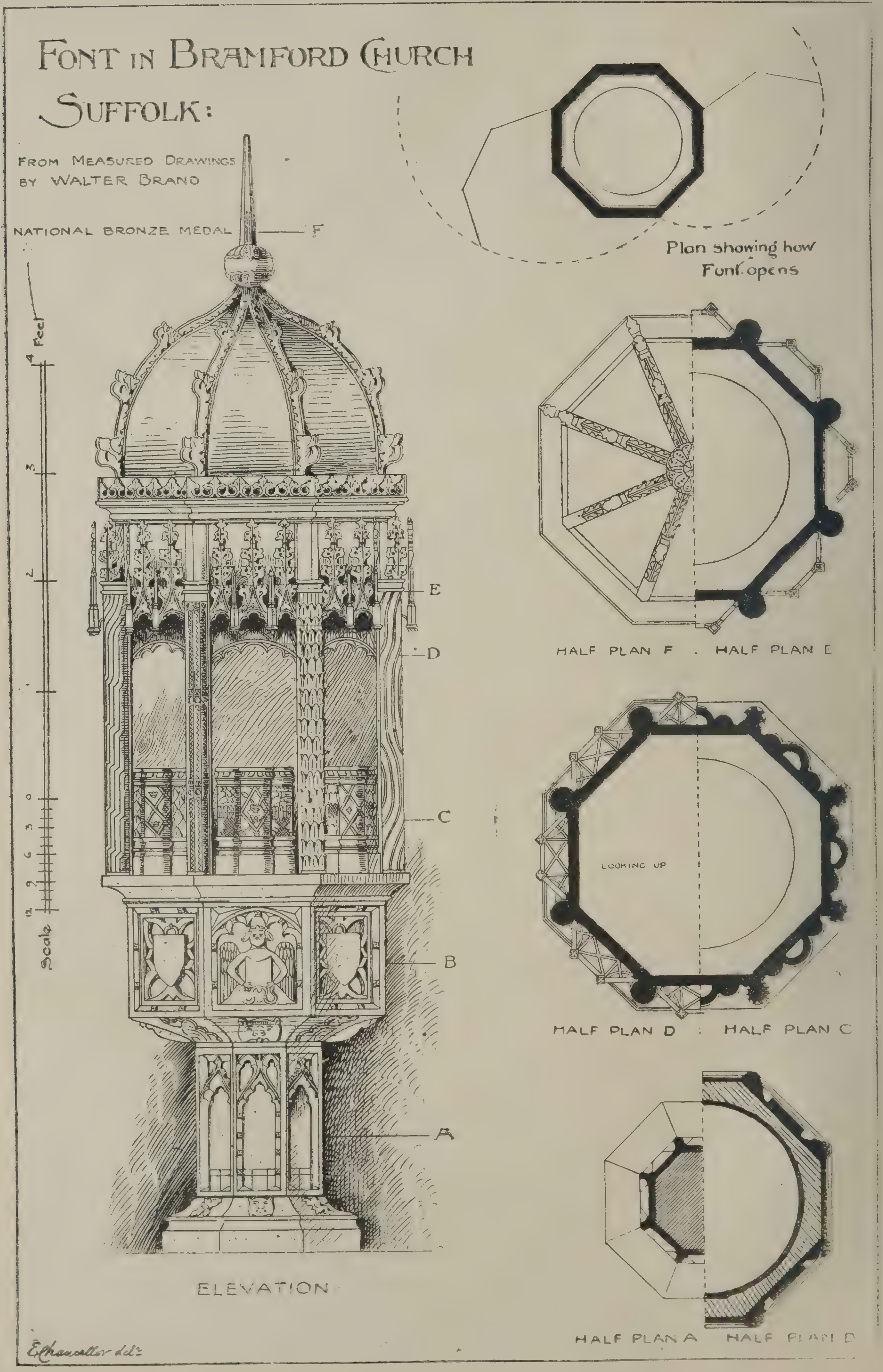
(SEE description on p. 560.)

PUBLIC BUILDINGS AND SHOPS AT COLWYN BAY.

THE district of Colwyn Bay, in North Wales, is being rapidly developed as a favourite seaside resort. A fine row of shops (eight in number) has recently been erected for Mr. E. Foulkes and Mr. F. Madren in Station-road. They are all occupied, and one of them does duty as the post-office. The group of buildings will be completed by the public offices, &c., now in course of erection, as shown in our illustration. These include a court-room, police-station, &c., for the magistrates of the county of Denbigh and the county council; public offices for the Colwyn Bay and Colwyn Local Board of Health; premises for the National Provincial Bank of England, and two suites of offices leased to private firms. The walls are faced with Ruabon bricks, and the dressings are of local stone. Mr. Edward Foulkes is the builder, and Messrs. Booth, Chadwick, and Porter, of Manchester and Colwyn Bay, are the architects.

FONT IN BRAMFORD CHURCH, SUFFOLK.

WE give on another page a reproduction of one of the measured drawings for which Mr. Walter Brand received the National Bronze Medal. Bramford is between two and three miles from Ipswich. The church is rather a handsome structure, and is chiefly Perpendicular. The font, like the church, is Perpendicular; the wooden cover is very curious and richly carved, but the detail is crude and poor: the ornamentation of the long, baseless columns is an instance of this. The sectional plans, taken at various levels, will help to elucidate the design better than any description. The smaller diagram at the top of the illustration indicates the manner in which the cover opens in two leaves.

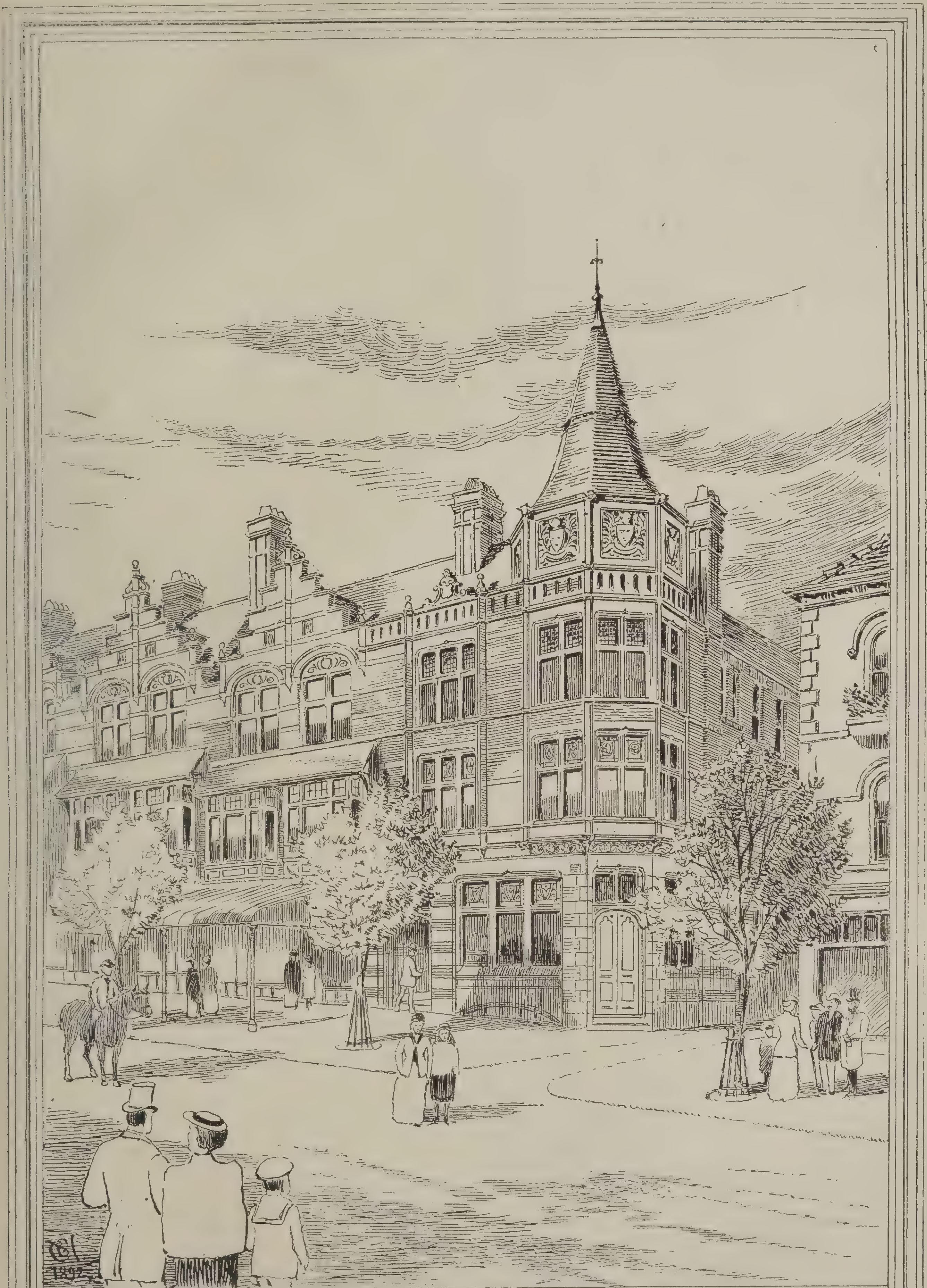


FONT IN BRAMFORD CHURCH SUFFOLK:

FROM MEASURED DRAWINGS BY WALTER BRAND

NATIONAL BRONZE MEDAL

E.Chancellor del.



PUBLIC OFFICES AND SHOPS, COLWYN BAY

BOOTH, CHADWICK & PORTER
Architects Manchester & Colwyn Bay

WAYSIDE NOTES.

If the Wellington memorial at St. Paul's can be moved to some less gloomy quarter of the cathedral than that which it at present occupies, this work of the late Alfred Stevens may be more fully appreciated. The removal of the monument may appear to some persons a costly piece of unnecessary labour; but practical considerations are here nothing as compared with sentiment, and the sentiment of the British public with regard to the great Duke of Wellington should hold good for a thousand pound subscription. This is about the sum required to carry out Sir Frederick Leighton's scheme, and bring a little of the light of day to bear upon the monument. I understand that the original idea of the sculptor, like the original idea of Wren and other great designers, was never completely carried out. The crowning feature of the design was to have been an equestrian statue of the Duke. The dean of the day objecting to the statue, or otherwise preventing the realisation of the complete design, the monument was left as it now stands. It is a part of Sir Frederick Leighton's idea to complete the composition as intended by Stevens, and if funds were forthcoming, the work would doubtless be undertaken. The statue or some crowning feature is certainly required. At present there is a platform or raised pedestal evidently meant to carry something, but practically, I suppose, giving support only to a varying quantity of dust. Thus, there is not only an absence of that which should be, but also a certain amount of "matter in the wrong place."

One would imagine that, out of the whole length and breadth of England, the War Office could pitch upon some suitable site for a rifle range without breaking in upon the peace and quietness of the New Forest. It is not easy to express one's feelings when a proposal of this nature is made; but there always remains the practical line of action in doing all in one's power to endeavour to nonplus the efforts of the authorities who would thus destroy part, if not the whole, of the glory of our only forest. I am glad to see that Mr. Morton K. Peto, of Littlecroft, Lyndhurst, as hon. secretary to the New Forest Association, has appealed for funds to resist these proposed encroachments by the War Office. Why does not the Department make a range in some unattractive marsh or tract of flat land? It may be very pleasant and nice to do the shooting amid the beauties of the New Forest, but while Englishmen have any spirit left, they will see that it is done elsewhere. Had it been proved necessary to the safety of the country and the proficiency of the army that a rifle-range should be established in the New Forest, no one would object—excepting, possibly, that body of persons—now rather large—who, in the matter of expenditure on public works, &c., can see no farther than their own noses. Whilst there is a marsh or tract of level, commonplace land in the country, it is difficult to see the necessity for destroying one of the great natural beauties of England.

Admirers of Mrs. Barrett Browning's writings will be the best persons to send in sketches for the proposed memorial clock-tower at Ledbury. Properly regarded, this competition should be only for architects of Browning sympathies. To produce a really suitable memorial to poet or poetess, one must be imbued with a love of their works, and appreciate the spirit of their writings. Memorial architecture, if possible, should certainly have some tale to tell. In a mere heaping together of pilasters and cornices there is no true memorial.

Competing architects must be busy again, and will want all the fresh energy gained during the few days of holiday. The Llanelly Town Hall competition must rank among the upper grades, and will doubtless attract much attention. Even in the announcement considerable trouble has been taken to put the competition properly before architects. Other competitions, now current, are small by comparison, and neither foreshadow great premiums, remuneration, nor notoriety.

I do not know the exact impression that Mr. E. F. C. Clarke has made with his letter to you from the "Hogarth"; but personally I have no inclination to take it seriously or in an offensive spirit, rather imagining that your correspondent was in a playful, after-dinner mood when he composed the epistle in question. Had Mr. Clarke been actually out of humour and written in anger, he would have left a very poor defence for any reply to his attack; for it is sufficient to point out that nowhere in any writings of mine have I "made him out" to be young, naturally or supernaturally, while the allusion to his being regarded as "a woman" is wholly lost upon me, there never having been any such statement offered in these "Notes," either directly or indirectly. I do remember now, it is true, years ago, while he was yet in Mr. Street's office, listening to one or two rather feminine tirades about things in general, which I had forgotten till his petulant epistle reminded me of them.

I left the reader the other week at Horsemonden Church, Kent. Perhaps he might like to follow our Easter wanderings. Friday evening we found ourselves at Tenterden, of steeple renown, after passing *en route* the curious old-world villages of Cranbrook, Benenden, and Rolvenden, all far removed from the neighbourhood of the iron way, as many will know, and all may see who will glance at a map of Kent and Sussex and note the great triangular space, free of railways, with apices at Tunbridge, Hastings, and Ashford. Cranbrook Church is fine, and the village is curious and interesting. Benenden I saw only for a few moments, and the same may be said of Rolvenden. The former is evidently a grand old Kentish village, and the latter only second in interest. At Tenterden we were snowed up all Saturday, so far as concerned the continuation of the ramble. It was a considerable surprise to me on looking out of the windows of our hoslelrie on Saturday morning to discover that Tenterden Steeple was an architectural myth, as shadowy and deceptive, perchance, as the legend that connects it with the Goodwin Sands. A tower there was, certainly, with four pinnacles, like a table upside-down in the air, as Mr. Ruskin says; but of steeple, not even the rudiments. Let me not be misunderstood: A *steeple* I take to be a *spire* in the English vernacular; but if "steeple" means "tower," then Tenterden Steeple is no myth. In the village is little of interest compared with many of those seen on this tour, though mention should be made of a grand old house standing above the approach to the town from the west—a building, I believe, completed some nine years after the accession of Queen Anne to the throne, and a beautiful example of the style. Not far from Tenterden is Biddenden, renowned for its two "maids," who, it is said, lived in the 12th century for thirty-six years, and were joined together at shoulder and hip. A glorious old place is Biddenden, with a grand old church-interior *slightly* different from the symmetrical modern church. We made a complete circumnavigation of the Weald, through Bethersden, Pluckley, Charing, Lenham, Ulcombe; Sutton Valance, and so through Linton and Hunton to Yalding and Tonbridge. Pluckley has a beautiful position on the side of a hill rising out of the flat Weald. Near Pluckley is the beautiful church of Chart, and of Charing Church one cannot say too much. It has a most beautiful groined 15th-century porch of a type of many church porches in that part of Kent. Lenham is also a most beautiful place. Ulcombe, again, is on the side of the hills, and charmingly overlooks the Weald, as also does Sutton Valance. At East Sutton is a pretty little church with some remarkably beautiful window tracery, apparently of the Decorated period. Local peculiarities were very marked in all these villages, both in Domestic as in Ecclesiastical architecture, and the theory of the bands of masons going from place to place seemed more than ever plausible to me. During this tour through part of Kent I have seen more perhaps architecturally worth examining than on any of the several Easter excursions of this sort that I have made. The district is well worth visiting.

Goth.

Col. J. O. Hasted, C.E., held an inquiry at Truro Town Hall on the 12th inst. into the circumstances attending the application of the Truro U.S.A. to borrow the sum of £2,500 for the provision of a new cemetery at Truro. Mr. W. Clemens, assistant surveyor, in the absence of his father, the city surveyor, through illness, the result of severe gas-poisoning, produced plans of the proposed ground and buildings.

OBITUARY.

We greatly regret to announce the decease of Mr. Robert James Johnson, F.S.A., F.R.I.B.A., of Pilgrim-street, Newcastle-on-Tyne, and Coney-street, York, which occurred on Monday, at Rock Villa, Tunbridge Wells. Mr. Johnson, who was sixty years of age, was one of the many men who, trained in Sir Gilbert Scott's office, have since risen to distinguished positions in the profession. He subsequently travelled abroad, and on his return published a work entitled "Specimens of Early French Architecture." He settled in Newcastle-on-Tyne, where, on his own account and subsequently as head of the firm of Johnson, Crawford, and Hicks, he carried on an extensive practice. Comparatively recently he removed to York, and commenced a branch in that city. His works include many new churches and restorations, and the erection of schools, colleges, banks, and mercantile premises. His *magnum opus* has been the rearrangement of the great church of St. Nicholas in Newcastle as the cathedral of the diocese, and his work here was illustrated in the Building News for Nov. 11, 1887, and Jan. 6 and May 25, 1888. The Saxon churches at Monkwearmouth and Escombe were restored by him, and his new works include the Durham College of Science at Newcastle, and the North-Eastern County School at Barnard Castle. Till recently, he was Diocesan Surveyor for Durham. His sketches were vigorous and bold, his work refined in character, while evidencing a master's touch, and he ought years since to have been admitted into the ranks of the Academicians. We gave his portrait in our issue of May 23, 1890.

Miss Amelia Branford Edwards, LL.D., the well-known Egyptologist and novelist, died on Good Friday at Weston-super-Mare. Miss Edwards was the author of several successful novels, but for the last twelve years her attention had been mainly devoted to archæological and especially to Egyptian subjects, on which she wrote frequently. Miss Edwards contributed articles on Egyptology to the *Encyclopædia Britannica*, and wrote for the American supplement to that work an account of "Recent Archæological Discoveries in Egypt." A volume on "Pharaohs, Fellahs, and Explorers" was published at the end of last year. The foundation in 1883 of the Egypt Exploration Fund was largely due to her efforts, and she was for some years its honorary secretary. Egyptology was the subject of a long course of lectures delivered by her in the winter of 1889-90 in the United States, and at the centenary celebration of Columbia College she had already received an honorary degree. Miss Edwards was a contributing member of various Oriental congresses, a member of the Biblical Archæological Society, and of the Society for the Promotion of Hellenic Studies. At the beginning of the present year she was accorded a pension on the Civil List.

The death is announced, at the age of 80, of Mr. William Chaffers, F.S.A., the well-known authority on pottery and goldsmiths' work, and organiser of art exhibitions. Mr. Chaffers's works included: (1863), "Marks and Monograms on Pottery and Porcelain," seventh edition; "Hall-marks on Plate," illustrated with tables of date letters; (1865-1886), "Handbook of Marks and Monograms on Pottery and Porcelain," ninth thousand; (1889), "The Keramic Gallery of Pottery and Porcelain," with numerous illustrations, two vols.; (1887), "Gilda Aurifabrorum," a history of goldsmiths and their marks on plate, &c. Mr. Chaffers was regarded in his day as the highest authority in England on keramics and gold and silver plate, but he will also be remembered for his success in the organisation of art treasures exhibitions. He acted either as superintendent or general manager at Manchester, in 1857; South Kensington Museum (loan collection of old plate), in 1862; Leeds, 1868-9; Dublin, 1872; Wrexham, 1876; Hanley, Staffordshire, 1890. Mr. Chaffers was, like his father had been before him, "Father" of the Worshipful Company of Wheelwrights.

An inquiry was held on Tuesday last by Mr. Alfred Taylor, inspector of the Local Government Board, at the Town-hall, Worthing, when the scheme for providing sea defences for the frontage of Lancing was considered. Mr. R. F. Grantham, M.Inst.C.E., F.G.S., explained the plans and estimates. The inspector determined to recommend sanction for a loan for the purpose.

PRICES.* — XXXV.

(All Prices Include Profit.)

IRONMONGER (*continued*).

Nettleford's Oval Wire Nails: Flat, rose, or brad heads —

		s.	d.			s.	d.
1¼in	per lb.	0	6	1½in	per lb.	0	5½
1¾in	ditto	0	5¼	2in	ditto	0	5¼
2¼in	ditto	0	5	2½in	ditto	0	4¾
2¾in	ditto	0	4¾	3in	ditto	0	4½
3½in	ditto	0	4½	4in	ditto	0	4½
4½in	ditto	0	4¼	5in	ditto	0	4¼
6in	ditto	0	4	7in	ditto	0	4

Floor Brads, cut—

		s.	d.			s.	d.
2in	per lb.	0	2½		per cwt.	12	6
2¼in	ditto	0	2½		ditto	12	3
2½ and 3in	ditto	0	2½		ditto	12	0

It must be noted that the prices of floor brads vary with the market.

Cut Clasp Nails—

		s.	d.			s.	d.
1in	per lb.	0	4		per cwt.	18	0
1¼in	ditto	0	4		ditto	17	0
1½in	ditto	0	3¼		ditto	15	6
2in	ditto	0	3		ditto	14	0
2½in	ditto	0	2¾		ditto	13	0
3 to 6in	ditto	0	2½		ditto	12	6

Steel nails add 15 per cent.

Strong Patent Rose flat points—

1¼in	per m.	1	9	1½in	per m.	1	11
1¾in	ditto	2	0	2in	ditto	2	3
2¼in	ditto	2	8	2½in	ditto	3	6
2¾in	ditto	4	0	3in	ditto	4	9

Patent Wrought Clasp—

1½in	per m.	1	10	1¾in	per m.	2	2
2in	ditto	2	9	2¼in	ditto	3	0
2½in	ditto	3	3	3in	ditto	4	6

Fine Wrought Clasp—

1in	per m.	1	6	1¼in	per m.	1	8
1½in	ditto	1	9	1¾in	ditto	2	0
2in	ditto	2	3	2¼in	ditto	2	9
2½in	ditto	3	0	2¾in	ditto	3	10
3in	ditto	4	0				

Cut Clout Nails—

1in	per lb.	0	3	1¼in	per lb.	0	3
1½in	ditto	0	2¾	1¾in	ditto	0	2¾
2in	ditto	0	2¾				

Wrought Clout Nails, fine—

¾in	per m.	1	2	⅞in	per m.	1	3
1in	ditto	1	5	1¼in	ditto	1	7
1½in	ditto	1	9	1¾in	ditto	2	0
2in	ditto	2	4	2¼in	ditto	2	8

Strong ditto—

(Same prices as above for ¾in. and ⅞in.)

1in	per m.	1	6	1¼in	per m.	1	9
1½in	ditto	1	11	1¾in	ditto	2	6
2in	ditto	2	9	2¼in	ditto	3	2
2½in	ditto	4	0				

Town Clout—

¾in	ditto	2	0	1in	per m.	2	6
1¼in	ditto	3	0	1½in	ditto	4	0
1¾in	ditto	4	6	2in	ditto	5	6
2½in	per lb.	0	4	3in	per lb.	0	3½
4in	ditto	0	3½				

Tenter hooks—

1¼in	per m.	2	3	1½in	per m.	3	0
1¾in	ditto	4	6	2in	ditto	4	6

Flemish Tacks—

No.				No.			
8	per m.	1	3	10	per m.	1	4
12	ditto	1	4½	14	ditto	1	5
16oz		1	5				

Felt Scupper Nails—

½in	per m.	2	0	⅝in	per m.	2	3
¾in	ditto	2	5	⅞in	ditto	2	8
1in	ditto	3	3				

Wire Slating Nails—

1¼in	per lb.	0	3½	1½in	per lb.	0	3¼
2in	ditto	0	3				

Malleable Slating Nails—

1¼in	per lb.	0	4	1½in	per lb.	0	3½
1¾in	ditto	0	3¼	2in	ditto	0	3

Zinc Slating Nails—

1¼in	per lb.	0	5	1½in	per lb.	0	4½
2in	ditto	0	4				

Copper Slating Nails—

1¼in	per lb.	1	3	1½in	per lb.	1	2

Cut Copper Clout—

⅝in	per lb.	1	9	¾in	per lb.	1	8
1in	ditto	1	7	1¼in	ditto	1	6

Copper Tacks—

½in	per lb.	1	4	⅝in	per lb.	1	3½
¾in	ditto	1	3	⅞in	ditto	1	2
1in	ditto	1	1½				

Copper Boat Nails—

½in	per lb.	1	6	⅝in	per lb.	1	5
¾in	ditto	1	4	⅞in	ditto	1	3
1in	ditto	1	2½	1¼in	ditto	1	2
1½in. and upwards					per lb	1	1

Wire lath nails—

⅞in	per lb.	0	4	1in	ditto	0	3¾
1¼in	ditto	0	3½				

Cut lath nails—

⅞in	per lb.	0	2½	1in	ditto	0	2½
1¼in	ditto	0	2¼				

Cast tile pegs—

Per lb.		0	2	per cwt.		13	0

Fancy cast door nails—

1in. head	per gross	6	0
¾in. ditto	ditto	4	0
⅝in. ditto	ditto	3	3

Hurdle nails: Kent pattern—

2in	per m.	4	6	2¼in	per m.	4	9
2½in	ditto	5	3	3in	ditto	6	3

Hurdle nails: Essex pattern—

2in	per m.	4	9	2¼in	ditto	5	3
2½in	ditto	6	3	3in	ditto	7	6

Pipe nails—

2½in	per lb.	0	4	3in	per lb.	0	3¾
3½in	ditto	0	3¾	4in	ditto	0	3½
Per dozen		0	6				

Wall hooks—

		s.	d.
2in. to 6in	per dozen	0	5
Ditto galvanised	ditto	0	7

Wrought iron pipe hooks—

2in	per dozen	1	0	2½in	per dozen	1	3
3in	ditto	1	6	4in	ditto	1	9
5in	ditto	2	3				

Ditto galvanised—

2in	per dozen	1	4	2½in	per dozen	1	9
2in	ditto	2	3	4in	ditto	2	9
5in	ditto	3	3				

Gas-pipe hooks for iron barrel—

¼in	per gross	1	6	⅜in	per gross	2	0
½in	ditto	2	6	¾in	ditto	3	6
1in	ditto	4	9	1¼in	ditto	6	6

Ditto tinned—

¼in	per gross	2	3	⅜in	per gross	2	10
½in	ditto	4	3	¾in	ditto	5	4
1in	ditto	6	3	1¼in	ditto	9	0

Gas-pipe hooks for compo pipe—

¼in	per gross	1	6	⅜in	per gross	1	6
½in	ditto	1	9	⅝in	ditto	2	2

Ditto tinned—

¼in	per gross	1	9	⅜in	per gross	2	0
½in	ditto	2	3	⅝in	ditto	2	8

Ceiling hooks tinned and to screw—

3in	per gross	5	0	4in	per gross	5	9
5in	ditto	6	3	6in	ditto	7	6
7in	ditto	9	6				

Japanned driving staples—

1½in	per dozen	1	0	1¾in	per dozen	1	3
2in	ditto	1	4	2¼in	ditto	1	6
2½in	ditto	1	9	3in	ditto	2	0

Line hooks, driving—

2in	per dozen	0	5	2½in	per dozen	0	5½
3in	ditto	0	6	3½in	ditto	0	7
4in	ditto	0	8	5in	ditto	0	10
6in	ditto	1	0				

Ditto tinned—

2in	per dozen	0	6	2½in	per dozen	0	7
3in	ditto	0	7½	3½in	ditto	0	8
4in	ditto	0	8½	5in	ditto	0	9½
6in	ditto	1	2				

Ditto to screw—

2in	per dozen	0	6	2½in	per dozen	0	7
3in	ditto	0	7½	3½in	ditto	0	8
4in	ditto	0	8½				

Ditto ditto, tinned—

2in	per dozen	0	7	2½in	per dozen	0	7½
3in	ditto	0	8	3½in	ditto	0	9
4in	ditto	0	10				

Meat hooks: common ∽ hooks tinned—

3in	per dozen	0	7	3½in	per dozen	0	7½
4in	ditto	0	8	4½in	ditto	0	9
5in	ditto	0	11	6in	ditto	1	0
7in	ditto	1	3				

Ditto bar hooks, to lift, tinned—

2½in	per dozen	0	9	3in	per dozen	0	11
3in	ditto	1	1				

Bar hooks, to slide, welded and tinned—

For ⅜in., ½in., and ⅝in. bars	per lb	0	10

Swivel hooks (double)—

All sizes	ditto	1	0

Double ceiling hooks, to screw—

4in	tinned per dozen	2	3	5in		2	5
6in	ditto	2	6	7in		2	8

Iron Screws, with profit, not fixed—
(¼in., ⅜in., and ½in. For smaller quantities a higher price must be charged)

No.		s.	d.	No.		s.	d.
1, 2, 3, & 4	per gross	0	4½	7	per gross	0	6
5 and 6	ditto	0	5	9	ditto	0	7
8	ditto	0	6½	11	ditto	0	8
10	ditto	0	7½	13	ditto	0	11
12	ditto	0	8½	15	ditto	1	2
14	ditto	1	0				
16	ditto	1	5				

⅝in. ditto—

2, 3, and 4	per gross	0	5	5 and 6	per gross	0	6
7 and 8	ditto	0	7	9	ditto	0	8
10	ditto	0	8½	11	ditto	0	9
12	ditto	0	9½	13	ditto	0	11
14	ditto	1	0	15	ditto	1	3
16	ditto	1	5	18	ditto	1	9

¾in. ditto—

3, 4, and 5	per gross	0	6	6 and 7	per gross	0	7
8	ditto	0	7½	9	ditto	0	8
10	ditto	0	8	11	ditto	0	8½
12	ditto	0	9	13	ditto	0	11
14	ditto	0	11½	15	ditto	1	2
16	ditto	1	4	17	ditto	1	7
18	ditto	1	9				

1in. ditto—

4	per gross	0	6½	5	per gross	0	7
6	ditto	0	7½	7	ditto	0	8
8	ditto	0	8	9	ditto	0	8½
10	ditto	0	8½	11	ditto	0	10
12	ditto	0	10½	13	ditto	1	0
14	ditto	1	1	15	ditto	1	3
16	ditto	1	5	17	ditto	1	7
18	ditto	1	9	19	ditto	1	10

1¼in. ditto—

5, 6, and 7	per gross	0	8½	8 and 9	per gross	0	9
10	ditto	0	10	10	ditto	0	10½
11	ditto	0	11	12	ditto	1	0
13	ditto	1	1	14	ditto	1	3
15	ditto	1	5	16	ditto	1	8
17	ditto	1	9	18	ditto	1	11
19	ditto	2	2	20	ditto	2	4

1½in. ditto—

6 and 7	per gross	0	9½	8	per gross	0	10
9	ditto	0	11	10	ditto	0	11½
11	ditto	1	0	12	ditto	1	1½
13	ditto	1	3	14	ditto	1	5
15	ditto	1	8	16	ditto	1	10
17	ditto	2	0	18	ditto	2	2
19	ditto	2	4	20	ditto	2	7
21	ditto	2	10				

1¾in. ditto—

8	per gross	1	0	9	per gross	1	1
10	ditto	1	1½	11	ditto	1	2½
12	ditto	1	4	13	ditto	1	6
14	ditto	1	8	15	ditto	1	10
16	ditto	2	2	17	ditto	2	3
18	ditto	2	5	19	ditto	2	8
20	ditto	2	9				

2in. Iron Screws.

No.		s.	d.	No.		s.	d.
8	per gross	1	1	9	per gross	1	1½
10	ditto	1	2	11	ditto	1	4
12	ditto	1	6	13	ditto	1	8
14	ditto	1	10	15	ditto	2	0
16	ditto	2	2	17	ditto	2	7
18	ditto	2	7	19	ditto	2	9
20	ditto	3	0				

2¼in. ditto—

9	per gross	1	4	10	per gross	1	4½
11	ditto	1	6	12	ditto	1	8
13	ditto	1	10	14	ditto	2	0
15	ditto	2	2	16	ditto	2	4
17	ditto	2	6	18	ditto	2	9
19	ditto	3	0	20	ditto	3	2
21	ditto	3	6				

2½in. ditto—

10	per gross	1	6	11	per gross	1	8
12	ditto	1	10	13	ditto	2	0
14	ditto	2	2	15	ditto	2	4
16	ditto	2	6	17	ditto	2	9
18	ditto	3	0	19	ditto	3	2
20	ditto	3	5	21	ditto	3	9
				22	ditto	4	0

2¾in. ditto—

11	per gross	1	10	12	per gross	2	0
13	ditto	2	2	14	ditto	2	4
15	ditto	2	6	16	ditto	2	9
17	ditto	3	0	18	ditto	3	6
19	ditto	3	9	20	ditto	4	0
21	ditto	4	3	22	ditto	4	9
23	ditto	5	2				

3in ditto—

12	per gross	2	2	13	per gross	2	4
14	ditto	2	6	15	ditto	2	9
16	ditto	3	1	18	ditto	3	10
17	ditto	3	6	20	ditto	4	6
19	ditto	4	3	22	ditto	5	6
21	ditto	5	0	24	ditto	6	3
23	ditto	6	0				

Brass Screws, including profit, but not fixing—

½in. ditto—

No.		s.	d.	No.		s.	d.
4	per gross	1	0	5	per gross	1	0½
6	ditto	1	1	7	ditto	1	3
8	ditto	1	5	9	ditto	1	7
10	ditto	1	9	11	ditto	2	2
12	ditto	2	4				

⅝in. ditto—

4	per gross	1	1	5	per gross	1	2
6	ditto	1	4	7	ditto	1	5
8	ditto	1	6	9	ditto	1	9
10	ditto	1	11	11	ditto	2	1
12	ditto	2	3	13	ditto	2	9
14	ditto	3	6				

¾in. ditto—

4	per gross	1	2	5	per gross	1	3
6	ditto	1	4	7	ditto	1	7
8	ditto	1	8	9	ditto	1	11
10	ditto	2	1	11	ditto	2	5
12	ditto	2	9	13	ditto	2	11
14	ditto	3	7	15	ditto	4	5
16	ditto	4	8	17	ditto	5	6

⅞in. and 1in. ditto—

6	per gross	1	9	7	per gross	1	11
8	ditto	2	1	9	ditto	2	3
10	ditto	2	6	11	ditto	2	10
12	ditto	3	2	13	ditto	3	6
14	ditto	3	11	15	ditto	4	4
16	ditto	4	11	17	ditto	5	6
18	ditto	6	3	19	ditto	6	11
20	ditto	7	9				

1¼in. ditto—

6	per gross	2	0	7	per gross	2	2
8	ditto	2	6	9	ditto	2	9
10	ditto	3	0	11	ditto	3	3
12	ditto	3	9	13	ditto	4	2
14	ditto	4	8	15	ditto	5	2
16	ditto	5	8	17	ditto	6	6
18	ditto	7	3	19	ditto	7	11
20	ditto	8	10				

1½in. ditto—

8	per gross	3	0	9	per gross	3	3
10	ditto	3	9	11	ditto	4	0
12	ditto	4	4	13	ditto	4	9
14	ditto	5	4	15	ditto	5	11
16	ditto	6	6	17	ditto	7	3
18	ditto	8	0	19	ditto	9	0
20	ditto	10	0	22	ditto	12	6

1¾in. ditto—

9	per gross	3	9	10	per gross	4	4
11	ditto	4	6	12	ditto	5	0
13	ditto	5	6	14	ditto	6	0
15	ditto	7	0	16	ditto	7	5
17	ditto	8	0	18	ditto	9	0
19	ditto	10	0	20	ditto	11	0
22	ditto	13	0	24	ditto	15	6

2in. ditto—

10	per gross	4	6	11	per gross	5	2
12	ditto	5	8	13	ditto	6	3
14	ditto	6	10	15	ditto	7	6
16	ditto	8	2	17	ditto	9	0
18	ditto	10	9	19	ditto	11	0
20	ditto	12	0	22	ditto	14	0
24	ditto	16	6	26	ditto	20	0

2¼in. ditto—

10	per gross	5	1	11	per gross	5	8
12	ditto	6	3	13	ditto	7	0
14	ditto	7	6	15	ditto	8	3
16	ditto	9	0	17	ditto	10	0
18	ditto	10	10	19	ditto	12	6
20	ditto	13	6	22	ditto	15	3
24	ditto	17	6	26	ditto	21	6

2½in. ditto—

12	per gross	7	0	13	per gross	7	6
14	ditto	8	2	15	ditto	9	0
16	ditto	10	0	17	ditto	10	10
18	ditto	12	0	19	ditto	13	0
20	ditto	14	0	22	ditto	16	8
24	ditto	19	0	26	ditto	22	6
26	ditto	27	6				

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2¾in. Brass Screws.

No.		s.	d.	No.		s.	d.
14 …………	per gross	9	0	15 ………	per gross	10	0
16 …………	ditto	10	9	17 ………	ditto	12	0
18 …………	ditto	12	9	19 ………	ditto	13	9
20 …………	ditto	15	0	22 ………	ditto	17	0
24 …………	ditto	20	0	26 ………	ditto	23	9
28							

3in. ditto—

14 …………	per gross	10	0	15 ………	per gross	10	7
16 …………	ditto	11	6	17 ………	ditto	12	7
18 …………	ditto	13	9	19 ………	ditto	14	10
20 …………	ditto	16	3	22 ………	ditto	18	9
24 …………	ditto	21	6	26 ………	ditto	25	0
28 …………	ditto	31	6				

Copper Screws, including profit, but not fixing—

½in. ditto—

No.		s.	d.	No.		s.	d.
4 …………	per gross	1	5	5 ………	per gross	1	6
6 …………	ditto	1	7	7 ………	ditto	1	10
8 …………	ditto	2	0	9 ………	ditto	2	3
10 …………	ditto	2	6	11 ………	ditto	3	2
12 …………	ditto	3	6				

⅝in. ditto—

4 …………	per gross	1	6	5 ………	per gross	1	7
6 …………	ditto	1	9	7 ………	ditto	2	1
8 …………	ditto	2	3	9 ………	ditto	2	6
10 …………	ditto	2	9	11 ………	ditto	3	0
12 …………	ditto	3	4	13 ………	ditto	4	2
14 …………	ditto	5	3				

¾in. ditto—

4 …………	per gross	1	8	5 ………	per gross	1	9
6 …………	ditto	2	1	7 ………	ditto	2	4
8 …………	ditto	2	5	9 ………	ditto	2	9
10 …………	ditto	3	1	11 ………	ditto	3	6
12 …………	ditto	4	0	13 ………	ditto	4	5
14 …………	ditto	5	2	15 ………	ditto	6	4
16 …………	ditto	7	1	17 ………	ditto	8	0

⅞in. and 1in. ditto—

6 …………	per gross	2	6	7 ………	per gross	2	9
8 …………	ditto	3	0	9 ………	ditto	3	4
10 …………	ditto	3	9	11 ………	ditto	4	2
12 …………	ditto	4	6	13 ………	ditto	5	0
14 …………	ditto	5	9	15 ………	ditto	6	4
16 …………	ditto	7	2	17 ………	ditto	8	1
18 …………	ditto	9	0	19 ………	ditto	10	0
20 …………	ditto	11	6				

1¼in. ditto—

6 …………	per gross	3	0	7 ………	per gross	3	3
8 …………	ditto	3	8	9 ………	ditto	4	0
10 …………	ditto	4	6	11 ………	ditto	5	0
12 …………	ditto	5	5	13 ………	ditto	6	0
14 …………	ditto	6	9	15 ………	ditto	7	6
16 …………	ditto	8	4	17 ………	ditto	9	6
18 …………	ditto	10	6	19 ………	ditto	11	6
20							

1½in. ditto—

8 …………	per gross	4	3	9 ………	per gross	4	9
10 …………	ditto	5	4	11 ………	ditto	5	11
12 …………	ditto	6	6	13 ………	ditto	7	3
14 …………	ditto	7	9	15 ………	ditto	8	6
16 …………	ditto	9	6	17 ………	ditto	10	9
18 …………	ditto	11	9	19 ………	ditto	13	0
20 …………	ditto	14	4	22 ………	ditto	17	3

1¾in. ditto—

9 …………	per gross	5	6	10 ………	per gross	6	0
11 …………	ditto	6	7	12 ………	ditto	7	9
13 …………	ditto	8	0	14 ………	ditto	9	0
15 …………	ditto	9	9	16 ………	ditto	10	9
17 …………	ditto	12	0	18 ………	ditto	13	3
19 …………	ditto	14	6	20 ………	ditto	16	0
22 …………	ditto	19	0	24 ………	ditto	22	9

2in. ditto—

10 …………	per gross	6	9	11 ………	per gross	7	9
12 …………	ditto	8	2	13 ………	ditto	9	0
14 …………	ditto	9	11	15 ………	ditto	11	0
16 …………	ditto	12	0	17 ………	ditto	13	3
18 …………	ditto	14	6	19 ………	ditto	16	0
20 …………	ditto	17	3	22 ………	ditto	20	9
24 …………	ditto	24	9	26 ………	ditto	29	0

2¼in. ditto—

10 …………	per gross	7	9	11 ………	per gross	8	4
12 …………	ditto	9	0	13 ………	ditto	10	0
14 …………	ditto	11	0	15 ………	ditto	12	0
16 …………	ditto	13	3	17 ………	ditto	14	6
18 …………	ditto	16	0	19 ………	ditto	17	6
20 …………	ditto	19	0	22 ………	ditto	22	6
24 …………	ditto	26	0	26 ………	ditto	31	0

2½in. ditto—

12 …………	per gross	10	0	13 ………	per gross	11	0
14 …………	ditto	12	0	15 ………	ditto	13	3
16 …………	ditto	14	4	17 ………	ditto	16	0
18 …………	ditto	17	3	19 ………	ditto	18	9
20 …………	ditto	21	0	22 ………	ditto	24	0
24 …………	ditto	27	6	26 ………	ditto	33	0
28 …………	ditto	40	0				

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THE REMAINS OF ANCIENT ROME.*

PROFESSOR J. HENRY MIDDLETON, Director of the Fitzwilliam Museum and Fellow of King's College, Cambridge, has done a useful service by revising his valuable work of "Ancient Rome in 1885 and 1888." Much of that work has been rewritten, and accounts of recent discoveries added, with several illustrations of value. Prof. Middleton laments justly the rapid obliteration of ancient and Mediæval features of the Eternal city, the spoliation of many of its beautiful gardens and vineyards, notably the famed Ludovisi Gardens; the transformation also of many picturesque streets by the speculative builder, and the erection of stuccoed boulevards. This pitiable destruction of historic streets and avenues, of the Ghetto, of the prati round the Castle of S. Angelo and other parts is an irredeemable loss to the antiquary and artist of every nation, though it has been the result of making Rome again the capital of Italy. As we noticed pretty fully the former work by this author, a brief reference to the present volumes must suffice. The first chapter describes the site of Rome, its physical aspects and building materials, varieties of marble, granite, and porphyry, the styles which took root and flourished; and here it may be said that Professor Middleton's work is the only one published in England that so thoroughly enters into the constructional and architectural features of ancient Rome, and on that account deserves the careful attention of the student of architecture. The natural production of quarries, the methods of construction in masonry and concrete, are described and illustrated with a completeness that leaves little to be desired. Chapter II. gives a very admirable summary of the varieties of masonry, the *opus quadratum*, the primitive kind of rectangular block building, and the concrete system, either faced or unfaced, forming the two chief systems of building used; the other kinds being mainly employed as thin facings, like the *opus insertum* and *reticulatum*. The blocks were mainly of *tufa* or *peperino* and *travertine*, all of which are described and are mentioned by Vitruvius. The arch of mixed travertine and peperino, built by Vespasian, is a good example; travertine was chiefly used for the voussoirs, the peperino for the walling, as in the arch of the Forum of Augustus, seen in Fig. 2. Tufa is admittedly the material first used, and required neither mortar nor clamps. Concrete walls were of later introduction, and of these the faced kind was with (A) *opus insertum*, in the 2nd and 3rd centuries B.C.; (B) with *opus reticulatum*, in the 1st century to end of Western Empire; (C) with *opus testaceum*, or brick, 1st century A.D. to end of Empire; and (D) *opus mixtum*, in 3rd century A.D. to end of Empire. These four sub-classes appear, therefore, in the chronological sequence given; but the unfaced concrete was common during all these periods, and generally for substructures, as we employ concrete now. The author gives a plan, elevation, and view of the method adopted in erecting concrete walls of the unfaced kind between wooden hoardings; the wall was, in fact, filled in or cast between the boarded partitions, the imprints of which and the upright posts still remain.

Lime, pozzolana, and small stones, or brick bats, composed the semi-fluid mass, with alternate layers of larger stones. Cross ties to keep in the boardings were used to resist the pressure of the mass till it had set. Thus the Romans used an apparatus like that employed by concrete builders now. Excellent engravings of the classes of faced work are given, showing the front appearance and section of the different kinds of wall, also of a concrete wall faced with triangular bricks, the points being laid inwards and the bond breaking joint. Arched structures of concrete and stone showing method of forming them, also cements and stucco, cement floors, mosaic floors, and marble linings of walls, are described and illustrated. Chapters III. to VIII. describe the prehistoric and regal periods, the remains of the Roma Quadrata and wall of Romulus, gates, the cloacæ, Palatine Hill, prehistoric and republican buildings, early temples and houses, Flavian Palace, the Forma Romanum, Capitoline Hill, &c., plans of which are given. The second volume deals with the Imperial Fora, the Circi, the theatres, the baths, and thermæ of Rome, the various buildings, tombs, triumphal arches, the water supply, the roads and bridges and walls of Rome. These are well illustrated, with plans and illustrations of the leading examples, sections of the hypocausts of the baths of Caracalla, &c. Professor Middleton has given us a handbook full of the latest research and learning.

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* The Remains of Ancient Rome. By Prof. J. H. Middleton. 2 vols. London and Edinburgh: Adam and Charles Black.

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EFFLORESCENCE ON BRICKWORK.

THE white salt-like exudation found on new brick buildings is, of course, well known to our readers as saltpetreing—a chemical action. Two German chemists have concluded that the efflorescence is due to the formation of sulphate of lime and sulphate of magnesia, owing to the coal used in firing the kilns, which contains sulphide of iron (iron pyrites), and which becomes decomposed in the kiln when the sulphur is oxidised and taken up by the bases, lime and magnesia of the bricks. Thus, bricks containing large quantities of carbonate of lime or magnesia are subject to this discoloration, as the bricks absorb a large percentage of sulphuric acid. When wood was used as fuel instead of coal this discoloration was not experienced. One German chemist attributes the inferiority of modern bricks to this sulphate, which causes a disintegrating action in the material by the alternate deliquescence and crystallisation that take place. As a remedy, it is suggested that the kilns should maintain a temperature of from 40° to 60° Centigrade at the early stage.

Other authorities say that sea-sand should be avoided as mainly the cause of the formation of chlorides; clay containing pyrites or much magnesia should not be used. By mixing the mortar with any fatty matter the evil may be reduced. Dampness is favourable to efflorescence. The causes, however, have been known to be mainly attributable to the fuel used in burning the bricks and lime—the coal fires, the sulphur from which converts the lime or magnesia in the clay into sulphates. Hence the value of burning the bricks with coke or wood. We see many recent red brick houses, gate piers, and viaducts, like that carrying the Chatham and Dover line through Dulwich, disfigured by this white efflorescence. Architects should be careful to specify the qualities of bricks—that they should be burned with fuel not charged with sulphur, or that the clay should be free, if possible, from pyrites or magnesia.

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BRISTOL CATHEDRAL.

WE have been requested by Mr. J. L. Pearson, R.A., to contradict the statement (copied from a local paper) that the late Mr. Street made plans for the restorations now proposed to be carried out to the above. No such plans were made by him, nor is there any record of what his ideas were on the subject.

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THE SURVEYORS' INSTITUTION.

THE following student candidates have passed the examination for the Professional Associateship:—

William Henry Bate, Robert Edwin Brinkworth, George Turville Brown, Reginald Ed. Campbell Burder, Charles Child, jun., Lionel Cooke, Charles Reginald Crookes, Edric Druce, Walter Robinson Elgar, Gillibrand Edwin Evered, Arthur Sherman Everett, Fred Finn, James Herbert Furmedge Foster, Thomas Frederick Haigh, Arthur John Hales, Francis Henry Hankinson, Frank Wilmot Jarman, Bernard Marr Johnson, George Edward Knight, Henry Little, Richard Percival Morris, Peter Arnold Ouvry, Frederic William Parker, †Herbert William Rafferty, Thomas Scott, *Gerald Robert Squire, David Wilkinson Weatherhead, William Henry Wells, Ernest Victor Whitaker.

* Institution Prizeman, 1892. † Special Prize, 1892.

The following non-student candidates have also passed the examination for the Professional Associateship:—

John Parnell Allen, Frank Amos, Geoffrey Lionel Barker, Septimus Bevan, David Thomas Davies, Frank Bridgewater Debenham, Albert Edward Ellis, Alfred Flight, Solomon Ford, Charles Edward Fox, Gilbert Gardner, ‡George German, jun., Henry Jenner Griggs, George Thomas Hellicar, Thos. William Jarrett, Percy Johns, John Archibald Lucas, Henry Robert McCarthy, Alfred Thomas Macer, John Maughan, James Henry Mellenfield, Robert Menzies, Robert Heath Mew, George Frederick Miller, Hugh Kenneth Morrish, Samuel Frank Newman, Charles Ovenden, Herbert Alexander Prall, Richard Arnold Price, Henry Herbert Skipper, Edward Morgan Dawson Thomas, John Edward Tory, Alfred John Meybohn Venning, John Henry Wheeler, George Stauton Wing, John Hayes Wilson, Arthur George Woods.

‡ Driver Prize, 1892.

The result of the Fellowship examination will, it is hoped, be announced this day week.

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The parish church of Llangeinor, Diocese of Llandaff, is about to be restored. The restoration will include the part rebuilding of the tower, now in ruins, the reparation of the old principals, and restoration of the roofs throughout in oak, together with the lengthening of the chancel. The work will be carried out from the designs, and under the superintendence, of Messrs. Halliday and Anderson, architects, of Cardiff.

The sudden death is reported of Mr. Thomas Barnes, arbitrator and surveyor of timber, who at one time occupied a prominent position in Bristol, but has lately been residing in London. Deceased was second son of the late Alderman F. K. Barnes, of Bristol, and was for some years head of the firm of F. K. Barnes and Sons, who were the largest timber importers in Bristol. Mr. Barnes was Mayor of Bristol in 1873-4, and was a Past Master of the Society of Merchant Venturers. Death resulted from pneumonia at the age of 66.

Building Intelligence.

Church Restoration in Glamorganshire.—A group of four small village churches in Glamorganshire are now undergoing restoration entirely at the cost of Miss Olive Talbot, of Margam, from the plans of Mr. George E. Halliday, of the firm of Messrs. Halliday and Anderson, architects, of Cardiff and Llandaff. From the first of these, Nicholaston parish church, Gower, we gave last week illustrations of the quaint oak cornices in the chancel, now being restored by Mr. W. Clarke, carver, of Cardiff. This church, 47ft. long, with a chancel 12ft. by 14ft., is of Norman origin. The piscina, holy-water stoup, and one Early window still remain. The opening leading to the rood-loft has been discovered during the present restoration, with a portion of the old door-frame remaining *in situ*. The tower of Llangeinor parish church, now in a ruinous condition, is to be restored on the old lines. The peal of four bells will be replaced, and the nave and chancel are also undergoing restoration. The picturesque little village church of Bettws practically dates from the 15th century, the 12th-century holy-water stoup being the only evidence at present brought to light of there having been an earlier building. A north aisle is being added. The oak principals, which were in an unsafe condition, are being repaired, and will be replaced in the position which they have occupied for the last 300 years. Llangynwyd parish church dates from the 12th century, but was evidently enlarged during the early part of the 13th century.

Dundicheock Church, Devon.—We are informed that the particulars respecting tenders for this work which appeared last week in another column were incorrect. They were sent us by Mr. H. Read, whose tender was, we understood, accepted. We are now referred to a statement in the *Western Times* of the 11th inst., from which it appears that two parties were asked to give estimates, and these proved as follows:—Mr. Read: Putting in bay at south end, £50; repairing old work, £60; new doors to chancel and Lady-chapel entrances, £36; new groining, £85—£231. Mr. Harry Hems's estimate proved £31 lower than this: Putting in bay at south end, £40; repairing old work, £15; new doors to chancel and Lady-chapel entrances, £25; new groining, £120—£200. Correspondents who are good enough to send us lists of tenders must kindly see all particulars are accurate, and not subject us to subsequent necessary correction.

Madras.—The new High Courts in Madras, the largest block of buildings in the Presidency, which have been in course of construction for the past three years, are approaching completion. The style adopted is a blending of Hindu, Saracenic, and Gothic, and the buildings are executed in red brick with much stone carving. The plan is double transepted, and in the centre is a dome with lantern rising to a height of 162ft., and which will be illuminated at night. It has to serve as a lighthouse for shipping. Mr. Brassington designed the courts, which are being carried out by Mr. Stephens, under the supervision of Mr. Irwin, consulting architect to the Government.

Paisley.—The memorial stone of the new Original Secession Church, now in course of erection in Wellmeadow, Paisley, was laid on Saturday. The church is in the Gothic style, and is being built of Auchinlea stone. It will be seated for 500 persons, while underneath the church there will be three halls, capable of accommodating 60, 80, and 350 respectively. Owing to the site being between two tenements, no light can be obtained from the sides; but, besides a two-light window in the frontage and a three-light at the south end, there will be a large amount of borrowed light from the roof. The entrance is from Wellmeadow by a flight of ten steps, leading to a vestibule, from which there are two passages to the area seats. The interior of the church will be finished in red pine. At the south end a small building will be erected, attached to the main edifice, and will comprise the minister's vestry, ladies' room, and heating apparatus. The whole structure, which, it is expected, will be completed by September, is estimated to cost about £3,000, exclusive of the site. Mr. T. G. Abercrombie, Paisley, is the architect, and Messrs. Milligan are the contractors.

Wrexham.—At a vestry meeting held at the parish church, Wrexham, on Monday, a discussion took place as to the plans and report prepared by Messrs. Middleton, Prothero, and Phillott, of Cheltenham, showing the repairs necessary or desirable to keep the fabric in good condition, and the additions which would make it more convenient for Divine service. Sir Robert Cunliffe having read the report, a Mr. Palmer said it was quite clear that the effect of the proposed alterations would be to deface and destroy the building. He read a letter from the secretary of the Society for the Protection of Ancient Buildings stating that the committee of that society is of opinion that the alterations will be very harmful to the building, as they will alter the ancient plan of (what is unusual) a complete church of Late date, and that the right course would be to leave the old church unaltered, and to build a new church on a fresh site. Mr. Oswell Bury moved "that the further consideration of the plans and report now read be postponed for two months, and that the wardens obtain in the mean time an elevation and plan of the proposed alterations at the east end, and also consult a leading organ builder as to the advisability of removing the organ from the west to the east end of the church." Sir R. Cunliffe said that the committee of the Society for the Protection of Ancient Buildings had not seen the plans, and it would be well for them to know a little more about what was proposed to be done before they condemned the proposals. An amendment was proposed "that the extension of the north and south aisles is entirely unnecessary, and would be a great disfigurement to the church." A working-man parishioner seconded the amendment, but the original resolution was carried by a large majority.

CHIPS.

The parish church of New Wortley has been enriched by the erection of a stained-glass window (the first in the church), consisting of three lights and tracery. The subjects illustrated are—first light (counting from the entrance), "Christ with the Doctors"; centre light, "The Baptism"; and the third light, "Christ blessing little children." The subjects are surmounted by canopies on a background of ruby. The window is from the studio of Messrs. Kayll and Company, Albion-street, Leeds.

Last week, at the Guildhall, Conway, Colonel C. H. Luard, R.E., Local Government Inspector, held an inquiry into the application of the town council for sanction to borrow £2,500 for works of gas—a new gasometer, scrubbers, exhausters, and new mains. Mr T. B. Farrington, C.E., borough surveyor, detailed the requirements.

Billington Church, Yorkshire, was reopened last week after partial restoration. Mr. Temple Moore was the architect, and Messrs. Padbury Brothers, of Scarborough, were the contractors.

The parish church of Bettws, Diocese of Llandaff, is at present being restored, and a north aisle and vestries are also being added. Messrs. Halliday and Anderson, of Cardiff and Llandaff, are the architects.

Mr. John Shewell Corder, architect, of Ipswich, has been appointed Deputy-Assistant Inspector of the Schools of Science and Art in the Suffolk district.

In the case of Edwin Hirst and Matthew Hirst (trading as Hirst and Sons), Sunderland and Birtley Quarry, near Chester-le-Street, builders and contractors, the discharge from bankruptcy has been suspended for five years.

Mr. W. H. Seth-Smith, P.S.A., presided on Friday at the annual distribution of prizes to the inmates of the Home for Working Boys, residents of Pelham House, 7, Spital-square, Bishopsgate, which, as we have recently stated, is about to be rebuilt from Mr. Seth-Smith's designs.

The Chiswick local board are laying the whole of the Chiswick High-road with wood paving, and at the same time the West Metropolitan Tramways Company are placing a double line of tram rails through the entire length of that road to Kew Bridge.

The premises of Mr. J. Greenwood, builder, of Glengall-road, Old Kent-road, S.E., were greatly damaged by fire on Good Friday, the cause being officially stated to be friction of machinery.

The will of Mr. Thomas Henry Maudslay, late of Knight's Hill, Lower Norwood, retired engineer, who died on the 14th ult., has been proved, with personalty valued at £30,500.

The drainage commissioners for Somersetshire have appointed Mr. Larway, of Grimsby, as their engineer, at a salary of £370 a year. There were 90 candidates for the appointment.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

Birmingham Architectural Association.—A meeting of the above association was held on Tuesday week at the Birmingham and Midland Institute, the President, Mr. W. Hale, F.R.I.B.A., being in the chair. The following gentlemen were elected as officers for Session 1892-93. President, W. Hale, F.R.I.B.A.; Vice-president, F. Barry Peacock; Hon. Treasurer, C. E. Bateman; Hon. Librarian, H. Beck; Hon. Secretary, Herbert R. Lloyd, A.R.I.B.A. Council: W. H. Bidlake, M.A., A.R.I.B.A.; H. H. McConnal, A.R.I.B.A.; W. Hawley Lloyd, T. Naden, H. Rawson Bewlay, S. F. Harris, and C. Silk. Mr. C. E. Bateman then read a paper on "Castle Bromwich Church," in which he described with considerable minuteness the discovery which he has recently made, that within the 18th-century pseudo Classical buildings are the remains of a much earlier Gothic church, which was apparently chiefly, if not entirely, a timber building. The remains of this earlier church which are still in site are the roof of the nave, with its supporting oak columns, clerestory, and gable ends, all framed of extraordinarily massive oak timbers, the present nave being merely a plaster case to the earlier work, with aisles and chancel probably built on the lines of the original aisles and chancel; but in brick and stone, in the fashion of the 18th-century, in place of the timber Gothic work. Mr. Bateman illustrated his paper with an elaborate series of measured drawings of the church, and gave extracts from the parochial accounts, proving the dates of the various works carried out from time to time. A vote of thanks, proposed by Mr. Newton, was supported by Messrs. Bidlake, Naden, Doubleday, Harrison, Peacock, and Hale, who each referred to the great value of the discovery made by Mr. Bateman, and to its great interest to both architects and archæologists.

Glasgow Master Wrights' Association.—The annual meeting was held on the 11th inst. in the office of the secretary, 64, West Regent-street, Glasgow—Mr. James Inglis, president, in the chair. The directors' report, with the treasurer's statement, were adopted. Mr. Thomas Kay was appointed president, Messrs. William Livingston and Archibald M'Farlane, vice-presidents; and Jas. L. Selkirk, C.A., 64, West Regent-street, secretary and treasurer.

The town council of Walsall have finally decided in favour of the Park-street site for the proposed town-hall. A curious memorial was presented against the adoption of the site from the architects of the town, who represented that the Park-street site was unsuitable, because it was surrounded by streets, the traffic along which would be an annoyance to those using the hall, and that a vastly increased cost would be entailed by the ornamentation which would be necessary on every side of the building. They suggested the desirability of obtaining a site which would afford room for the erection of additional municipal buildings, and for the extension of the hall, if required.

The Halifax Corporation have received intimation from the Local Government Board that the scheme for the extension of the borough was approved. The present borough of Halifax is one of the most densely populated in Yorkshire, the area being 3,705 acres for 82,864 people. Nearly all the available building land has been covered, and the Corporation have now added the district previously under the jurisdiction of the Ovenden Local Board, the School Board for the same township being also annexed to Halifax. The Ovenden district lying to the north-west of Halifax is of larger area than the borough, covering 4,504 acres, with a population of 6,969. Some of the corporation reservoirs are in that district. The total area of the borough will now be 8,209 acres, and the population 89,833.

The sculptor, Heinrich Natter, died in Vienna of heart disease, aged 48, on Wednesday last. Natter was by birth a Tyrolese, and in his youth earned his livelihood as an ordinary wood-carver, working especially on figures of Christ. In this occupation he gained enough to allow him to study and travel. While in Italy he came into contact with an Englishman, who became his patron, and extended his liberality to the gifted young sculptor. Natter afterwards settled in Munich. His later works include the memorial to Walther von der Vogelweide, erected in Bozen; the Zwingli monument at Zurich; the statue of Haydn, in front of the Mariahilfer Kirche, in Vienna; and the monument to the Tyrolean hero, Andreas Hofer, which is still in the foundry, where it is to be cast in bronze.

COMPETITIONS.

Paisley.—Mr. William Dunn, M.P. for Paisley, has examined the fifteen sets of competitive plans for laying-out and ornamenting the open space at the Cross purchased from the town council by him for £4,000. The estimates propose sums of expenditure varying from several hundreds to £5,000. The ground is sloping in character, and the plans provide for a terrace at the north end on a level with the High-street, on which statues of the late Sir Peter and Thomas Coats would be placed. The remainder of the ground generally it is proposed to lay out in ornamental style round a fountain or bandstand. The space when laid off will be a foreground for the Clark Town Hall.

Penrith.—The designs under motto "Experience" have been selected as the best by the school board for their new schools to be erected in Brunswick-road, Penrith, from amongst 16 sets of plans submitted in open competition. The author was found to be Mr. Geo. D. Oliver, of Carlisle, who has been appointed architect for the buildings.

CHIPS.

Among the receiving orders in bankruptcy announced in Friday's *Gazette* the names appear of Samuel Healey, Milton-road, Bow, builder; Henri Charles Joseph Henry, St. James's-street, Piccadilly, S.W., art decorator; and John Smeaton (trading as Smeaton, Son, and Co.), Great Queen-street, Lincoln's Inn-fields, W.C., sanitary engineer.

The county council for Staffordshire have finally selected, as the site for the third lunatic asylum, land at Chaddington, about seven miles from Hanley. The asylum will serve the northern part of the county.

The East Cowes local board have instructed Mr. James Lemon, C.E., of Southampton, to prepare specifications for a water supply.

The funds for the construction of the Wrexham and Ellesmere Railway have at length been raised. The contractors, Messrs. Davis Brothers, of Wrexham, have had orders to proceed, and the work will be begun in about a fortnight at both the Ellesmere and the Wrexham ends.

A church, to seat 400 adults, is about to be built at Abergwynfi, Diocese of Llandaff. Messrs. Halliday and Anderson, of Cardiff and Llandaff, are the architects employed.

The dissolution of partnership is announced as between Messrs. G. Lansdown and Harris, Warwick-street, Charing Cross, architects and surveyors.

The Coventry Town Council adopted at their last meeting a report presented by the Estates Committee, recommending the erection of a fireproof muniment-room, in accordance with plans prepared by Mr. Edward Burgess. The building will be erected on vacant ground against the kitchen of St. Mary's Hall, its estimated cost is £1,200, and it is intended to form part of the larger scheme of municipal offices, for which preparations have been made.

A new bank is about to be built for James Ashby at Godalming. Mr. T. H. Nixon is the architect, and Messrs. Wheatley and Sons, of Molesey, have taken the contract at £2,030.

One of the two-light clerestory windows on the south side of the choir of St. Giles's Cathedral, Edinburgh, has just been filled with stained glass. In the one light is placed the arms, and in the other the crest, of the Worshipful Goldsmiths' Company, surmounted by their motto—"To God only be all glory." These are placed within canopied ornament. The work was executed at the studios of Messrs. Ballantine and Gardiner, George-street, Edinburgh.

The Guildford rural sanitary authority have, by the casting vote of the chairman, adopted plans by Mr. C. N. Lailey, C.E., for the drainage and sewerage of Woking. About nine acres of land in Tinkler's-lane will be taken for irrigation purposes.

The Mary Orrell Higginbotham Memorial Home for Nurses in Bath-street, Glasgow, was formally opened on Tuesday. It occupies the site of the dwellings, which have been remodelled at a cost of £2,600, exclusive of £3,250 paid for the premises. It will accommodate 82 nurses.

The sawmills at Bishop Auckland, belonging to Mr. W. Hudson, which were only recently erected, and which contained valuable machinery and a large stock of timber and finished goods, were destroyed by fire on Saturday night. The damage is estimated at £3,000.

The Grammar School, Beverley, is being warmed and ventilated by means of Shorland's patent Manchester grates, the same being supplied by Mr. E. H. Shorland, of Manchester.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. Passmore Edwards.

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One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 0d. (or 6dols. 30c. gold). To France or Belgium, £1 6s. 0d. (or 33fr. 30c.) To India, £1 6s. 0d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two the minimum charge being 5s. for four lines.

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Front Page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No front page or paragraph Advertisement inserted for less than 5s.

Situations.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is One Shilling for Twenty-four Words, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., L., LI., LIII., LIV., LVIII., LIX., and LX. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

Received.—J. R. F. Co.—B. Atkinson.—G. and T. Co.—F. R. G. S.—M. T. (Gloucester).—S. M. and R. Co.

"BUILDING NEWS" DESIGNING CLUB.

Drawings Received.—"Old Postage Stamp," "Sphinx"

T. W. M. (Stucco—the *opus albarium*, used by the Romans, who employed it for the raised decorations of their buildings, as in the Baths of Titus at Rome—is a ductile paste made of pulverised marble mixed with lime and water and readily manipulated before it sets for surface ornament. It does not imply "sgraffito" work necessarily, which consists of layers of plaster of various colours, the enrichments being formed by scraping away the lines of the design in the outer coatings of plaster, so as to display the colours below as required.)—Cosmos. (The next subjects for competitions will be given next week.)—Postage Stamp. (See illustrations of Post-office given to-day.)

Correspondence.

A STUDENTS' BRANCH OF THE S.A.

To the Editor of the Building News.

Sir,—There is going to be a split in the Architectural Association—worse luck! It is inevitable, if the section which at present has the upper hand has its way, and I think it will have, and that the Association of which we have all been so proud will suffer and dwindle.

Is it not time that the Society of Architects did something to prepare to fill the blank that will be left?

If rumour is correct, it will have a President next year who has already busied himself to good purpose with Architectural Education. Let Professor Banister Fletcher still further pursue the path he has entered on, and make it his business to formulate and carry out my suggestion.

I would propose that the Society forms a students' branch, *free of all subscription*, and gives the students the use of its hall one night a fortnight, and the run of its library. Classes should be formed on the basis of those of the A.A. at the lowest possible rates, and so a students' society might be built up, which in time would form a feeder to the ranks of the S.A., and a boon to the young architectural students of the kingdom.—I am, &c.,

An Ex-member of the S.A. Council.

CAIRO DRAINAGE COMPETITION.

Sir,—The short paragraph in which you announce the result of the above matter is singularly suggestive of unfair treatment of the thirty "unbelievers" who were credulous enough to send in designs in the belief that the matter was to be carried out under the auspices of the English Government, and would therefore be fair, square, and above-board. The result, so far, falls a long way short of any of these terms. Put into plain language, it seems that, after keeping these thirty designs for three months, these two favoured Government employés, doubtless with free access to them, are enabled—with the accumulated experience so gained—to evolve a scheme which should command the approval of their employers, and so "dish" the thirty unbelievers. This may be in accordance with the ethics of Egyptian thought in such matters. If bad faith thus characterises the initial stage, what may be expected when the financial side of the subject comes to be considered? This initial stage having been inaugurated by a Turk and a Welshman, it only needs the further association of a Levantine Greek to do the finance, and the scheme is complete, armed at all points, calculated to inspire confidence, and with prospect of much ultimate reward to "the faithful."

The scheme which these two ingenious gentlemen have evolved is, so far as the particulars of it have been allowed to transpire, identical with my own in all essential features—doubtless many of the thirty competitors may say the same—and with perhaps equal justice. Speaking for myself, I must admit I was wrong to waste time, thought, and money in preparing a scheme at all, on such doubtful basis as that of Egyptian good faith and credit, and certainly should not have done so but for the understanding that the competition was to be conducted under the auspices of English Government officials, who are supposed to know that official competitors, with their local influence and opportunities, make a competition a foregone conclusion.

One of the Deluded.

Intercommunication.

QUESTIONS.

[10761.]—**Coal Storage.**—Information is requested as to factories where coal is stored in bulk over a range of engine boilers with furnaces of the usual type in this or other countries. Where can such be seen?—S.

[10762.]—**Heating of Church.**—I am interested in the heating of a large old church in which, although the existing hot-water heating apparatus seems in itself to work satisfactorily, a cold down-draught is experienced by the congregation. The building is fairly lofty, the roof tiled and not ventilated, and the spaces between the rafters filled with boarding. Presumably the down-draught is simply the falling of the heated air after contact with the cold roof area. I have some recollection of reading several years ago in one of the building journals an interesting correspondence as to a similar case successfully dealt with, and overcome by, so far as I can remember, some system of roof ventilation. Should any of your readers be able to refer me to the correspondence I have named, or having successfully treated any similar case, would generously state their experience, it would be most acceptably received by—M. J. L.

[10763.]—**Bills of Quantities.**—In making out bills of quantities for flooring, is it usual to add to the measurement between the walls for the tongued and grooved flooring boards a dimension to make up for the loss sustained by making tongues to the boards? Is there any reliable authority on the subject? Do you know of a local rule, or place where the allowance is given in the quantities? I understand most contractors allow for it in the pricing out.—M. A. R.

REPLIES.

[10757.]—**Surveying.**—Set out 3 acres, sides as 3 to 2 $(3x \times 2x = 30 \text{ chains}) = (6x^2 = 30) = (x^2 = 5) \div x = 2{\cdot}236$ $2x = 4$ chains 47·2 link $+ 3x = 6$ chains 07·8 link.—H. B., Birkenhead.

A Masonic ceremonial characterised the laying of the foundation-stone on Monday of a memorial porch to the old church of St. Mary's-on-the-Hill, Chester, by Lord Egerton, P.G.M. The architect is Mr. T. M. Lockwood, P.P.G.S.W.

An inquest was held at Blaenavon on Saturday on the body of Charles Stone, a plumber, belonging to Birmingham, who murdered his wife at Blaenavon on Tuesday, and then cut his own throat. The jury returned a verdict of *felo de se*.

Legal.

OWNERS AND PARTY-WALLS.

THE definition of an "owner" in the Metropolis Building Act, 1855, and in other similar statutes, has given rise to numerous decisions in the Courts. Where this difficulty is complicated with questions about party-walls, its settlement is still more troublesome. The latest case of this kind is that of "Wigg *v.* Lifebore" (*Times*, April 8), when Mr. Justice A. L. Smith gave an important judgment, reviewing the earlier authorities. The facts were that the plaintiff, as undoubted owner of No. 97, Curtain-road, Shoreditch, sued the defendant, as legal "owner," within the Act, of No. 99, the adjoining house, for a moiety of the expense he had incurred in rebuilding the party-wall between, which had been condemned as dangerous by the County Council. The facts were admitted, and the only point at issue was one of law—whether the defendant was rightly sued as an "owner" who would be liable to rebuild a party-wall or pay his moiety. It appeared that the defendant was lessee of 99, Curtain-road, under a lease for 35 years from 1876, at £60 per annum; but that in December, 1888, he sublet the premises to a firm now in occupation by lease for 14 years, at a rental of £90. It was argued that the defendant, as the person receiving the whole rent of the house, was the "owner" within the meaning of the Act of 1855, and so liable to pay his half of the expenses of rebuilding the party-wall.

On the other hand, the defendant's contention was that he had leased the whole premises to the present occupants, and thus they were the owners, and so were liable to the plaintiff. Mr. Justice A. L. Smith pointed out that the interpretation clause, which defined the "owner" as being the person in possession or in receipt of the whole or part of the rent, or in occupation other than as tenant from year to year, covered various persons, including the freeholder, his lessee, or any sub-lessee; and so that with this clause must be read, s. 97 as to party-walls, which stated that "the owner immediately entitled in possession to such premises, or the occupier thereof shall, in the first instance, pay such expenses." Now, the defendant was not so entitled to possession of the house, for he only took it upon the expiration of the term he had granted, so that he did not come within the section as an owner immediately entitled to possession of the premises. The judge quoted a dictum from an earlier case to the effect that "If there is a person in occupation other than as tenant from year to year, that person is made a statutable owner." In the result, therefore, judgment was given for the defendant on the ground that he had been wrongly sued as owner. The plaintiff must bring another action against the defendant's lessees as adjoining owners liable for moiety of the party-wall; while the question whether or not they have any claim upon the defendant their lessor will depend upon the terms of their lease.

Fred Wetherfield, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

Eaves Drop.—You have no legal right to an eaves drop over your neighbour's land, though such a right can, of course, be acquired by prescription and long user.

Agreement.—Committee.—It would be better signed by all the members of the committee, unless one or more can do so as agents for and to bind the remainder.

A. H.—Contract. — Quantities. — Extras. — The builder would be bound by the contract he has signed, unless he could show that there were mistakes by which he was misled, so that the extra works in question were not covered by the clause in his contract.

One in a Fix.—Building Land Restrictive Covenant.—This is really too complex a case for a brief answer here. But under the circumstances of B.'s having stood by and allowed things to go on, he could certainly only claim damages to the limited extent suggested; if, indeed, so far.

◆

A new public hall has been erected at Ashington, and special attention has been paid to the ventilation, which is carried out on the Boyle system, the latest improved form of the self-acting air-pump ventilator being adopted for the extraction of the vitiated air, and fresh air admitted by their improved air inlets.

LEGAL INTELLIGENCE.

An Unsuitable Quarry.—Fish and Company v. George and Another.—At the Glamorganshire Assizes, on the 12th inst., this action was tried, in which plaintiffs claimed £2,711 damages, whereas defendants made a counter claim of £3,891 7s. 9½d. The plaintiffs, who were builders and contractors at Preston, entered into a contract with Isaac George and others (who represented a building society at Mountain Ash) for the purpose of building 81 houses by contract. One of the terms of the agreement was that the contractor should quarry the stone required free of royalty from a quarry near the site. On the 23rd April the plaintiffs commenced work. After the contract had been signed, the plaintiffs wrote to the defendants to point out the quarry as per agreement. The latter subsequently pointed out a little gully, from whence it had been absolutely proved they could only get rubble stone, unsuitable for building purposes, and that even this stone could only be got at the exorbitant price of 6s. per cubic yard. The plaintiffs had been put to extra expense in opening the quarry. The plaintiffs had repeatedly asked to be put on to another quarry, and also for compensation, without result, and they had consequently discontinued the work, and now brought their action for damages. His Lordship, in delivering judgment, said that there was not such a failure on defendants' part to carry out stipulations as to justify the other side in rescinding their part of the contract. It seemed to him that it was a matter which the parties should come to an arrangement about. After a long consultation, the cause was withdrawn by consent, the Judge giving an order for £25, if necessary, which the defendants undertook to pay.

Balconies and the Building Act.—Messrs. B. Finch and Co., engineers, of Belvedere-road, Lambeth, were summoned on the 13th inst., at the instance of Mr. E. Dru Drury, the District Surveyor for Westminster, for erecting a balcony projecting beyond the general line of frontage at the Albert Hotel, Victoria-street, without having obtained permission of the London County Council. Mr. Glasier, who appeared for the defendants, said the hotel and bar premises were large, many servants were employed, and what was really being put up over the balcony was a patent fire-escape. His contention was that the permission of the County Council was not needed, for the balcony in question did not extend beyond the general line of fronts in the street.—Mr. Shiel: On that point the superintending architect's certificate is final.—Mr. Glasier: We say that the line never has been defined as regards Victoria-street.—Mr. Shiel said that there was a case reported that day reiterating the decision of the Appeal Court in the case of "Bardwell v. The Vestry of St. Mary Abbotts, Kensington." It was there laid down that the architect's certificate was final, not only as to the street where the house is, but as to the general line. Had the district surveyor got the necessary certificate? Mr. Dru Drury said he had not. Mr. Shiel: Then you can't go on. By arrangement the case was then adjourned for four weeks.

In re W. Needham, of Loughborough.—In the summary of affairs under the receiving order made against William Needham, builder, of Loughborough, the total liabilities are returned at £5,214 12s. 10d., of which £1,693 16s. 7d. is owing to unsecured creditors, £3,372 2s. 6d. to fully secured creditors, and £110 17s. 6d. to creditors partly secured. The amount expected to rank for dividend is £1,704 14s. 1d., against net assets £656 7s. 8d., leaving a deficiency of £1,048 6s. 5d. The debtor explains his failure by a falling-off of business, owing to the depression in trade in the district. The Official Receiver reports that the debtor started in business in Loughborough in 1869, with a capital of £50 only. An offer of 7s. 6d. in the pound has been made, payable by three instalments.

In re David Storer.—An application has been made for the discharge from bankruptcy of David Storer, of Wharf-road, Millwall, Poplar, residing at Blackheath, Kent, lately of Wharf-road, Millwall, aforesaid, Billiter-avenue, E.C., Glasgow, and Sydney, New South Wales, some time trading at Thorn Mill, Johnstone, Renfrew, Scotland, paint manufacturer and merchant, lately trading in co-partnership with John Storer, Thomas Storer, and William Storer as David Storer and Sons. The discharge has been suspended for two years.

Re John Riddel.—At the Liverpool Bankruptcy Court on the 11th inst., the debtor, who had carried on business in Shaw-street, St. Helen's, as a contractor, came up for public examination. The total liabilities were £13,624, of which £7,127 was expected to rank, and the assets were £7,164, less £36 to preferential creditors. Of the assets, £1,144 was set down as retention money on a contract held by the St. Helen's Corporation, and £5,757 for balance of a contract and extras due by the St. Helen's Corporation. The debtor started business in 1875 as a stonemason at Widnes. His capital then was about £60. He filed a petition for liquidation in July, 1881, with debts amounting to £508. He went in 1882 to Birkenhead, where he remained until 1890, when he removed to St. Helen's, and started there as a contractor. While at Birkenhead he had in hand several flagging contracts for the Corporation, and at St. Helen's he entered into a contract for the corporation of that town to construct an intercepting sewer. The amount of that contract was £17,372 8s. He attributed his failure to the losses on this contract. When he entered into this contract he had a capital of about £300, but it was not immediately available. His entire claim for the contract and extras amounted to £23,721, of which he had received £15,493, leaving a sum of £8,228 due to him at the completion of the contract. The corporation only admitted that £1,417 was due to him, in addition to retention money, amounting to £1,144. The examination was adjourned to the 5th May.

In re E. Ackerman, of Cardiff. — A first meeting of the creditors of Edward Ackerman, builder, of 72, Clare-road, Saltmead, Cardiff, was held last week. The gross liabilities are £2,351 8s. 9d; expected to rank, £832 4s., leaving an estimated surplus of £605 2s. 3d. The assets fully secured are put at £832 4s. The debtor alleges as the causes of his failure want of capital, inability to realise leasehold properties, and pressure from creditors. The debtor commenced business as a jobbing painter some years ago without capital, taking contracts for builders, and in August, 1891, he started as a speculative builder, money being borrowed as the work proceeded. No resolution was passed, and the meeting was adjourned.

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CHIPS.

Next Monday evening a meeting of the older members of the Architectural Association is to be held to consider whether and what steps shall be taken with reference to the matter raised by Mr. T. G. Jackson's letter published in the April number of "A.A. Notes." Mr. Cole A. Adams, Past-President of the Association, has convened the meeting. The communications which we have printed in the last two numbers of the Building News have already attracted considerable attention.

The Glasgow District Lunacy Board have finally adopted plans for the new asylum at Hawkhead. The estimated cost, after knocking off £18,000 for features which can be dispensed with, is £102,000.

A stained-glass window and reredos at the east end of the new church of Lockerley, Hants, were dedicated last week. The centre light shows Our Lord's Passion by the Crucifixion and the carriage of the cross beneath it; the dexter light, His Baptism by St. John, and beneath is the Blessing of Little Children; the sinister light, the Resurrection; beneath, the angel, seated on the tomb, addressing the holy women. The cost of the window was £240. The reredos comprises a centre compartment with a base of Caen stone. The super-altar is of polished red Devonshire marble; above this is a sculptured representation of the Lord's Supper, after Leonardo da Vinci, in statuary marble, under an arched canopy of alabaster, carved and moulded. On either side are niches of veined alabaster, and in each niche is an angel in white alabaster. On the north and south sides are arcades in Caen stone with clustered columns of Purbeck marble, in four panels of which will be painted on a gold ground, by Hardman, four figures. The design is by Messrs. John Colson and Son, of Winchester, and it has been executed by Mr. N. Hitch, of London. The cost is £375.

As had been generally anticipated, the President of the Local Government Board has appointed Dr. R. Thorne Thorne, F.R.S., to be principal medical officer of the board, in succession to Sir George Buchanan, F.R.S., resigned.

St. Paul's Church, Hooton, has just been further improved by the addition of a stained-glass window containing life-sized figures of St. Luke and St. Elizabeth. The work has been carried out under the direction of Messrs. Rumney and Co., of Bold-street, Liverpool.

The newly-formed local board for Knottingley, in the West Riding, have appointed Mr. T. H. Ingle, of that town, as their surveyor from among 45 candidates.

In the case of the application for discharge from bankruptcy made by Walter Fitter and Henry Walter Ankrett (trading as Fitter and Ankrett), Wolston, Warwickshire, builders and contractors, the discharge has been suspended for two years ending March 15, 1894.

The scheme for providing a cottage hospital for Dumfermline is taking definite form. About £8,000 has been subscribed, and on Monday a building committee was appointed, with power to procure plans.

New Baptist schools, erected at a cost of £1,150, were opened at Bourn by Dr. Clifford on Monday. The schools were built by Mr. Chappell, from the designs of Mr. Shilcock, architect, of Bourn.

WATER SUPPLY AND SANITARY MATTERS.

Inverkeithing and Aberdour Water Supplies.—Portions of Aberdour have suffered from a famine of water during the visitors' season of the past two years, and last year a lengthy litigation was fought out in Dumfermline Sheriff Court between the local authorities of Aberdour and Inverkeithing, it being alleged that the scarcity arose from the abnormal pull made daily for the trade supplies of Inverkeithing. The matter was ultimately compromised, and a remit was made to Mr. W. D. Parker, C.E., Glasgow, and Mr. R. C. Reid, C.E., Edinburgh, to inquire and report as to the best means of improving the supplies for both places. At a meeting of the Inverkeithing Town Council last night, the engineers' report was submitted. They recommended (1) that the tank at Castlandhill, from which present supplies are drawn, should be divided into two compartments by a water-tight wall, the one compartment to have a capacity of 22,600 gallons, and to be set aside for Aberdour, and the other to have a capacity of 33,800gals., and to be allocated for the supply of Inverkeithing; (2) that a 4in. pipe be laid from Aberdour compartment to join Aberdour pipe at the point past the burgh of Inverkeithing, so as to give Aberdour an independent supply; (3) that the cost of the works, estimated at £525, be borne mutually in proportions of seven-tenths by Inverkeithing and three-tenths by Aberdour. The report has been adopted.

Salford.—Mr. S. J. Smith, C.E., and Mr. E. P. Burd, C.E., Inspectors of the Local Government Board, held an inquiry at the Salford Town Hall last week into an application of the corporation for a provisional order to carry out certain improvements, and to sanction the borrowing of £134,000 for gasworks purposes, the latter expenditure having been authorised by a provisional order in 1891. The total sum required to be raised was £211,303, including a repayment of £12,970 which had been spent in draining Peel Park, &c.; £14,675 for the paving and flagging of Broad-street, Pendleton; £11,000 for waterworks purposes; £600 for the completion of Walness Bridge, which passes over the Irwell; £1,000 for a sewer in Trafalgar-street, Broughton; and £5,777 for extending the intercepting sewer. The town clerk and Mr. Shoubridge, the gas-engineer, explained the requirements.

Sewerage of Whitby and Ellesmere Port.—The sewerage of Whitby and Ellesmere Port, Cheshire, has recently been completed by the Wirral Sanitary Authority. The work was rendered all the more necessary by the great increase in the population of Ellesmere Port through the construction of the Manchester Ship Canal. The sanitary condition of the place was becoming exceedingly defective. The total length of the sewers constructed is about 5,000 lineal yards. They are laid with stoneware pipes supplied by Messrs. Doulton and Co., ranging in diameter from 9 to 18in., and provided with Stanford's joints. Flushing tanks and all other modern appliances are provided, and the manholes are furnished with deodorising baskets filled with polarite. The work, which has cost £4,250, was designed by Mr. Charles H. Beloe, M.Inst.C.E., of Liverpool and Westminster, the engineer to the authority, assisted by Mr. Frank E. Priest, Assoc. M.Inst.C.E., and has been executed, under their superintendence, by Messrs. Young and Sons, contractors. The clerk of works was Mr. Geo. McIlwaine.

The Dundee School Board have accepted tenders for the erection of a new infants' school in Hawkhill. The building is to accommodate 1,000 scholars, and the estimated cost is about £8,800.

Thos. Jex, of New Walsoken, has just passed away at the reputed age of 104 years. He was a master bricklayer by business, and was apprenticed at St. German's, near King's Lynn. He was three times married, his eldest son being born in 1817—seventy-five years ago. His last wife survives him.

On Easter Monday memorial stones were laid of a new church school for Barry parish. The building, which will occupy a site near the parish church, will be 60ft. by 27ft., and 21ft. to the ceiling. It will be Gothic style, the material to be used being Cattybrook bricks outside, and stone inside, with brick facings. The seating accommodation will be for 200. The architects are Messrs. Kempson and Fowler, of Llandaff, and the contractor Mr. F. Small, of Barry, the cost of the work being £900.

The memorial stones were laid on Saturday of a new Liberal Club at Bacup. It is to cost close upon £4,000, will be built of stone, and the style will be English Renaissance. On the ground floor, on either side of the entrance corridor, will be a billiard-room and a newsroom, each 27ft. by 21ft. On the first floor there will be an assembly-room, capable of holding 500 people, with a platform at one end. The size of this room is 51ft. by 29ft. The second floor contains a billiard-room of the same dimensions. The architects are Messrs. Mangnall and Littlewoods, Manchester.

Our Office Table.

The disastrous fatality which happened at the Hampstead railway station ought to draw attention of all railway authorities to the need of improvement and widening of the approaches, platforms, and staircases to all stations near the Metropolis. In many of the staircases, as in that on which eight persons were crushed to death and several more injured, the width is insufficient for an unusually large concourse of people eager to catch a train. At the Hampstead station the staircase was, it is stated, only wide enough for three or four persons abreast between the centre rail and wall, but the cause of the disaster seems to have been the ticket-box at the bottom of the flight which projected on the stairway each side of the rail, and thus contracted the space to a width which only permits two persons to pass at a time. This was the mischief. Why make a staircase 4ft. or 5ft. wide, and then reduce it to nearly half at the bottom? This question is one which will have to be answered by many railway authorities. The protruding box formed a death-trap, into which the hapless women and children were apparently forced by the downward pressure of the crowd. A crush in a crowd on level ground is bad enough, but a descending mass of people becomes a powerful wedge-like force against any obstruction placed at the bottom of a staircase. Not a few of the fatalities on theatre staircases have been from a similar cause—a door closed or a ticket-box reducing the passageway and causing thereby an increased pressure. That every passage and staircase should have a uniform width preserved throughout its length, and its ends should be unobstructed, is a rule that one would have thought was self-evident to all.

We have received from the director, Mr. Whitworth Wallis, F.S.A., the new catalogue of the permanent collection of paintings in oil and water colours, and also statuary, of the City of Birmingham Museum and Art Gallery, which is published at one penny. It is printed on good paper, and contains advertisements of a high class. It is calculated that on an edition of ten thousand the corporation will make a profit of £15, which enables the committee to give away the catalogue to those who cannot even afford to pay for it. The catalogue has descriptive notes. To the names of painters are appended brief notices of their lives; the names of places are also occasionally described, like Windermere, for the use of the less-informed visitor. Why cannot the authorities of the National Gallery, British Museum, and South Kensington Museum art galleries do the same for the poorer visitors, and confer a national and immense educational advantage? The Birmingham experiment is at least a proof that a penny catalogue does pay.

Dr. Spence, the Dean of Gloucester, claims to have made the interesting discovery that the actual remains of Osric, King of Northumbria, who was buried A.D. 729, lie beneath the shrine erected to his memory, which stands on the north side of the high altar in the choir of Gloucester Cathedral. This shrine is the work of Malvern, the last Abbot of Gloucester; it has been generally supposed to be merely a cenotaph, or empty tomb, and until now the statement has never been questioned. After examination of Leland's notes on the tombs, written by Leland on his official visit to Gloucester Abbey in 1540-1, Dean Spence shows it to be more than possible that the memorial tomb marked the actual resting-place of the remains of the great Northumbrian King, and founder of the abbey. Two panels have been taken out of the stone loculus, and a long leaden coffin has been disclosed, lying exactly beneath the King's effigy. The contents of the coffin, which probably replaces an older stone one, proved to be the remains of a very ancient interment. Much of the cement which had once fastened down the stone effigy of Osric had fallen into the end of the coffin, broken by the weight of the superincumbent figure, and a few small bones were discovered mingled with the cement. No attempt was made to discover Royal insignia or fragments of vesture, and the remains were left untouched. It is believed that, in the tomb of Osric, Gloucester may claim the guardianship of the oldest known remains of the Saxon Kings.

Some useful particulars as to the making of French roads are given in the last report by the British Vice-Consul at Dieppe. He remarks that many of the roads near that port have been made with an exceptionally good quality of stone of singular hardness and durability, brought from Cherbourg. It is broken up into macadam, and forms splendid material for making roads. The Vice-Consul thinks it might be worth inquiring whether it could be employed on some of our English roads, where a lesson in road-making might be learnt with advantage from the French "cantonier." The material is usually marble, flint, stone, or gravel, and whatever is used must be of the best quality, and cleansed from all foreign substances. The stone must be broken up so that each piece may pass through a ring 2½in. in diameter. It is then spread evenly over the road, the interstices being filled in with smaller pieces, so that the whole is smooth and free from abrupt eminences and depressions. A steam-roller then crushes and levels the whole, after which a superficial layer of clay and earth completes the work. In Normandy, where the roads are perfect, they are made slightly convex, with a trench on either side, and are scraped to keep them dry. One of the most important ingredients used in road-making is a little chalk, which helps to bind and consolidate the macadam or small stones into a firm and hard mass. If too much chalk is used, it renders the roads sticky after frost.

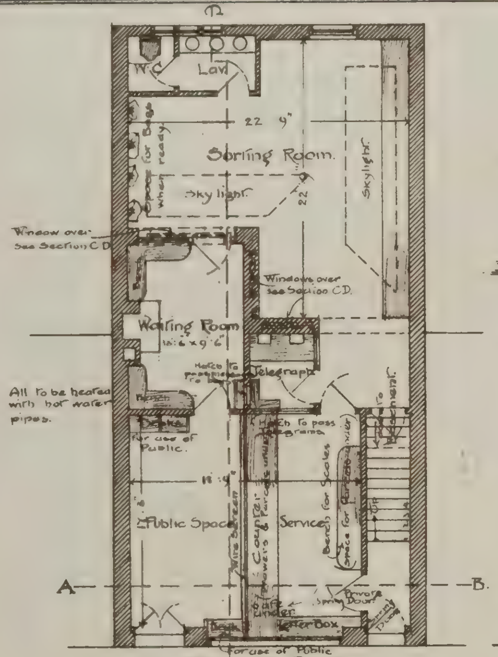
Although wrought-iron and medium steel are largely used for structures, little use has been made of soft steel. Mr. F. H. Lewis, member of the Engineers' Club of Philadelphia, has an interesting paper on the subject of "Soft Steel for Bridges" in the *Proceedings* of that body, in which he advocates the use of soft steel. Wrought iron, he says, is not improving in quality; but in the manufacture of steel there has been a notable improvement in quality, and the best qualities of soft steel leave little to be desired. As compared with wrought iron, it has 15 per cent. higher ultimate strength, and from 20 to 25 per cent. higher elastic limit, and 50 to 60 per cent. greater ductility. Soft steel can bend across its grain, it has no fibre, and can give a better finish. One great thing in its favour mentioned by Mr. Lewis, it is less injured by punching than iron. The series of tables and tests he gives of experiments at the Watertown Arsenal are of value. As regards the cost of soft steel, it is asserted to be a little over 7 per cent. higher than wrought iron, and Mr. Lewis specifies for soft steel the same treatment as for iron.

A lecture on "Domestic Plumbing" was delivered by Mr. John Gordon, of the Glasgow Institute of Architects, on Thursday night, the 14th inst., in the Trades Hall, Glasgow, in connection with the National Registration District of Plumbers for Glasgow and the West of Scotland. Bailie Crawford presided. The lecturer, having sketched the progress of domestic plumbing down to the present day, expressed the opinion that in the case of our grander houses there was no room for further development, except in several minor details. In regard to many of the smaller houses, however, there was considerable room for improvement. Some of them, indeed, were no better off in respect of plumbing than the same class of house at the beginning of the century. He hoped that the time was not far off when such houses would be declared uninhabitable if they had not their private lavatory accommodation and their own supply of hot and cold water. Plumbing was now a science as well as an art, and considering the dangers of insanitary plumbing, he impressed upon both masters and men the necessity of qualifying themselves by every means in their power for the proper execution of their important duties. Indeed, it was a question whether the public should not insist that the plumber, like the doctor, should be a systematically trained, tested, and qualified workman.

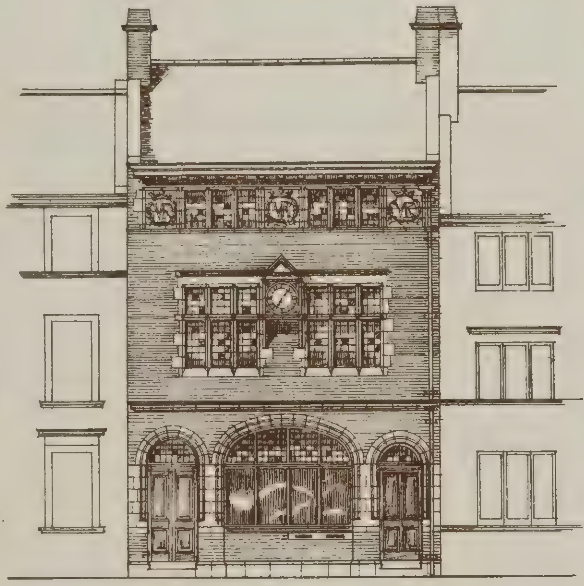
Mr. Allan Bertram Smith, of the firm of Messrs. Smith and McCuaig, builders, of Greenock, died on Friday, aged 60 years. He had for many years been a member of the town council, and a justice of the peace for Greenock.

Mr. H. T. Wakelam, M.Inst.C.E., M.S.A., who has been surveyor to the local board of Garston, near Liverpool, for the past four years, has just been appointed county surveyor to the Herefordshire County Council, having been selected for that post by 45 votes to 12 out of 84 applicants.

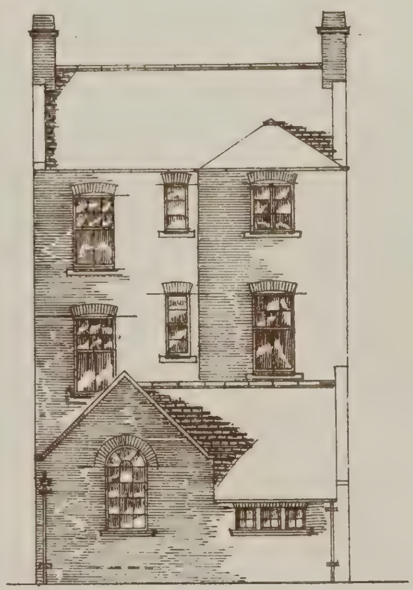
PLACED SECOND



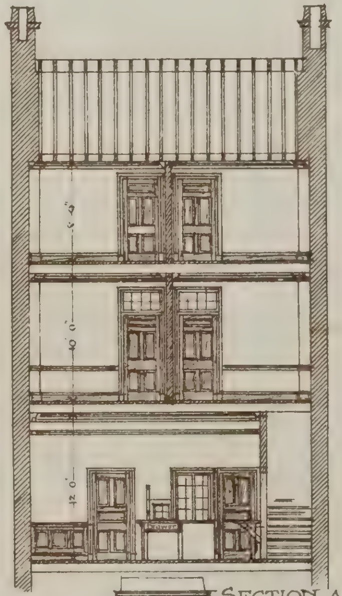
GROUND PLAN.



FRONT ELEVATION.



BACK ELEVATION.

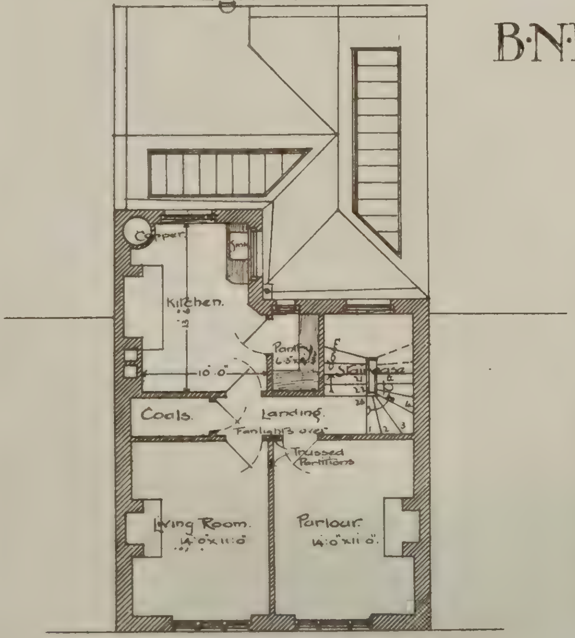


SECTION A.B.

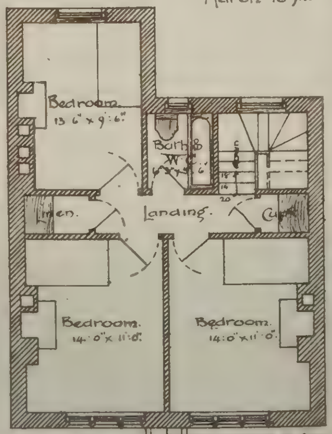
B·N·D·C. DESIGN FOR A SMALL POST OFFICE AND POSTMASTERS HOUSE.

BY "VULCAN"

March 1892.

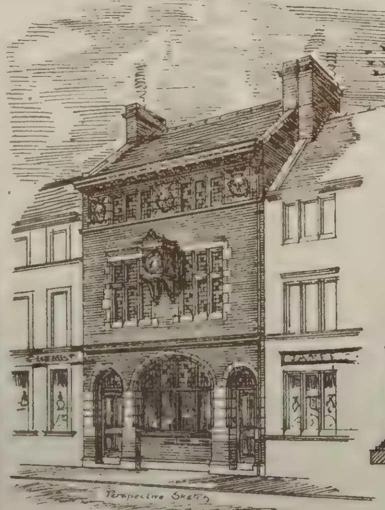


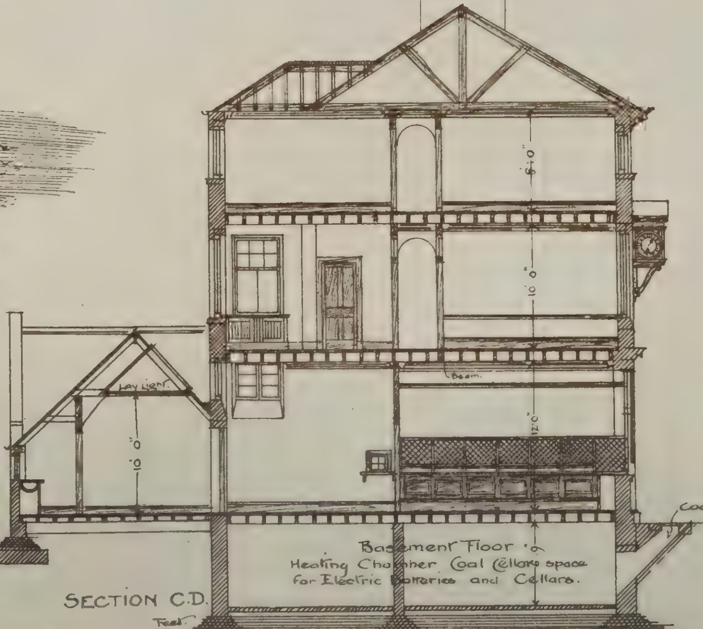
FIRST FLOOR PLAN.



2ND FLOOR PLAN.

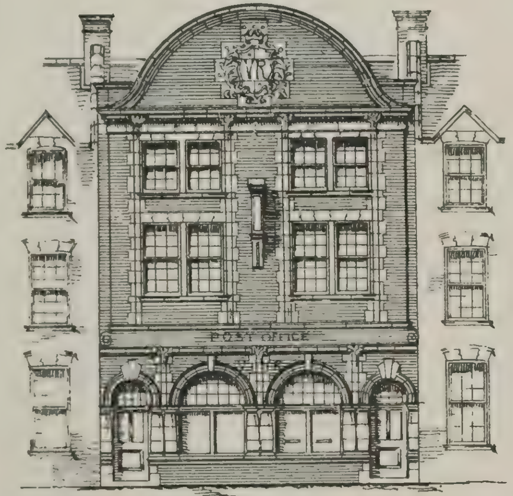
Clock. Attended to from hatch in Living Room


Perspective Sketch.

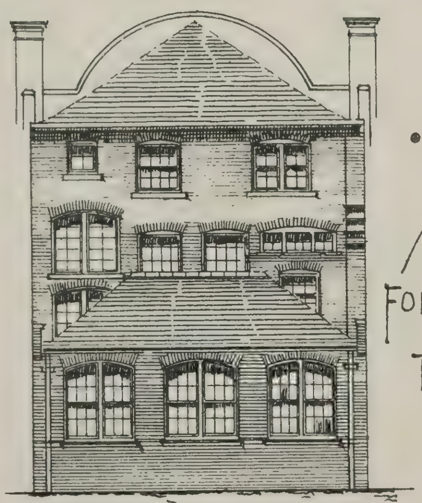

8' 0"
10' 0"
Beam.
12' 0"
Lay Light.
10' 0"
Basement Floor
Heating Chamber Coal Cellars space for Electric Batteries and Cellars.
Coal Shoot.

SECTION C.D.

Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.C.



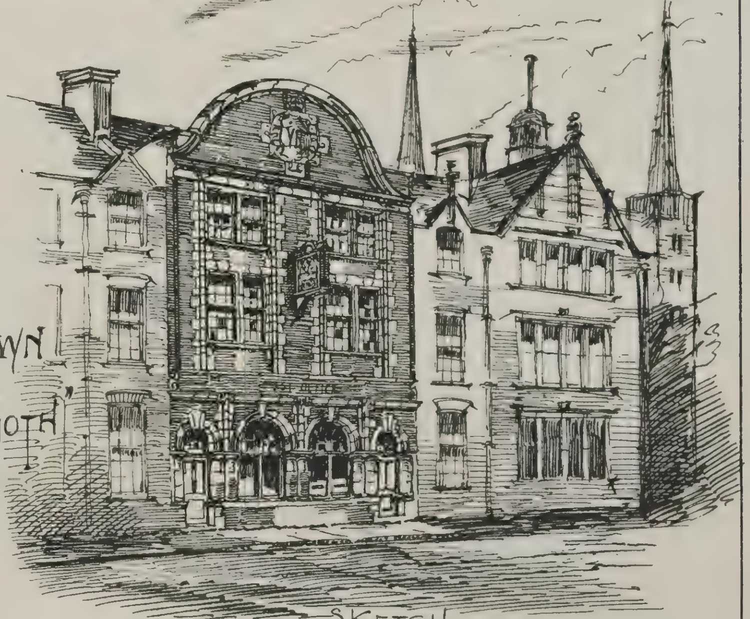
·FRONT·



·BACK·

·B·N·D·C·

A POST OFFICE
FOR A SMALL TOWN
by "SMILASH THE GOTH"
MAR. 1892.



SKETCH

SCALE
0 10 20 30 40 50

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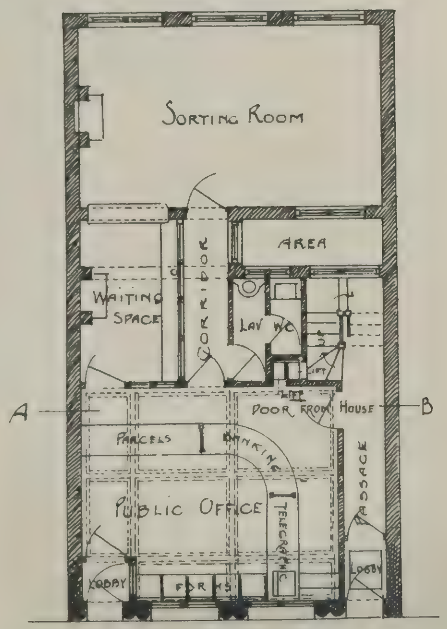
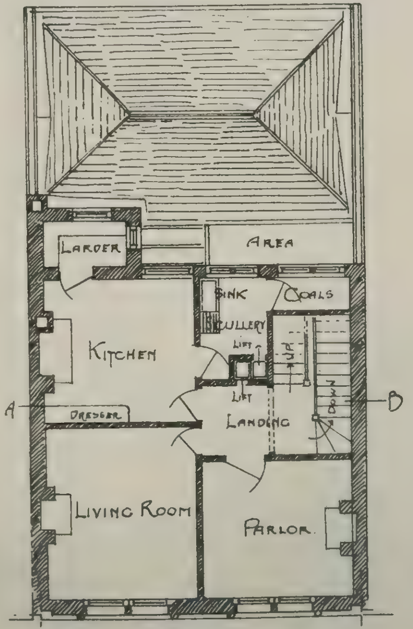
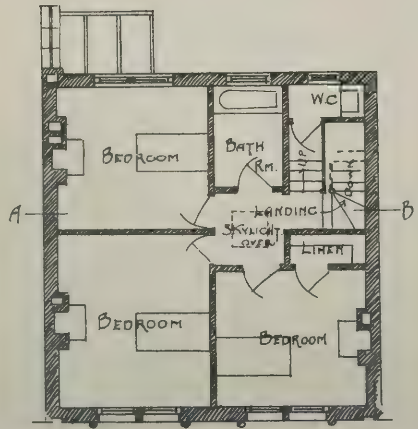


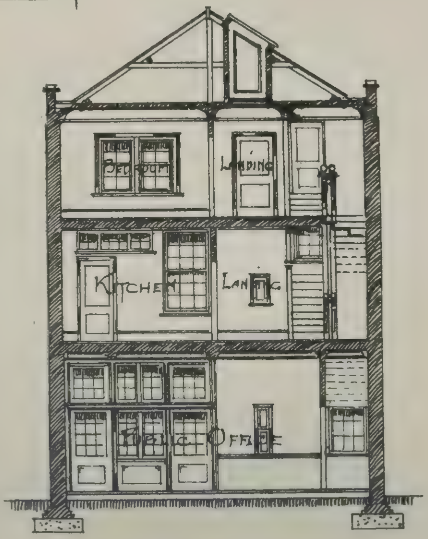
·GROUND PLAN·



·FIRST FLOOR·

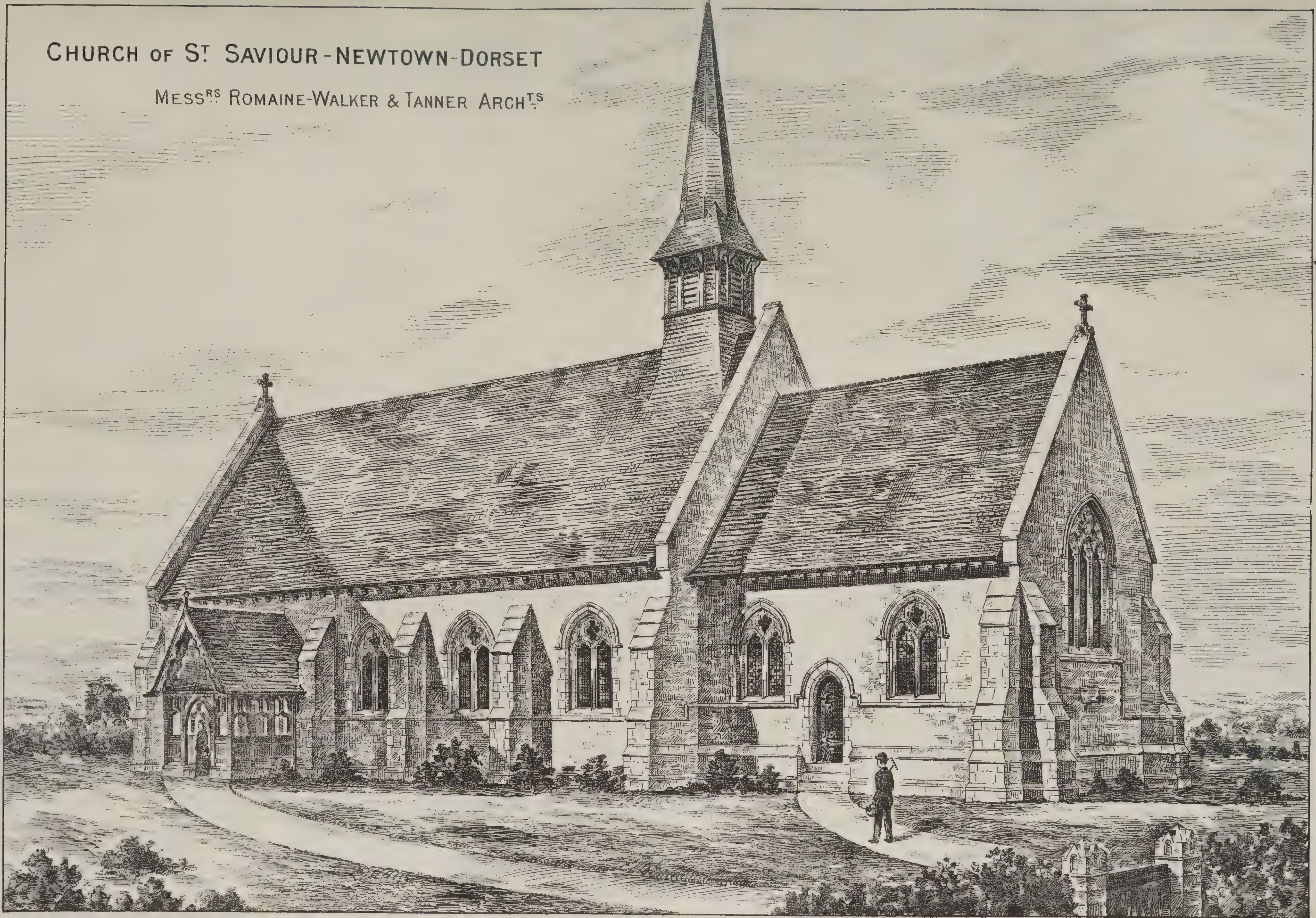


·SECOND FLOOR·



SECTION A·B

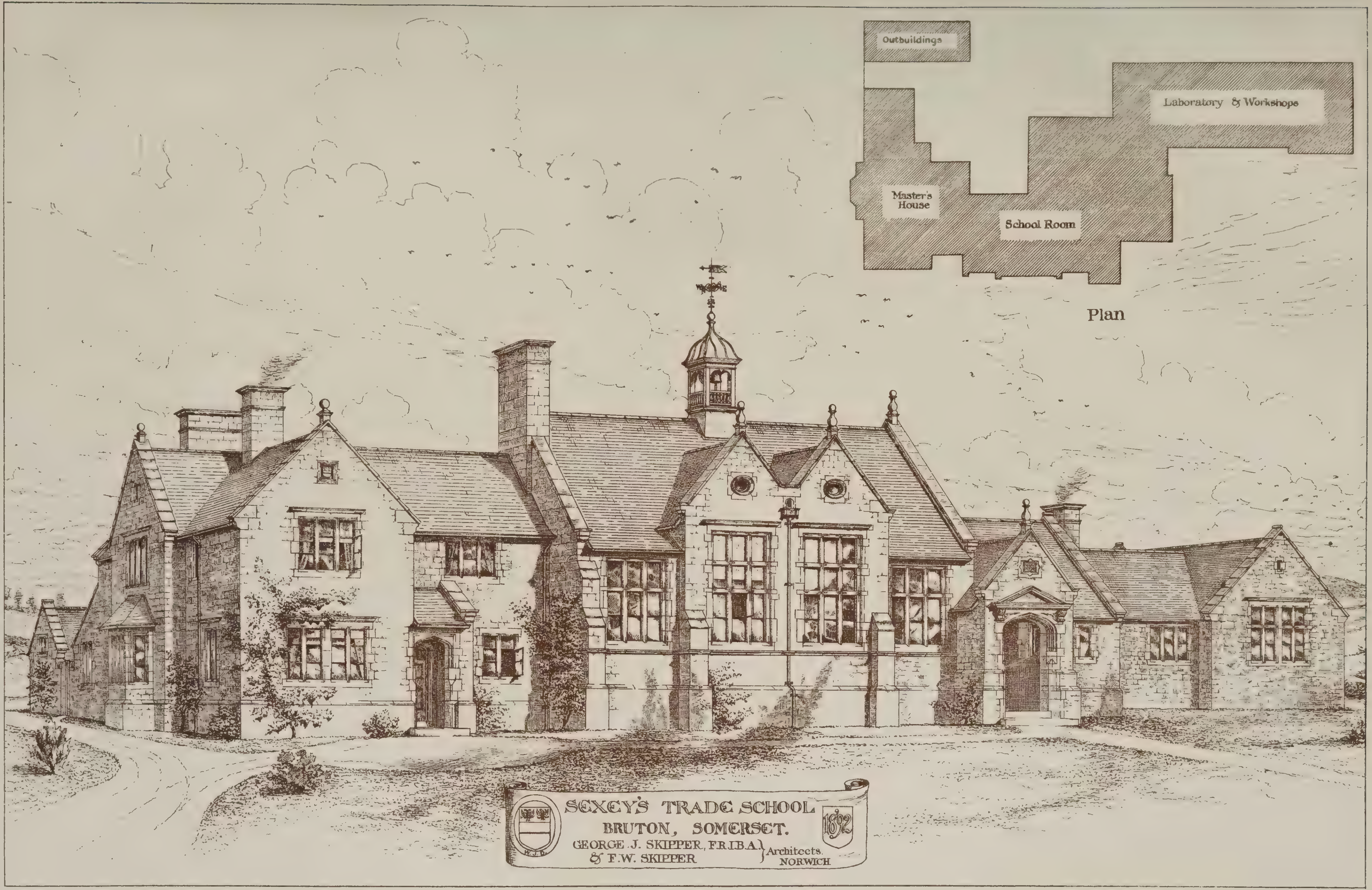
Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.C.



CHURCH OF ST. SAVIOUR - NEWTOWN - DORSET

MESSRS. ROMAINE-WALKER & TANNER ARCHTS.

Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W C



SEXEY'S TRADE SCHOOL
BRUTON, SOMERSET.
GEORGE J. SKIPPER, F.R.I.B.A.
& F.W. SKIPPER
Architects.
NORWICH

Photo Lithographed & Printed by James Akerman, 6, Queen Square, W.C.

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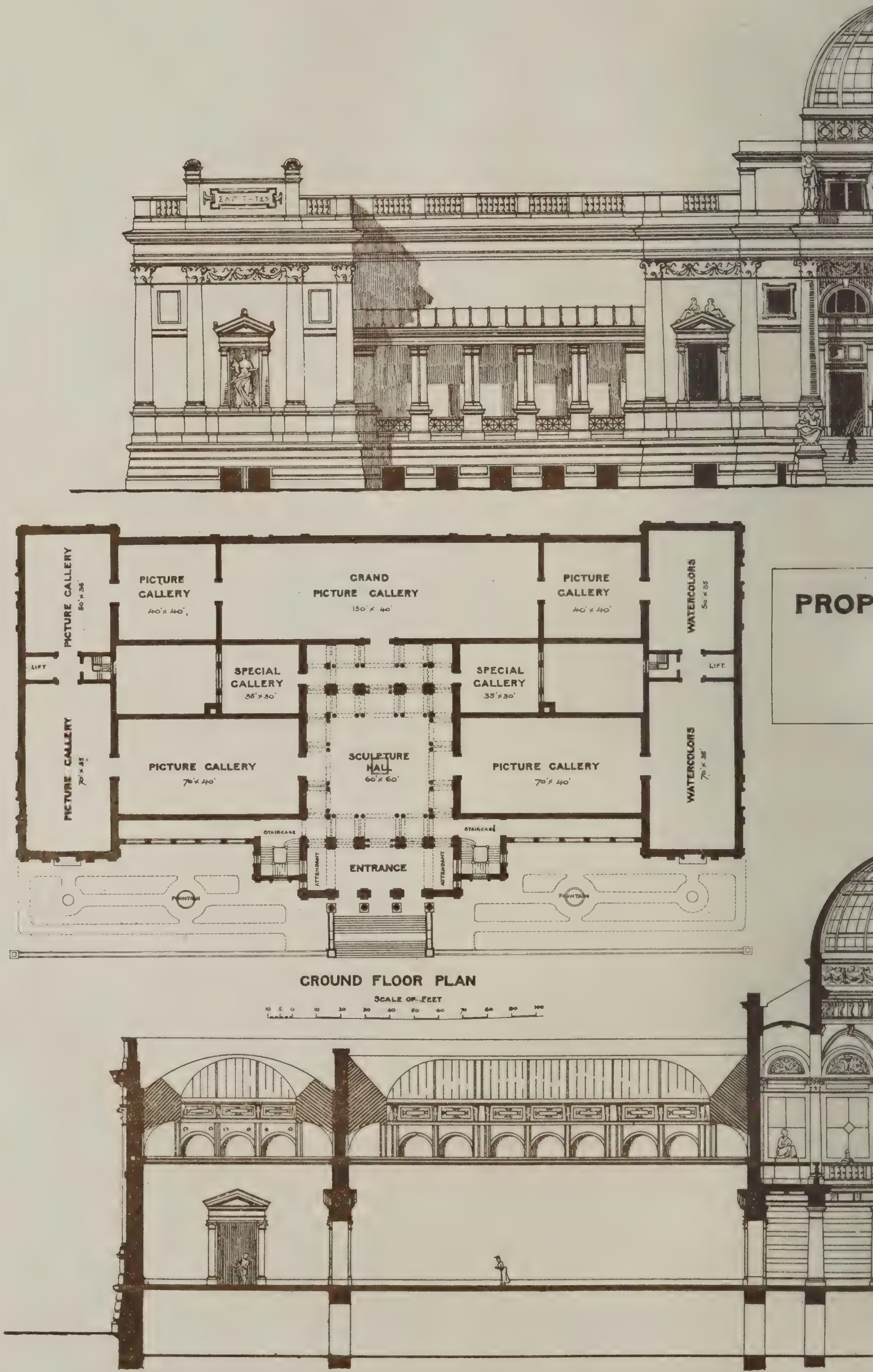
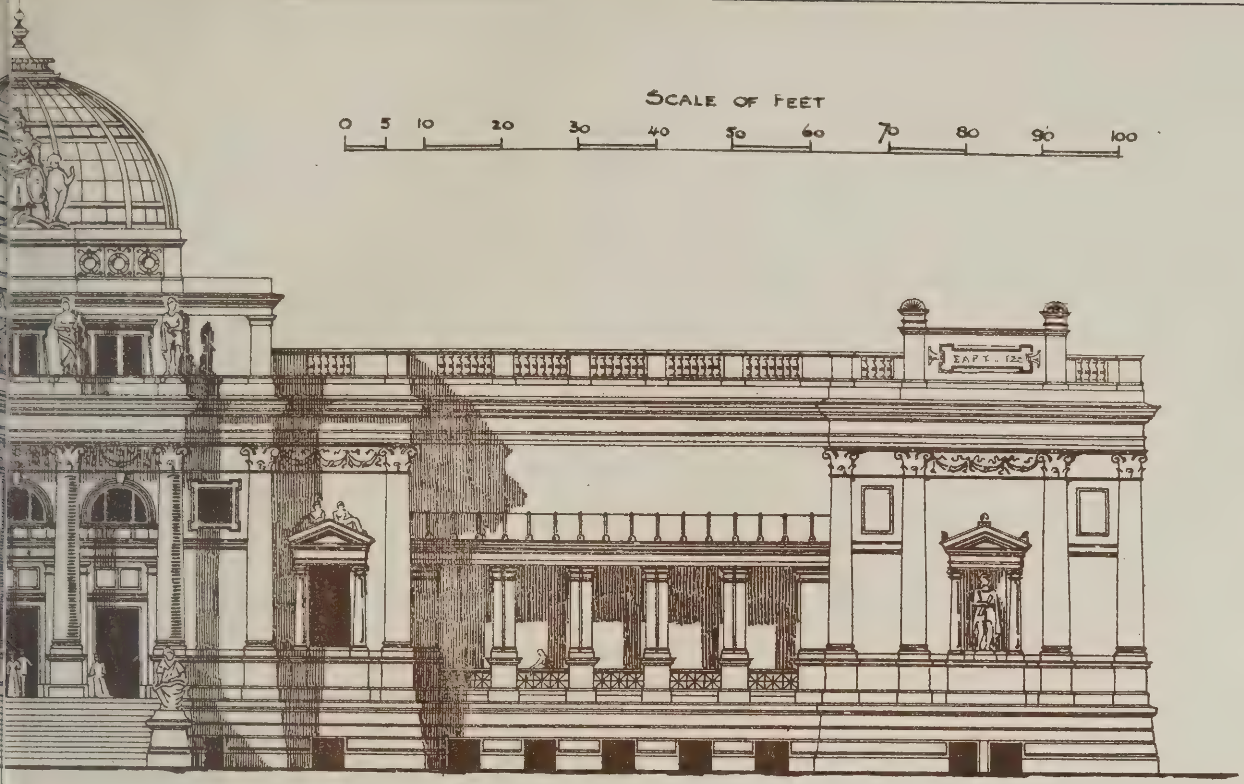


GROUND FLOOR PLAN

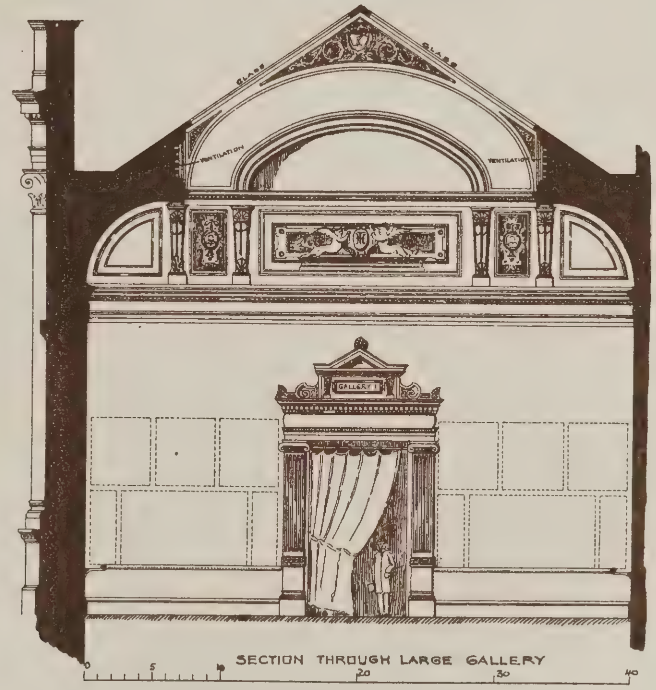
PROP



SED – BRITISH – GALLERY

– LONDON –

SIDNEY · R · J · SMITH · ARCHITECT ·



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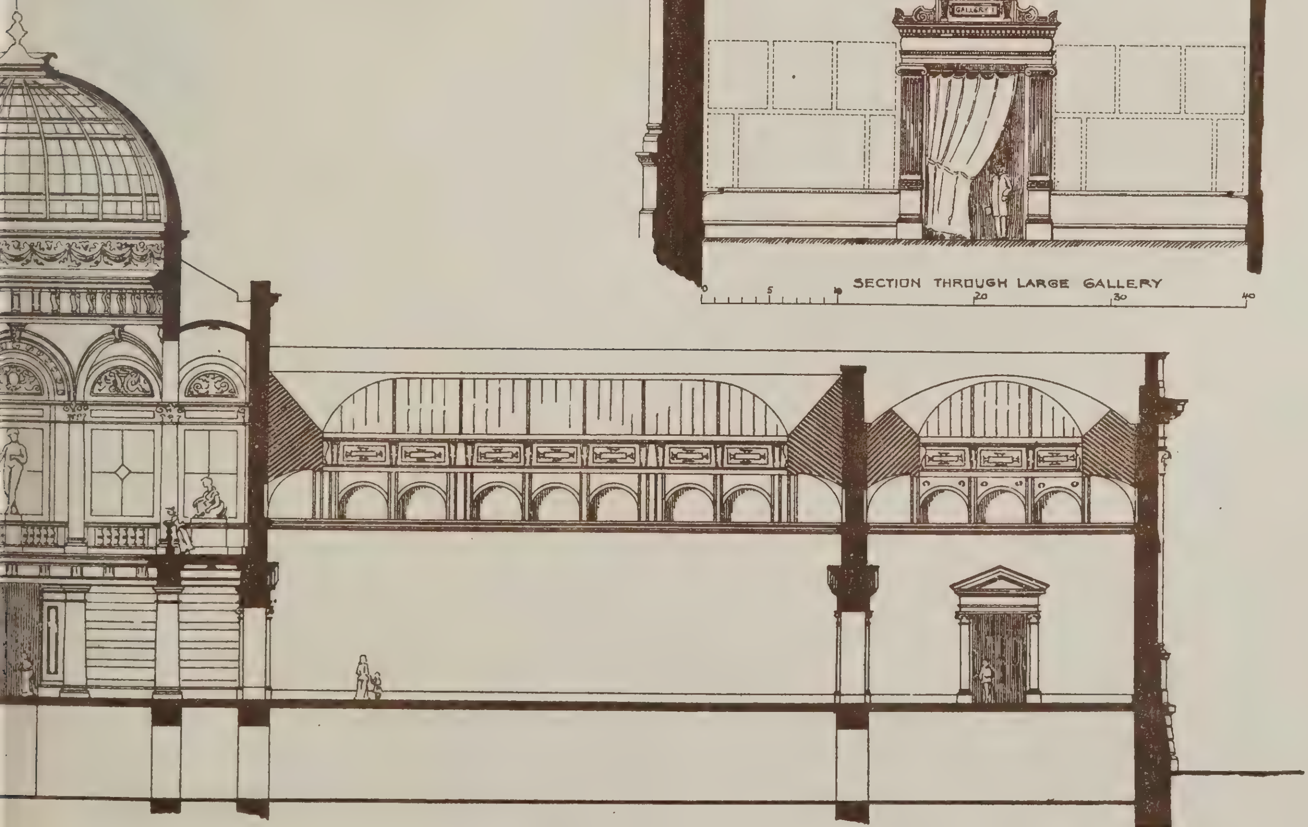

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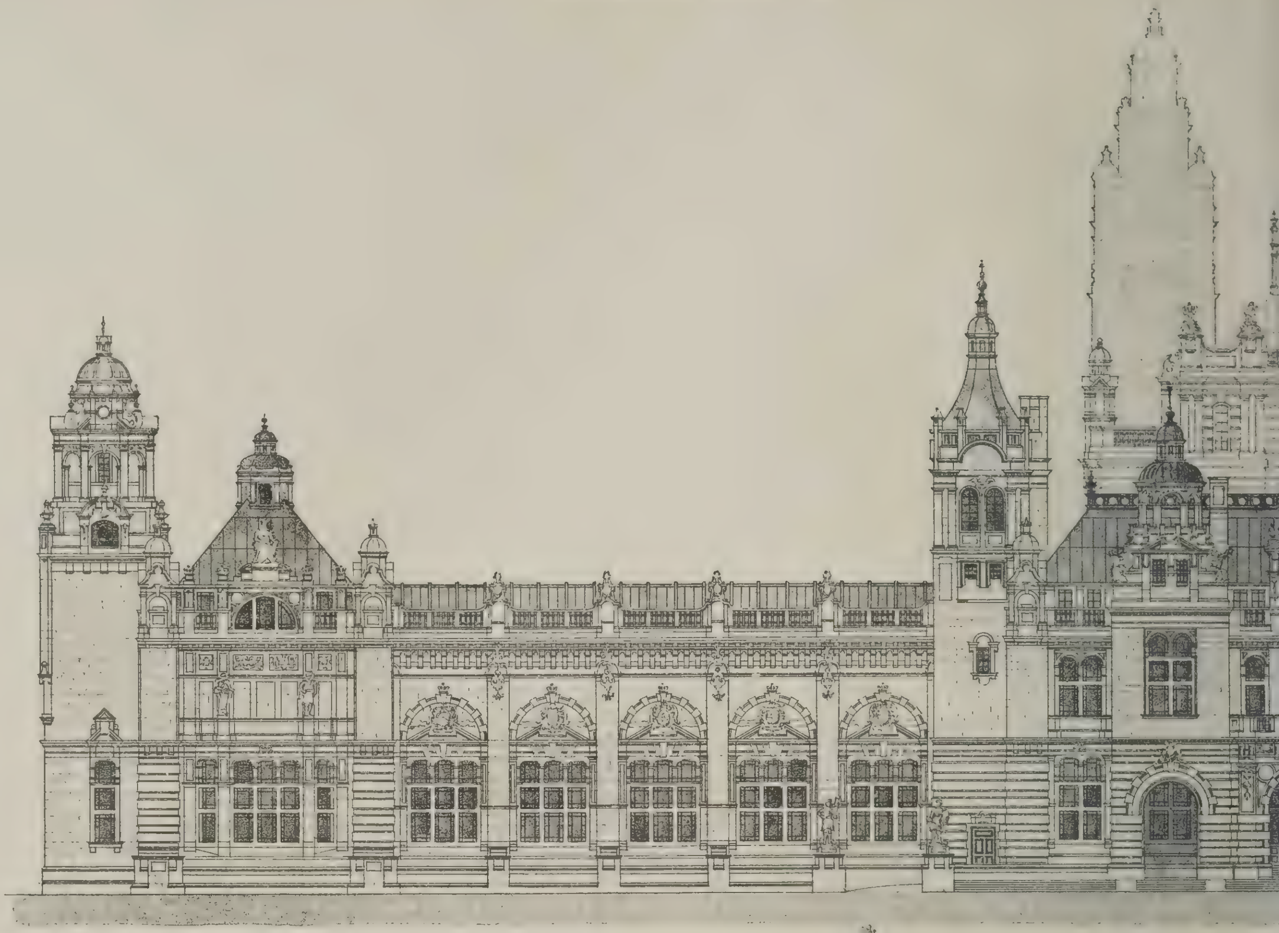

THE GLASCOW ART GALLERIES & MUSEUM,

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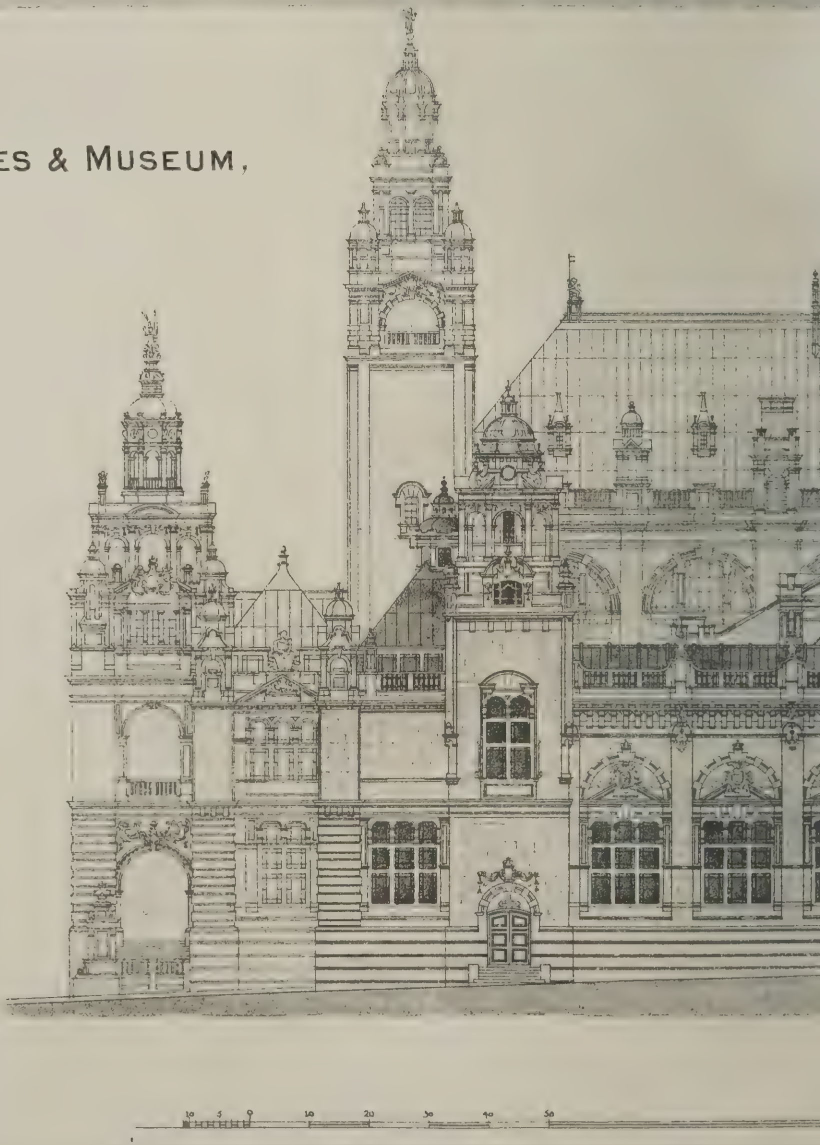
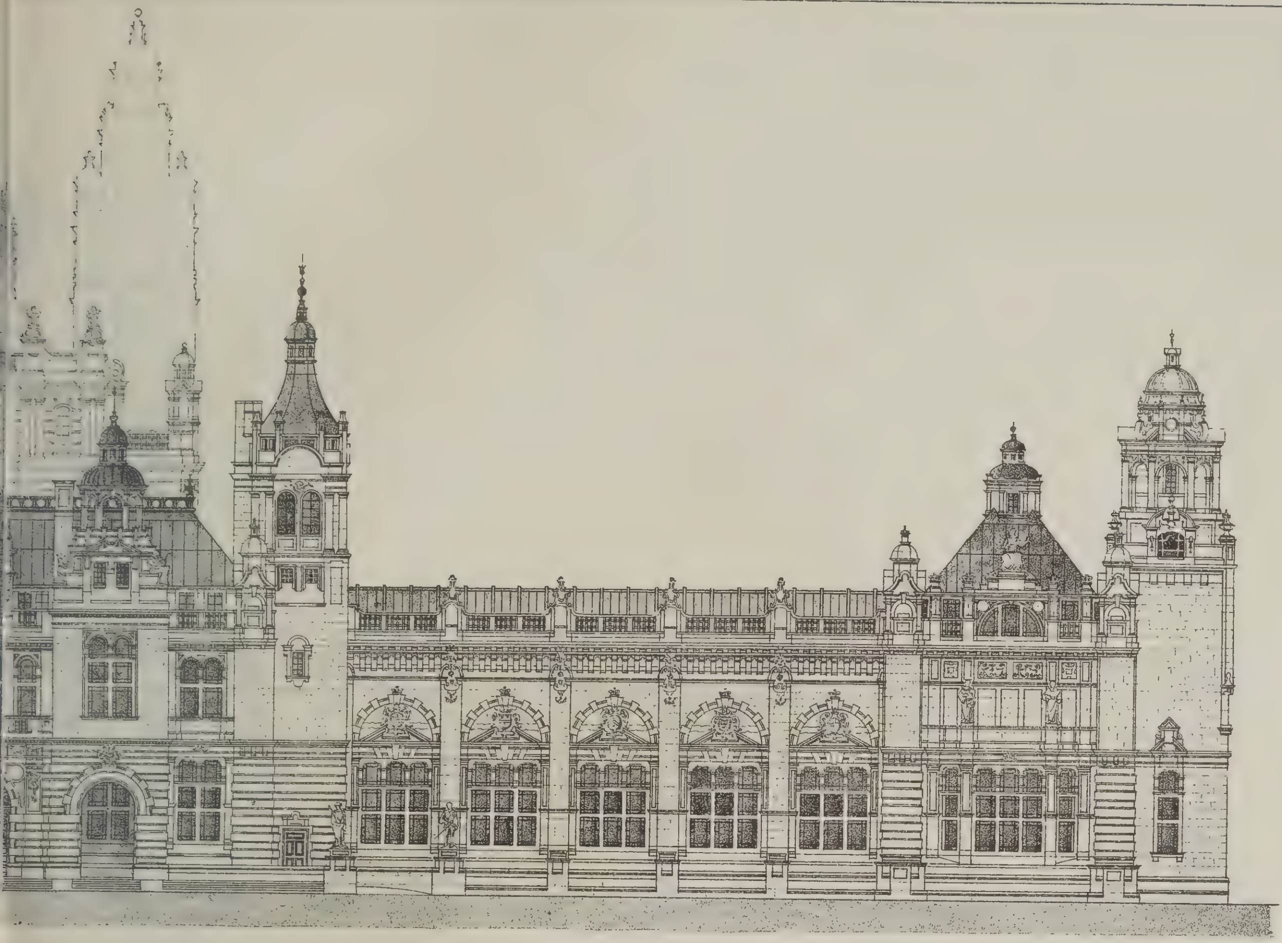
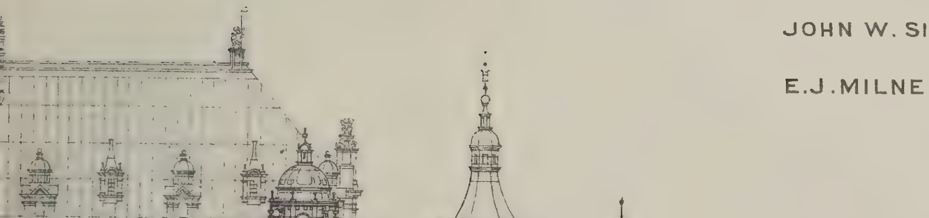


West Elevation



South Elevation

JOHN W. SIMPSON }
E. J. MILNER ALLEN } ARCHITECTS.



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FRIDAY, APRIL 29, 1892.

FLANK ARCHITECTURE.

ONE of the characteristics of our modern architecture is that it appears as an art of façades—a peculiarity born of the Renaissance, and fostered by an age of imitation and parsimony. The idea of going all round a building, of seeing its four sides, of treating it as a solid, was at one time never absent from the designer's mind. The Greek, Roman, and Mediæval architect each thought and designed in the solid, however much he may have lavished over the front of his building; he never forgot the perspective in his desire to make an impressive or splendid façade. At Salisbury, Lincoln, and Wells, it is true, we have something like a grand screen front to the cathedral at the west end, yet it was not a screen intended to conceal the sides. As soon as we turn the corner, the long perspective of buttressed aisle and pinnacled nave lead the eye to the transepts and the central tower or spire as a fine *coup de maître*. The façade screen is not a mask to hide the remainder, or behind which there is nothing but blank walls and bare openings. These edifices were built on sites open all round. Therefore, each side demanded equal attention; but even where they abutted on adjacent buildings, scrupulous attention was paid to those parts which were visible. The modern idea is to expend nothing on a side which is concealed from view, but to bestow all the adornment on one or two faces, the logic of which appeals to the English sense of commercial considerations. No doubt this principle saves trouble in planning, as windows can be placed anywhere that is convenient, and a vast deal of the architect's labour is saved. But the great advantage is the reduction of expenditure, and so long as competitive tendering is resorted to, we are afraid the inducement is too powerful to be resisted by artistic arrangements. The street site has encouraged the single-façade plan. Utility asserts itself in everything nowadays, and as every building in a street can be exposed to view only on one side, it may be urged that it would be absolutely unnecessary and extravagant to do more than to build the sides and back in the plainest brickwork. In the case of party-walls abutted on by adjoining premises, of course it would be useless to have any other than plain walls, at least in those portions that are hidden by the adjoining buildings, but there are many large public edifices which do not actually touch the side premises, but the side walls of which are built a few feet off, as when a side entrance or passage exists. Again, the side walls of many structures are often higher than the adjoining roofs, in both of which cases a blank wall is a standing disfigurement and reproach. In London, the overtowering party-wall is one of the monstrosities to which the citizen and the visitor are subjected, worse ten thousand times than the array of chimney-pots, and no building regulation has done anything to avert it. Gaunt, and grim, and bare, it rears its obtrusive head and its ungraceful sky-line above all the neighbouring buildings. In Oxford-street, Charing Cross-road, the Strand, and in others of our main streets we see many of these defiant erections with elaborate façades towards the street, made still uglier sometimes by the oblique lines of metal flues which are carried above the adjoining roofs in stacks. In the lofty new Ophthalmic Hospital erected in St. George's-circus, Southwark, a formidable array of iron stacks starts from the low roofs on either side and abuts against the side walls of the new building like attenuated flying buttresses. If not thus adorned, the bill-poster or advertising contractor utilises the blank walls for sensational placards. We wonder what our forefathers would have thought of such debasing uses! The rear wall also is equally bald; it has its claims to be at least presentable. In one place we see a new, handsome free library spoilt by a bare north end, hideous in its plainness; we do not know whether any other building will hereafter conceal its blankness. We might mention a dozen other buildings in which the architecture vanishes directly we turn the corner.

These blank sides afford at least an opportunity for decoration, either in the form of terracotta relief or sgraffito. Unfortunately the architect looks upon them as no part of his business. There is no attempt made to conceal or mask the unsightly brickwork, as the old architect would have done, by some kind of "flush work," by panels or arcading. The idea that a flank will be covered one day ought not to prevent some attempt being made at least to render the brickwork tolerable to the eye, and especially those portions which rise, and are likely to remain visible above adjoining buildings. The return of cornices and string-courses is desirable; if their projection would be a trespass, they can be indicated by bands of terracotta or stone. The bareness of many of the public halls and courts of modern municipal buildings which have been built in the rear of the main fronts is a deplorable witness to the lack of thoroughness of our architecture. Lavish ornamentation is to be seen within, while a parsimonious meagreness reigns outside. Architraves and columns adorn the interior window opening, a skin-deep reveal of brick the outer aperture. Within there is a palatial luxuriousness; outside we see a red brick and slated factory shed. There is no excuse for such barefaced meanness.

Again, in London experience has taught that a public building inclosed on three sides in a street may one day be open to view on one or all sides. We have only to see what has happened at the rear of the National Gallery, once built all round, and how bare and unsightly the brick walls were till the recent erection of new buildings, which will incase the exposed sides. Many of our theatres and public halls are monstrosities in the flank and in the rear. There is a prodigious towering roof, like that of a railway station or like those of St. James's Hall or Exeter Hall. A new road, or the diversion of a street, may expose, in all their naked ugliness, the flank and rear walls of any of these buildings, and what can be done to render them presentable to the public? The prospect is one at least not very hopeful, even supposing the problem of clothing them satisfactorily within reach.

Two losses result from the present tendency to limit design to one or two fronts. One is the loss of the quality of homogeneousness or unity. In every great architectural age the idea of solidity was realised in building; the front and flank exhibited a similar treatment, the columns, pilasters, and entablatures were returned on both faces, as were also the apertures and details; but in the modern or revived Renaissance we find this idea of solidness giving place to superficiality. A loss of homogeneity and character followed, for details like pilasters and architraves no longer retained their solid character, but dwindled down into face ornaments, and the superficial treatment of a portico followed, as we find in the revived Roman or Italian buildings of the 18th or early 19th century. The connection between façade and back grew less and less, till we have an elaborate front clapped on to a plain brick shell. Lastly, the effect of façade design is to neglect perspective as a means of arranging the masses of a building, and of bringing into harmony the front and sides of an architectural composition. If architects more frequently designed in perspective after their plan had been perfected—taking, of course, possible points of view and distances—there might be a hope of retrieving those qualities of which we have spoken.

PICTURES AT THE ROYAL ACADEMY.

[FIRST NOTICE.]

A GENERAL glance at a few of the leading pictures in Burlington House is all that we are enabled to take on the first Press view. Of the quality of the present Exhibition there will be different estimates; but it may be asserted that the pictures as a whole will not suffer upon comparison with those of last year. The president, Sir Frederick Leighton, exhibits five pictures, all of sufficient merit to entitle them to rank high as classical compositions. Of these the principal is a subject, in Gallery II., from the Book of Revelation, "And the Sea gave up the Dead which were in it"—a theme grand enough to exercise any master's imagination, and which had its origin, it appears, in the desire of decorating the dome of St. Paul's, when some years ago Sir Frederick and Mr. E. J. Poynter, R.A., were asked to make designs for the purpose. For some reason the project was abandoned, and the President was induced to select the same subject for a picture, which Mr. Henry Tate commissioned him to paint, and which will, we still hope, one day adorn the walls of a gallery of British art. The President has filled his circular canvas with groups of figures of varying ages and ranks. The central group, occupying the larger portion of the circular canvas, represents a man, his wife and child, whom he clasps in his arms, rising out of the sea—a statuesque group modelled with care, perhaps a little too hard and decided; the death-like pallor of the woman and boy contrasts with the more natural colour of the man's flesh. Rising also from the sea is an elderly person, who appears to be drawn up; her death-like habilaments or wraps still cling to her form. The background of rocks shows the bodies of sleeping saints bursting open their tombs; one looks as if he had awaken from a long sleep. Sir Frederick Leighton has here had to clothe in visible form the Revelation of the first resurrection as given by St. John the Divine, and whatever may be the verdict of the critic as to this important work, and opinions will differ of the conception and treatment, there can be no doubt as to the masterly composition, the sculptural grace of line, the varying attitudes suggestive of the "dead—small and great," and the modelling of the figures. The colouring is subdued, in ambers, blues, and deep greens, a little out of key perhaps here and there; but we must remember the design was for a strictly decorative purpose, and the statuesque treatment of the figures and the composition had to agree with these conditions. "At the Fountain," in the same gallery, depicts a beautiful Greek maiden in her chiton of a dark amber-coloured hue; her arm rests on the marble inclosure, which throws up the shoulder rather awkwardly, while the right arm looks depressed. The roseate tones of drapery contrast harmoniously with the dark-blue drapery and amphora at her feet. The colours are enhanced by the cool white marble of the fountain and the bright yellow of the lemons above the wall. The legend of the golden apples of the Hesperides, which it was one of the labours of Hercules to obtain possession, is the subject of another of the President's pictures in the third gallery. The apples, according to tradition, were given to Hera on her marriage with Zeus, and were intrusted to the keeping of the Hesperides and the dragon Ladon on Mount Altas. The painter again selects a circular canvas; the three Hesperides recline round the trunk of a beautiful tree, while beyond a deep-blue sea is seen through green foliage. The dragon or serpent is entwined round the body of the central nymph; another is playing a lyre. It is hardly necessary to say with what subtlety, grace of line, and wealth of colour the painter has endowed the three legendary beauties of the garden, and how harmoniously the colours and draperies blend. As a composition, this work has much decorative beauty; the central grouping of the three Hesperides and the tree with golden fruit filling up the circular frame, is pleasing, while the painting of the faces of the nymphs and their diaphanous draperies are broad, subtle, and dexterous. "Bacchante," in fawn skin, dancing with tambourine in a forest, is another clever painting by the President, to which we can only refer. Alma Tadema, in his brilliant little picture of "A Kiss," represents a Roman terrace of white marble facing the waters of a lake, with a broad flight of steps therefrom. Upon the terrace is a lady with strigils; a little girl in front of her is being kissed by an elder sister, and beneath, in the sea, are figures of women bathing, and on the beach beside the girl are seen other ladies, still undressed. In the distance are mountains; but the charm of the picture is the refined harmony of the translucent marble terrace and the light blue sea, broken by the draperies of the figures. The lines and mouldings of the pier or terrace are drawn with architectural knowledge, the side balustrade being shown in rapid perspective, while on the outer side of parapet is a bronze panel, with inscription, which records the fact that the Emperor Severus had rebuilt it. On one of the pedestals flanking the steps is a tripod or beacon of dark bronze. The figure grouping and the composition as a whole exhibit a scholarly attention to the details of Roman life. Mr. W. Q. Orchardson, R.A., sends an incident in the life of Napoleon at St. Helena. The illustrious exile stands before a collection of military maps arrayed on the floor of a large, bare room, and is dictating to his secretary, Count Las Casas, an account of his campaigns. The latter sits at a table, pen in hand. Napoleon is dressed in a light loose coat, white knee breeches and hose. The scene is painted with dramatic power, in delicate ivory tints, in which the rich chromic tones, so characteristic of other pictures, are not so pronounced. The incident took place the year after Waterloo, and the painter has broadly handled the subject, the features, and expression of the fallen hero, who is describing the passage of the Alps, one of his feet pointing to a battlefield. There is an imperiousness in the attitude and expression of Napoleon; as an historical picture, the work of Mr. Orchardson will rank among his best. Sir John Millais contributes three pictures. His principal one is "Blow, blow, thou Winter Wind." The landscape is a snow-clad hilly moor, or hillside, with pine-trees. Seated on a bank by the roadside is a woman, her grey shawl tightly wrapped round her infant, while in the mid-distance the figure of a man retreats, possibly her husband, who has left her to brave the wintry wind alone. A bundle lies on the ground beside her, and a dog beyond is howling. The grey clouds and wintry-looking scene swept by the wind are in keeping with the sentiment intended to be expressed—the deserted woman, who, in her despair, is bravely facing the sleet-laden blast, and who may be supposed to be uttering the words of the Shakesperian song.

We may return to the first gallery, and notice F. D. Millet's clever satire, entitled "Between Two Fires" (12), where a Puritan is seated at a table in an inn, with a decanter of red wine by his side, while two saucy maids—one in front, and one behind—are chaffing him, probably the result of some little banter in which he has indulged. Anyhow, the decorous-looking gentleman with steeple-shaped hat looks somewhat discomforted at the intrusion. As a painting the work is what we all expect to find from Mr. Millet; the interior and figures are faultless in drawing, and the accessories scholarly, while the colouring is cool and clear. J. W. Waterhouse exhibits a classical figure-subject, "Circe Poisoning the Sea" (20); According to the story in Ovid's "Metamorphoses," Circe, disappointed in her attempt to induce Glaucus to desert Scylla, poisoned the sea where the latter was wont to bathe, and thus communicated to her a hideous form. Circe is depicted as a beautiful maiden in deep blue drapery, holding a glass dish, out of which the poisonous potion is of being poured. The stately grace of the figure and deep green sea are well painted. Henry Wood's "Before the Procession" (3) is clever in the grouping of figures of the ecclesiastics, woman and child at the doorway of a church; the details are well painted, and the colours brilliant. Peter Graham has a powerfully painted coast view, "Sea-Worn Rocks" (25). The latter have been worn in the form of an arch; the painter impresses us by the contrast of the deep grey-brown rock and the atmosphere and sea. Lady Butler's pathetic and stirring picture "Halt on a Forced March: Peninsular War"—a halt of cavalry on a road, strewn by dead horses and men, the foremost horse without a rider, showing wounded knees, and a retinue of maimed and wounded men and horses—is cleverly painted. "Going with the Wind" (36), by Hilda Montalba, is a luminous sea-piece of much beauty. A "Haunted Temple," by Briton Rivière, two prowling, half-frightened tigers perambulating a temple lighted up by moonlight; Frank Bramley's "Old Memories" (53), an old couple, man and wife, seated in their cottage room by the glow of firelight; John C. Dollman's "Judas" (48), who, in the agony of remorse, is crouching, head down, on a rock in a desert, the money-bag and pieces of silver lying on the ground; G. D. Leslie's "The Rose Queen" (60); Geo. H. Boughton's "The Home Light" (66), and George Clausen's "Mowers" (81) are some of the pictures which attract attention in the first gallery. Subtle drawing and colour are seen in the poetically conceived figure by John de Casta, "A Pastoral" (49).

In the second gallery, Frank Dicksee, R.A., has a picture, "Leila" reclining on a couch clad in scarlet. The leopard skin, white lilies, and other details are well painted. Albert Goodwin sends a remarkable picture, "The City of Dis" (114), the city described in Dante's "Inferno," where Dante is led by Virgil, passes through the infernal regions, and is stopped by the citizens, who are driven back by a heavenly messenger. The painter dexterously depicts the passage where Dante and Virgil make their way "between the torments and the city wall." A very beautiful landscape is sent by J. MacWhirter, "June in the Austrian Tyrol" (120), in which the undulating fields of daisies and bluebells occupy the foreground, backed by mountains.

Some of these pictures deserve a more detailed account than we have been able to give them in a hurried notice. The grand composition of G. F. Watts, R.A., in the third gallery, is a picture of considerable power and allegorical meaning. "She shall be called Woman" (164) is probably equal to any of the veteran painter's works that have been exhibited, and to which we will return in our second notice.

ARCHITECTURE AT THE ROYAL ACADEMY.

THE painters this year have chosen the drawings selected for the architectural gallery at Burlington House, unaided by anyone more directly representing the art, so impartially is architecture comprehended at the Royal Academy of Fine Arts! The same unfortunate arrangement was made by the authorities last year; but we are given to understand now that a new order of things is to commence with "'93," and that in future an architect-member of the Academy will always be elected to assist in adjudicating upon the drawings sent for this little gallery. Hitherto, mere chance seems to have been accepted as good enough for so subordinated a subject. The collection on this occasion comprises no doubt some very good drawings, and the designs shown for South Kensington Museum completion redeem the gallery from comparative mediocrity and an entire absence of freshness. The Academicians, excepting Mr. T. G. Jackson, the newly-elected A.R.A., are all represented, and their work in each case certainly is characteristic. Truro Cathedral from the S.W., by Mr. J. L. Pearson, R.A., has been often seen by architects before, and though the view here exhibited seems a new one, done in Indian-ink washes by Mr. Masey, the perspective does not indicate the masterful building in any new light. The New North Front of Westminster Abbey is likewise shown by a similarly washed drawing, which well illustrates Mr. Pearson's clever façade to that church. Mr. Alfred Waterhouse, R.A., has but one drawing, and that holds the post of honour in the gallery. It shows the new Hall of the Yorkshire College, an important work now erecting in continuation of the vast series of buildings for this admirable institution which he has had in hand for many years. The walls are in red brick, treated in the style which Mr. Waterhouse has so long associated with his great reputation as the leading architect of the day. The picturesque quasi-towers at the end of the great hall, with their spire-like roofs, give importance to the road façade, and the ample fenestration, worked out in a Gothic mode, adds a practical air, which, combined with a pleasing grouping, go far to render a modern building satisfactory. Mr. R. Norman Shaw, R.A., once the life and soul of the Architectural Gallery in the days of Burges and Street, when Sir Gilbert Scott occupied the lion's share of space among the members, is content this year with a single exhibit, and that a quite unimportant subject. It is a geometrical detail, elaborated in gold and colour, of a triptych altar-piece for All Saints' Church, Richard's Castle. The outline is rigidly square in form and architecturally simple in treatment, the central part only having a florid framework of boldly-designed foliage in a 15th-century manner. The Crucifix with the Virgin Mary and St. John occupy the reredos, and in the leaves are figures of virgins and doctors, with angels in the outer wings. These are all in colour on a patterned gold ground, designed by an artist whose name appears on the drawing but not in the catalogue. When Mr. Bodley was first made A.R.A. his works were refused when offered for exhibition in conjunction with his partner, Mr. T. Garner, the plea being that his work by right had a claim to be exhibited, but that the hanging committee, by the very nature of things, were bound to exercise discrimination (save the mark!) in passing his colleague's productions. For years in consequence Mr. Bodley did not exhibit, and now the works of this firm are shown, some under one partner's name, and some under that of the other. To the uninitiated outsider the question naturally presents itself how the precise difficulty was overcome in dealing with Mr. Shaw's exhibit on the present occasion. The figure draughtsman evidently is responsible for the main part of the work shown, and credit is given to him in the frame for the designs; but in the catalogue only the architect's name appears. The ways of R.A.'s are indeed past finding out. Sir Arthur Blomfield, A.R.A., though now in partnership with his sons, exhibits a work of the firm in his own name. It is the Royal College of Music at South Kensington, a big, bold, striking building in red brick and terracotta, very simple, if not crude, in detail, but having a well-defined and telling skyline. The tall Scotch-like towers, with conical roofs at the ends complete the composition, but the dormers to them between the turrets look insignificant in this elevation, which is presumably Renaissance in feeling. The unfinished side of the new quadrangle at King's College, Cambridge, which Messrs. Bodley and Garner have had in hand for some while, is here represented by a design for the completion by Mr. G. F. Bodley, A.R.A. Like everything from his hand, the elevation is unquestionably good and dignified. With much restraint and a well-balanced simplicity the whole is treated, while a central tower surmounts the quad gateway in orthodox fashion, with an oriel marking the main story over the opening. On each side of the bay are mural niches for figures, made florid by carvings. The treatment is quiet, but seems, too, a trifle tame. Professor Aitchison, A.R.A., exhibits one of his works, executed many years ago now, if we remember rightly—viz., the marble Pavement and Staircase to Lord Leconfield's mansion in Chesterfield-gardens. The black and-white mosaic designs are graceful in well-drawn foliations, and the copper scroll-work to the staircase balustrade left an impression on our minds at the time the undertaking was finished, that it was an uncommonly good piece of metal-work. How the material has oxidised since then in London atmosphere we do not know. The other little drawing by the same hand of a small library room in a town private house (1703) calls for no remark. In turning now from the contributions by members of the Academy, we regret exceedingly the absence of Mr. T. G. Jackson's admirable work, which for so long has given interest to the gallery. Among the drawings sent by outsiders, to none do we refer with greater pleasure than to Mr. Aston Webb's accepted design for South Kensington Museum. The exterior view hangs on the line, and the interior ought also to have been exhibited. We published both when the award was made last summer,* and very little remains now for us to say here about the design. A detail and elevation of Mr. Belcher's design for the same work† are shown in the gallery; but his beautifully-delineated view of the same composition is absent. Few more artistic building pictures have of late years been seen to equal it for liquid light and massing of shadows. The big detail exhibited by Mr. Belcher is clever, and the architecture is free enough beyond doubt; but it is also very deceptive. The great hall of Hewell Grange, shown by Mr. Thomas Garner (Bodley and Garner) is out and away the grandest thing of the kind in the Academy this year. One chief thing about the work, indeed, is its bigness—so expensive, and what fine folks must live in such a place! But how unlike an Englishman's home! However, clients differ in taste, and requirements dictated to architects must be accommodated. The vast apartment of two stories high has a double colonnade dividing it off from an outer hall, or what possibly may be a vestibule. Over this arcaded division is a marble-fronted gallery, which, like the elegantly-hooded chimneypieces, seems treated in an Italian style, refined, and well conceived in detail. A deep carved frieze, with scarcely any cornice over, ranges round the walls half-way up, dividing off the tapestries, and above all is a flatly-treated timber ceiling, looking somewhat out of harmony with the rest. Through the window openings at the gallery level run wooden bridges fronted with balusters, and forming, probably, a gangway round the hall through openings in the main piers. The drawing is in colour, and gives a good idea of the place. The candelabra pendent from the roof look so high up that they would be quite beyond reach. If electric light is intended or gas, the designs are unsuited for the purpose. Messrs. Ernest George and Peto contribute excellent work again, as usual, but hardly command the line as heretofore. Their Country House in Dorsetshire is a plain, good house of some importance, with square mullioned windows, a long range of roof broken by well-proportioned simple gables, skilfully arranged for artistic contrasts. On the garden side two bays flank the central entrance, and to the right is a garden piazza for effect sake. The chimneys look a trifle thin, but there is no "trick" in these drawings of this house by Mr. George, nor in his other contributions. The dining-room and library, hanging below the last-named, is in a Flemish mode, with a flat, coffered ceiling, and ashlar-faced walls, or, marble in square slabs. The studio and house at Palace Court, Bayswater, by the same firm, has a big square-treated bay carried up into a tall capped roof, breaking into that of the main building, in which there are two rows of dormers. Flixton Hall, Suffolk, is a vast, Tudor-like mansion in red brick and stone, by Mr. F. B. Wade, shown here by a poor drawing which does not do it justice, and the same may be said of some of Mr. Mountford's heavily-washed drawings of Sheffield Municipal buildings. Some of these studies, however, are hung too high to be examined properly. This is the fate of Mr. Brooks' view of the proposed School Chapel, Tonbridge, a rich work in a Late style. The church, which he shows from Gospel Oak, is a much more typical work, recalling some of his best essays in Ecclesiastical art. Messrs. Douglas and Fordham send but one frame. It shows The Wern, Tremadoc, N. Wales, a large house with a rich Renaissance porch and big hall, bay window adjoining, in capital style, and a quiet sense of repose. Mr. W. F. Unsworth, too, deserves like commendation for his large house at Selsdon Park, which he lately enlarged. In this connection, also, we may name Mr. Wm. Young's additions, recently finished, at Gosford House, Scotland, a vast and bald Classical mansion, to which a grand staircase in alabaster has been erected, and two wings added of corresponding scale. The picture commands attention on the line. Mr. T. E. Collcutt sends a spirited sketch of the Queen's Tower at the Imperial Institute, with its copper-domed roof, and "Rivernook," Wraysbury, a county house such as might be expected from him. Mr. Hippolyte J. Blanc exhibits Ferguslie Park, Paisley, a residence in stone, well handled, and the Bury Municipal Buildings are shown in perspective by Mr. A. N. Bromley; while Messrs. Dunn, Hansom, and Dunn exhibit a well-hung interior of St. Michael's Church, Newcastle-on-Tyne. There are a very great many stained-glass window designs occupying good places in the room, and a greater number than ever of drawings of old buildings at home and abroad.

ROYAL SOCIETY OF PAINTERS IN WATER COLOURS.

THE summer exhibition of the Old Water Colour Society is interesting in bringing together the work of old and new painters, thus suggesting a comparison. Venerable members of the Society, like the president, Sir John Gilbert, R.A., Carl Haag, Alfred D. Fripp, G. A. Fripp, Birket Foster, E. A. Goodall, and others who have borne the burden and heat of the day; Alfred W. Hunt, William Callow, S. P. Jackson, and many more bring to our view works endowed with all the power, energy, and artistic feeling of the old school. Compared with the works of the new school of painters, there is much more conscientious labour, if we lose something of the *verve* and power of painters of the impressionist and naturalistic following. Brilliancy of colour, a more correct conception of "values" of light and shadow and tone, have been gained, as in such works as Lionel Smythe's "Digging Potatoes" (1), and in the clever work of Robert Little, a recent member, who in "Pittenweem" (161), "Greek Church, Bayswater" (38), "Firelight and Twilight" (183), has given us ample evidence of his power as a painter of exceptional skill. The first is broad, the light on houses of village and church tower admirably true to nature, while there is truthful drawing and tone in "Firelight," a girl warming her hands before a fire. A broad, wild moor seen under a dark evening sky by Matthew Hale is strong. Albert Goodwin's "Night: Faithful unto Death" (9), a scene of our Saviour's sepulchre, is powerfully impressive in painting and colour; a deep red sunset peers through the dark cypresses and palms; the three crosses on Calvary in the distance are seen, and the two Marys are watching opposite the sepulchre. The same painter's "Salisbury Close" (14) is rather purple in the tone of the shadows, the cathedral is screened by a dark mass of trees, which reveal its beauty in the summer's night, but there is poetic mystery. The views of Wells from the tower of the parish church (23) and from the market are clever sunlit sketches; another clever study by Mr. Goodwin is "Windsor" —a clover field (29)—in all of which the perception of the true artist is apparent. W. Collingwood paints a series of Alpine views—"At the Foot of Cervin," atmosphere and sunlight strive for mastery, the base is bathed in mist, the peak illumined by the glowing sun; "Beddegelert" (96), is also carefully painted in its atmosphere over the distant mountains. As studies of atmosphere, mist, and light, we value the work of this indomitable painter of mountain scenery. In another sphere—that of the coast, cliffs, wreck-strewn beaches, and rippling waves lighted up by evening skies—S. P. Jackson holds his wonted position. Mr. Jackson's drawings possess two desirable qualities—atmosphere and liquidness in his seas, perhaps rather cold in colour. His skies are generally serene and clear, as in "A Summer Day by the Sea" (12), or there is a freshness, as in "A Showery Day on the Welsh Coast," which with the Cornish coast are favourite hunting-grounds, as in Permizen Bay, with its fresh sea and half-sunken rocks in the foreground. The old hulk in No. 3, and the harbour studies, Goodwick Harbour, an old rock-built pier (121), "St. Ives Old Pier" (129), are all studies of reflected sunlight, of atmosphere and colour, generally grey in tone. H. C. Whaite has several mountain landscapes. "Loch Ranza, Arran," (18), "Sheep Pen, Snowdon," and the precipitous rock "On Glydwr Bach, N. Wales" (133), are full of character and colour. As a rocky summit suffused by vapour and sunlight, we have nothing finer here than the Cambrian landscape (67). A clever drawing of a hilly field with horses and men at work ploughing, is by R. Beavis (26); the foreshortening of the horses and the colour are both excellent. "A Wild and Windy Shore, Brittany" (31) is also well painted in the effect of sunlight and cloud. Miss Clara Montalba sends three pictures, of which "After a

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* See BUILDING NEWS for August 7th and 14th, 1891.

† See BUILDING NEWS, August 21st, 1891.

VENICE: THE APPROACH OF THE FLEET. (Saml. J. Hodson.)

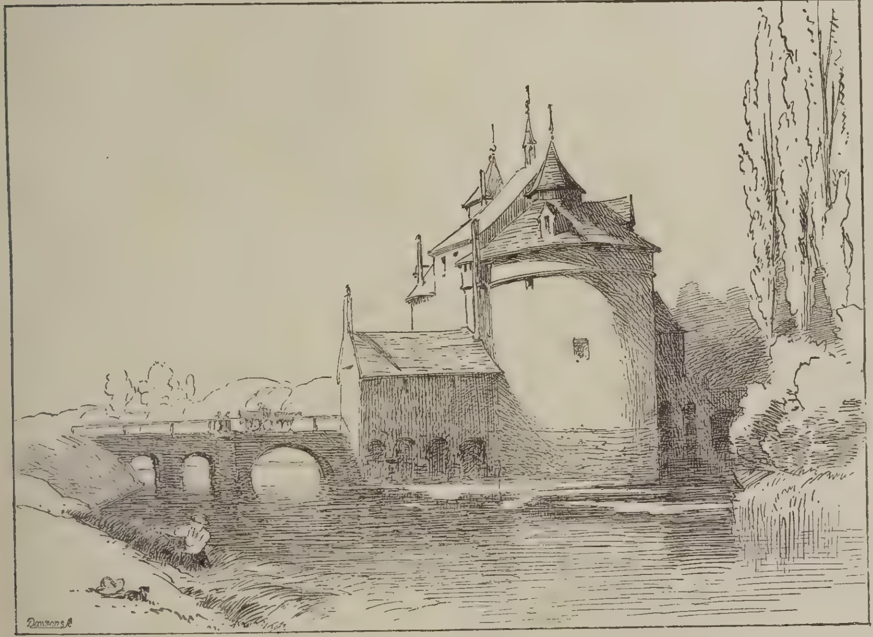
Shower (47) must be pronounced the most charming in the pearly-grey tones she so delights in; the placid lagoon mirrors a distant church, while on the water is a large vessel under canvas, its dark sails and bows contrasting with the luminous sea and sky. The other Venetian sketches on the screens are also delicate notes of colour. C. Napier Hemy's fishing-boat (40) on a deep-green sea is as bright and fresh as usual, the strong, sun-lit reflection forming a luminous background to the dark boat and its flying jib. "In Safe Keeping," a child and dog in a cornfield, by Lionel Smythe, is tenderly painted, and near it G. L. Bulleid has an ideal figure, "Phyllis," a maiden clad in delicate lilac drapery leaning against a marble column — a decoratively-handled subject. W. Callow has several drawings, one of which we illustrate. His "Belfry, Bruges," "On the Meuse, Dinant," "Venice from St. Georgio" (126), "Bellagio, Lake of Como" (154), and the views from Normandy, Ghent, &c., exhibit the same sense of picturesqueness, tone, and colour we have always admired in the work of this master. The poetry of the silent highway has still a charm for Herbert Marshall, whose "Shadwell Reach" (37), "Limehouse" (37), and "Winter Evening on the Embankment," in which the New Scotland Yard building and the Clock Tower of the Parliament Houses loom in the night mist (105), are conspicuous.

Of figure subjects, J. Henry Henshall's "Merry goes the Time when the Heart is Young" (156), like "Wonderland" some exhibitions back, is a study of a pretty-eyed, young girl with flaxen hair in a pink frock recumbent on a leopard skin, playing with three kittens, one of which looks down from an old carved chest at her feline companions. The drawing and details of chest, the rich plush curtain, the rose petals, and the textures generally are exquisitely painted. The young romp reposes gracefully, her stockinged feet and buckle shoes daintily showing beneath the embroideries. The pink dress is a charming contrast with the oaken floor, darker hangings, and background, while a few rose petals are prettily scattered on the floor. In colour and workmanship this work is worthy of Mr. Henshall's skill. Arthur Melville's "Eastern Shepherd" (162), a bold figure forcibly painted, is one of the strongest works. A recent member, T. M. Rooke, sends "Meeting of David and Abigail" (165), a composition of brilliant colour, a drawing of an Hotel at Lisieux, and "Among the Vines"; H. G. Glindon's "Great Expectations" (152) is rather French in style and clever in the accessories of the gorgeous interior; Alma-Tadema's small study on the screen, "Calling the Worshippers," is, though unfinished, a valuable contribution, full of grace and refined colour; lastly, the President's (Sir John Gilbert) "Standard Bearer" is remarkable for the painter's powerful drawing and spirited and forcibl colour, qualities which years have no diminished. Another veteran painter, Ca

A Bridal Procession in Damascus by Carl Haag

A BRIDAL PROCESSION IN DAMASCUS. (Carl Haag.)

TOWER OF RUDESHEIM. (Wm. Callow.)



LA PORTE D'OSTENDE, BRUGES. (Saml. T. Evans.)

Haag, paints a "Bridal Procession in Damascus" (55, which we illustrate in our reproductions) in his own brilliant style; while H. S. Marks, R.A., in "An Old Volume" (213), for its drawing and execution, is equal to anything in this class of subjects. We can only rapidly pass on to notice with due admiration Birket Foster's "Loch Maree" (90), a large mountainous landscape full of sunlight effect and of that careful execution which we expect to meet, certainly one of his finest works; also the work of that indomitable painter of the Dorsetshire coast, Alfred D. Fripp, whose "Lulworth" (122) and "Isle of Portland" are admirable examples of sunlight and air, and delicate craftsmanship; Tom Lloyd's idyllic picture of "Reapers" (120), and the "Lord of the Manor"; R. Thorne Waite's "Changing Pasture" (61), "Calling Home the Cattle," "Haymakers" (108), "Mid-day Rest" (230), and other small sketches reminding of the grouping and colour and handling of Cox; Robert W. Allan's strong colour and breadth of treatment in his view of Arran, sharp and rather hard sometimes; the fine blue seascapes of H. Moore; E. F. Brewtnall's clever sunset sky study in No. 113, and works by G. H. Andrews, W. Eyre Walker (171), Edwin Buckman (148). S. J. Hodson's Italian landscapes, especially his "Venice, Approach of the Fleet" (see illustration), "St. Mark's," and "Porta della Carta, Venice" (59), are admirable in drawing and colour.

J. W. North's "Cupid in the Pear Tree" is rich in the autumnal gold of foliage (60); William Pilsbury (76), Francis Powell (77), Arthur Hopkins (50), Sam T. Evans, and George A. Fripp are other contributors. For its sunlight and atmosphere the delicate handling of Alfred W. Hunt, in his "Grasse," deserves attention.

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THREE MINOR PICTURE GALLERIES.

We are glad to welcome such a series of paintings as those by Mr. John Varley, now on view in the Japanese Gallery, 28, New Bond-street, illustrative of the scenery and buildings of Japan, to which are added some views from North China. The city walls, bridges, and palaces, with their gateways; the inland seas; the mountains both in snow and summer; the native customs, temples, and cemeteries supply in turn the artist with subjects for his able pencil. The variety of the collection is marked by the different styles of treatment adopted and methods of rendering, as well as by the varied subjects by land and water selected for the pictures. This is no uncommon praise, and we can commend Mr. Varley's work for its modesty, honesty, and representative character. The dreary chill of a winter scene has received as much sympathy as the brilliant gardens of the plum and peach in full radiance of summer time, or in the spring, when the cherry-trees, grown for their double blossoms, fill the air with fragrance and cover the ground with flowers. Out-of-the-way villages, like Yumoto, in the mountains of Kikko, or "Ojigoku," the great hell near Hakona, a peak of Kamirgama, are represented, as well as more familiar spots, such as Tokio and Kioto. In all the views the local colour of the subjects is well secured, and the facility of the artist is shown as well in the oils as in his water-colours. Sir Edwin Arnold and Captain Brinkley, of Japan, have written explanatory notes for the catalogue.

In the Burlington Gallery, Messrs. Reginald Jones, E. P. Bucknall, C. J. Lauder, R.W.S., and Wilfred Ball are showing some excellent paintings. The first-named artist draws with a freedom and dash which is refreshing, and all his landscapes have a breezy air about them. The boats and craft in his waterside pieces are skilfully delineated; but in some of his productions there is a suggestion of such picturesque compositions being knocked off with a view of meeting popular tastes. Mr. Bucknall's cornfield studies greatly please us, and not a few of his North Wales scenes are admirable. Mr. C. J. Lauder brings us back to everyday life by his graphic street studies in London. The figures are true to life with the busses, cabs, water-carts, and the rest of it; but we scarcely like his architectural treatment, as the proportions given to some familiar buildings in relation to others appear to be governed by an endeavour to secure pictorial effects rather than exactitude of representation. Mr. Wilfrid Ball has in his "Nooks and Corners" some capital little drawings, such as "Eton from the River" (155), or "Outside Bruges" (160), both bright and crisp in colouring.

The New English Art Club show at the Dudley Gallery comprises, of course, some works of true merit; but, as usual, we find here first impressions and half-realised crude studies exhibited as finished works at fancy prices. Some, indeed, are weak in drawing, repulsive in colour, and incomprehensible in composition, "Ta-ra-ra-boom-de-ay," for example, by Miss Rose le Quesne, or "The Passing of Spring," by Mr. W. Brown Macdougall. It is a relief to turn from such "shockers" to Mr. Herbert Marshall's "Snow Effect, Whitehall," wherein all the grime and cold, damp misery of a mid-winter's foggy frost in London is fully realised. The artist has given us a true impression most ably of just the sort of days we long to forget. "A Breezy Day in the Fens" by Mr. Fred Brown well befits its name, for the willows with their feathery foliage bending against the wind almost actually move, and the cattle and sheep nestle as in a breeze—a little more air going and their backs would be presented to the windward. The clouds in this picture are too lumpy to convey the impression evidently intended by the painter. Miss Amy G. Draper's "Chemise" seems a curious study of nude shoulders, and "The Bathers," by Mr. T. H. McLachlan, is another differently treated. Prince Pierre Troubetzkoy sends a large portrait of a fine-looking girl painted in the open air. It is wonderfully rough, and the paint looks as if it had been put on with a pallet-knife; but when seen at a distance the effect is broad and delicate in tone, particularly the face. The brilliant blue in the middle picture is a mistake. "Fine Rain Falling over Swedes," by Mr. Francis Bate, is a curious subject, painted with much feeling.

LAND SURVEYING AND LEVELLING, AND THE TESTING, ADJUSTMENT, AND USE OF MATHEMATICAL INSTRUMENTS.

By G. W. Cobham, P.A.S.I.,

("Crawter" and "Special" Prizeman of the Surveyors' Institution.)

I.—INTRODUCTION.

IT rarely happens, in the ordinary course of pupilage, that practical experience is acquired in this subject in all the branches necessary to be studied; and it is hoped that these articles may contain the necessary data for the acquisition of the extended knowledge required. They are not intended to supersede practical training, which is absolutely necessary for the proper understanding of this subject, but are rather intended to help those who, while having a fair knowledge of practical routine work, are, by reason of distance from a large town, or from other causes, unable to gain information on practical or theoretical points which lie outside their everyday experience. A short explanation of the elementary principles and work must of necessity be made, so as to insure conveying all the information likely to be wanted. It will be assumed that the student has an elementary knowledge of algebra and geometry. It has been said that information of any kind is sure to be, sooner or later, useful to a military officer, and the same remark will apply to a surveyor. A surveyor is liable to be called upon at a moment's notice to do anything, from pulling a man out of a ditch to getting a crowd to "move on." It is essential that a surveyor should have, absolutely at his fingers' ends, all methods of measuring that have been invented, as well as the way of testing and adjusting his instruments, or he may have the mortification of finding himself standing upon a mountain side with no other surveyor within ten miles and a field full of assistants standing round waiting to be told what to do next, he being unable to tell them how to go on. He must be full of resource, as instruments *will* sometimes get broken, and then the surveyor who knows "the other way" will come out best.

II.—GENERAL PRINCIPLES.

The ultimate object of surveying is to reproduce on paper the lines of the division of property or of natural features of the earth. For our purpose these lines can be divided into two classes:—

1. Those which are straight.
2. Those which are not straight.

Straight Lines.—To reproduce a straight line we want to know three things about it:—

1. Its point of origin.
2. Its direction.
3. Its length.

We cannot reproduce it unless we know all these things, although we may know some very important, and in some cases sufficient, facts about it if we know only one or two of them. Now all we can do is to compare positions, directions, and (measured) extensions with other positions, directions, and (measured) extensions; we cannot conceive of any of these qualities as existing absolutely and alone. For instance, the point of origin must be arbitrarily assumed; of course it will be assumed somewhere on the earth's surface, and we treat it as fixed; but we only mean that it is fixed with reference to all other points on the earth's surface, we do not know whether it is really standing still or whether it is moving. We can, in fact, only imagine motion as movement relative to other objects. We may say that our "fixed" point moves round the earth at the rate of ·288 miles per second (introducing two arbitrary units, miles and seconds), and that the earth moves round the sun at the rate of 18·317 miles per second, and that, therefore, our point moves round the sun with a velocity varying between 18·029 and 18·605 miles per second. In the same way we might allow for the diminution of the distance between the sun and Sirius of 29 miles per second, or Arcturus of 55 miles per second, but we get no nearer to the idea of absolute motion or absolute rest. We must, therefore, assume standards, and consider and compare or measure our dimensions with reference either to the standards or to other dimensions which have been or will be compared with the standards.

The object of these papers being measurement of portions of the earth's surface, it will be sufficient if our lines are fixed relatively to all other portions of the earth's surface.

Position.—The standards of position are: the Equator—or mean position on the earth's surface between the North and South Poles—and the Greenwich meridian—or the line passing through the mean of the wires in the transit instrument in Greenwich Observatory and the North and South Poles. The positions of points are indicated by their angular distances from these standards as latitude and longitude. We do not always take the trouble to compare a point directly with the standards, it is often sufficient to put on a plan the main road from town to town with something, such as a cross road or mile-stone, to indicate what part of the earth we are dealing with; but it must be remembered that latitude and longitude is the correct way to express a position so as to be intelligible to a stranger.

Direction.—The standard of direction is the direction passing through the point of origin and the North and South Poles. Directions are measured by the angles they make with this direction. This direction, which is called the meridian of the point of origin, is the only one that can be calculated at any place so as to be compared with other places; sometimes, for convenience, the magnetic meridian, or the direction in which a magnet points, is used; but then the deviation from the true meridian is known and allowed for, as will be explained when we deal with magnetic instruments.

Extension.—The standard for the measurement of extension or length varies in different countries. In England and its dependencies the legal standard is the yard; but for our purposes we generally use the chain, which is 22 yards long. The only foreign standard of note is the mètre; it is used in practically all civilised countries except England, and even here it is in universal use in scientific measurements. The mètre is 1·09363306 yards long; the yard is ·91438348 of a mètre long.

A finite straight line begins and ends with points. If we know the point of origin, the direction, and the length of the line, we can determine the point at the end of it; and if we know the point of origin and the point of termination, we can reproduce the line. It is very important to remember that we can only conceive of a straight line as being the interval between two points. (Euclid, Book I. Definition 2.)

Lines which are not Straight.—To reproduce a line which is not straight. If it is made up of several lengths of straight lines, it can evidently be completely determined if we know the points where the direction changes, as well as the points of origin and termination.

When the line is neither straight nor made up of straight lines, we cannot reproduce it exactly, unless it is a single curve. Simple curves never occur except in railways or other artificial structures; they can be reproduced by determining the position of a number of points. From these we can calculate the position of any number of points on the curve, and can therefore reproduce it with any desired accuracy.

In the case of lines which are altogether irregular, we must determine the position of as many points on it as will render the reproduction sufficiently accurate for our purpose. In practice, the line is then drawn through the points, either by hand or by means of a French curve.

We have thus changed our definition of surveying from "the art of reproducing lines" to "the art of determining the relative positions of points."

Strictly speaking, the straight line is a curve the position of the points in which, reckoning from the point of origin, have an invariable direction and a variable length; the position of the points in what we have called a simple curve have both the direction and the length variable, but with a simple fixed relation to one another; and the position of the points in what we have called an irregular line have both the direction and length variable with no simple relation to one another.

I shall at all times be most happy to answer any questions which may be sent, in the paper if the question is of general interest. If a student gets into a difficulty, by all means let him write, as most likely others will have fallen into the same error or misunderstanding, and be glad of the answer. In any case, every inquirer may be sure that his question, however elementary, will be seriously dealt with. If an answer by post is desired, a stamped and addressed envelope should be inclosed.

LEASES TO LIMITED LIABILITY COMPANIES.

UNDER the above title a paper was read at the ordinary general meeting of the Surveyors' Institution, held on Monday evening last, by Mr. E. G. Wheeler (Fellow). The president, Mr. R. C. Driver, who took the chair, alluded, in opening the meeting, to the great loss the Institution had sustained by the death of one of its past presidents, Mr. W. J. Beadel, M.P., who had recently died while at a comparatively early age, and with apparently the prospect of many useful years of life before him. He would be regretted by all who knew him, by all who had business with him, and, above all, by his colleagues on the Council of the Institution and by his fellow Members of Parliament, as a man eminent for his ability, conspicuous for his geniality, and essentially the ideal of what an Englishman should be.

Mr. Wheeler's paper was then, in the author's absence, read by the secretary. The largely increased and increasing number of firms who now took advantage of the Limited Liability Acts, and the consequent proportionate loss of security for the fulfilment of their contracts enjoyed by the lessor, rendered it, he thought very necessary to consider the possible effect of granting leases to such limited companies. His remarks referred primarily to colliery leases, but in only a slightly smaller degree to leases to any companies whose liability was limited. In many cases the formation of such a company was the only means by which the capital necessary to carry out a large undertaking could be furnished, and it became inevitable, therefore, that landowners must face the probability of having to depend for tenants on such bodies. It therefore became necessary to consider: (1) Whether some equitable arrangement could not be arrived at which would reasonably secure the landlord in granting leases to limited liability companies; and (2) whether a landlord was likely to be the greater loser by granting leases to such companies, with all the attendant risks, or by letting them completely alone, and taking the chance of finding an independent tenant. Many suggestions had been made and carefully considered, in the hope of getting over the difficulties involved, among the most prominent of which were the following proposals: (1) That the company should only call up a part of its capital, and should give the lessor a debenture to secure the performance of the covenants of the lease. (2) That the company should pass a resolution that a given proportion of their capital should only be called up in the event of their being wound up. But both these proposals were open to the objection that, even if there were uncalled capital, it by no means followed that the then shareholders were in a position to find it. It was also found impossible, under the Limited Liability Clauses Act, to give a prior lien to the lessor on any sum set aside for the purpose, as all assets must be brought into a common fund for the benefit of all creditors. Another and more novel proposal, but, he thought, a more practical one, was based on the system of fire insurance at present so largely in vogue, and was that the lessees should obtain a guarantee in favour of the lessor from some substantial trust or insurance company for the fulfilment of their contracts and obligations. The insurance company, as between themselves and the lessor, should be liable as principals, and not as sureties; the amount should, of course, be limited to a previously agreed sum; the policies must cease at the end of a term, or on the lessees going into liquidation; and all policies should be payable by the lessees, or if by the lessor, should be recoverable from the lessees by distraint. By this means the lessor would be secured precisely as a landlord is secured from loss by fire. Negotiations had been opened with one or two insurance companies who seemed, however, to be little disposed to adopt such a system, asserting that experience only could establish the insurance of new risks on a firm basis, and that the prospective amount of new business was not apparently sufficient to warrant their undertaking such new risks. The author did not think the companies sufficiently recognised the remoteness of the chance of claims, nor the ease with which the character and substance of the insuring companies could be ascertained, and he was still hopeful that such a system might be found to be workable on, at all events a limited, if not on a large, scale. Failing such a proposal being carried out, the only practicable alternative seemed to be for the landowner to insure his own interests, by charging a somewhat higher royalty rent to a company than would be demanded from an individual, and setting aside such extra sum as a premium on a policy to be effected by himself, to secure him against loss from breach of covenant or failure on the part of the lessees. This might have the effect of checking the establishment of limited liability companies to some degree; but this would be a result, the author thought, not altogether to be deplored. The owner of a large number of different properties is practically insured by the soundness of the many against the possible failure of the few; but a small landowner might be completely crippled by the liquidation of the one company which was working his only property. In conclusion, the author regretted his inability to present the subject in its strictly legal aspect; but his experience led him to recognise it as a serious matter, and one which required such ventilation as would result from its discussion by a meeting of the Institution.

Mr. J. Cross, of Manchester, thought the suggestions of the author were scarcely practicable. It was all a matter of supply and demand, and the system of limited liability certainly increased competition, and caused the working of undertakings which would not be embarked in by a private individual. The lessees had the risk of working, and also the risk of the market, while the output was often limited by circumstances beyond their own control, at the same time that they had to pay the minimum rent, whether they made a profit or not.

Mr. A. Harston said that, although he had no practical knowledge of the working of coal mines, he had come across many instances in which the winding up of a company had seriously affected the interests of persons with whom they had contracts, and one case was specially fresh in his mind, where, against his advice, a building owner had intrusted the carrying-out of large works to a man who, trading under the bogus appellation of a limited company, had become insolvent, with the result that the security for the maintenance and completion of the work was useless.

Mr. F. K. Munton thought that the paper dealt too exclusively with coal and colliery interests, and was too obviously written from the point of view of the landowner only, who, it seemed to argue, must be secured against all risks, while everyone else must take the chance of success or failure inseparable from all business undertakings. It was very usual for the lessor to protect his interest by stipulating that certain substantial individuals should be the nominal lessees.

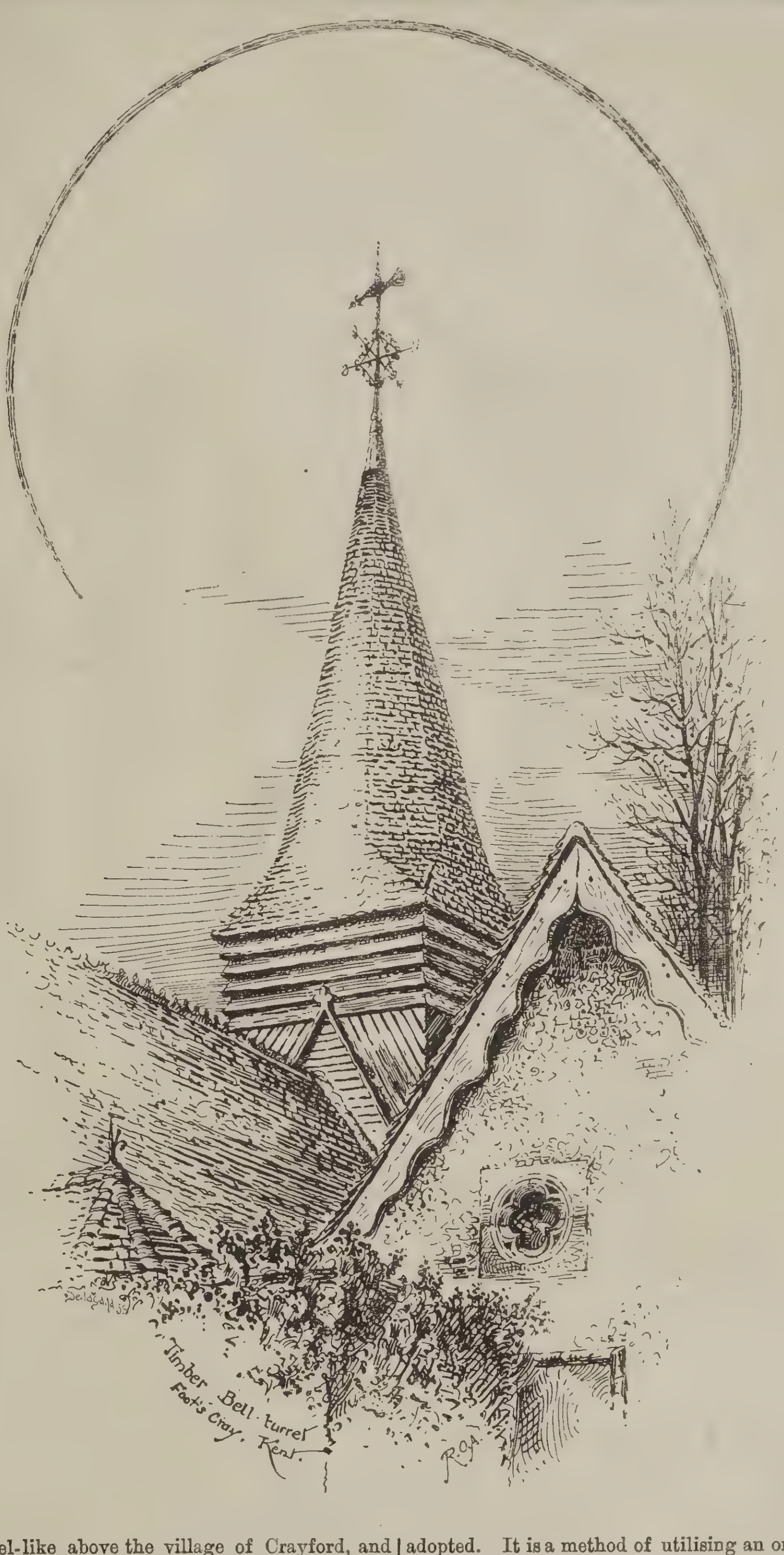
Mr. J. Oswald (visitor) said that the risk of loss from fire and that from breach of covenant differed in the essential particular that an insurer against fire had always before him the wholesome fear of the law of arson; but what corresponding check could there be on a man who wilfully and designedly broke the covenants of his lease, on which an insurance company could rely for the protection of their interests?

Mr. W. Mathews, Mr. W. Woodward, and Mr. A. King having spoken, and a vote of thanks to Mr. Wheeler having been carried unanimously, the meeting adjourned.

TIMBER BELFRY, FOOT'S CRAY CHURCH, KENT.

SEVERAL interesting old churches adorn the valley of the Cray. From Orpington, at the river's source, to the old church that stands sentinel-like above the village of Crayford, and overlooks the green marshes of the Thames Valley, there is a constant succession of thriving villages, each with its ancient fane. The church at Foot's Cray is not, perhaps, so well known as those at St. Paul's and St. Mary's, Cray; but though smaller than most of the Cray churches, it has its own points of interest, and well deserves a visit from anyone in the neighbourhood of this beautiful Kentish valley. The most prominent feature in its exterior view is the old shingle-covered, timber belfry, quaintly seated on the ridge of the nave roof, and forming a pleasing object at all seasons of the year.

R. OWEN ALLSOP.


Timber Bell-turret
Foot's Cray. Kent.
R.O.A.

THE PHONOPORE.

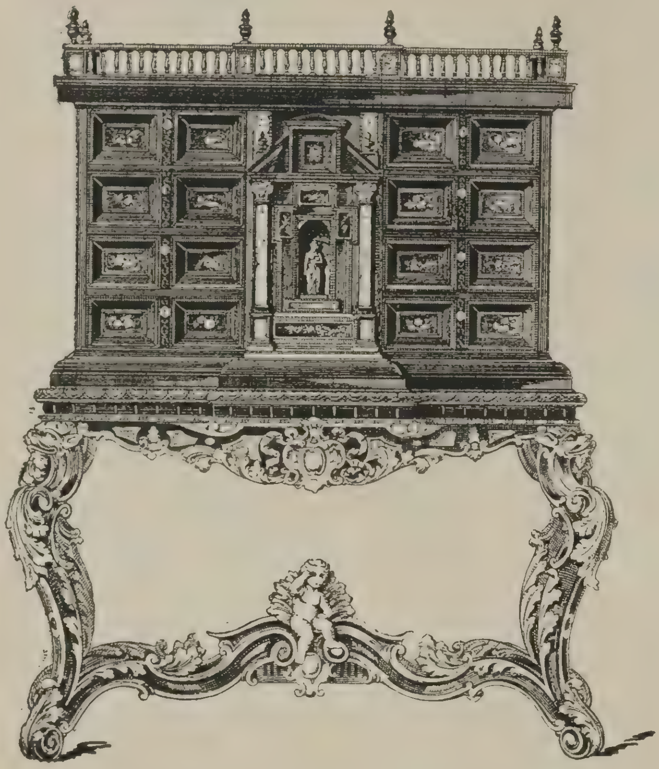
THE utility of the phonopore, the invention of Mr. C. Langdon-Davies, is at last beginning to be recognised on all sides, and after a long and rather severe trial on the Midland and other railways in this country and abroad, there is now no doubt that it will be almost universally adopted. It is a method of utilising an ordinary telegraph line for sending telephonic or other signals without interfering with the regular working of the telegraph, and consists primarily in utilising the causes of what are known as "induction noises" to transmit messages. When a current is passed through a telegraph line it induces a current in any adjoining wire, and that is utilised by Mr. Langdon-Davies to transmit signals, which can be read in the ordinary way or be heard by telephone. The Phonopore Syndicate, of Blomfield House, London-wall, E.C., have taken the invention in hand, and before long probably every telegraph line will have its phonopore attachment, which practically doubles or trebles its working capacity.

A RISING ESSEX WATERING-PLACE.

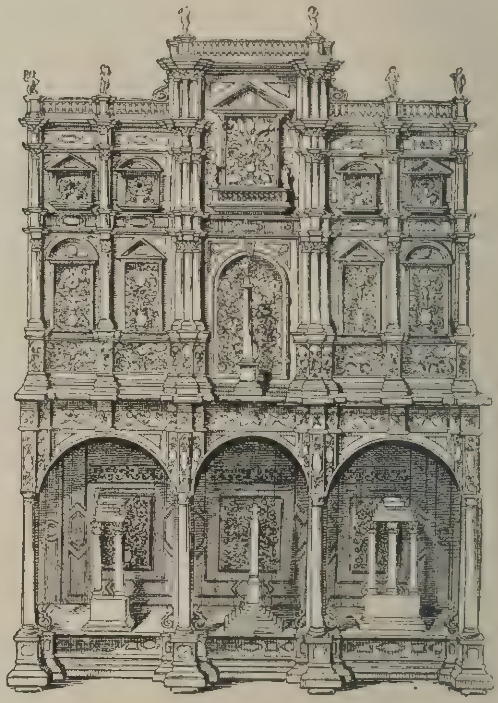
THE new Southminster Branch of the Great-Eastern Railway has made accessible a seaside place at the mouth of the Blackwater, which is here three miles broad, opening into the

OLD ITALIAN · CABINETS · AT "THE MOUNT" BISHOPSTOKE ·

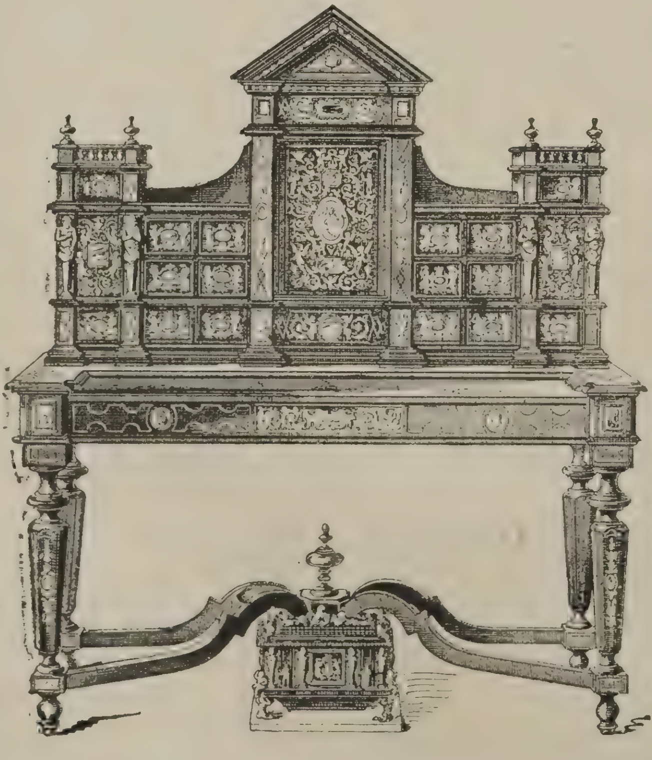
COLLECTED · BY · THE · LATE · CAPTAIN · THOMAS · HARGREAVES · J · P ·



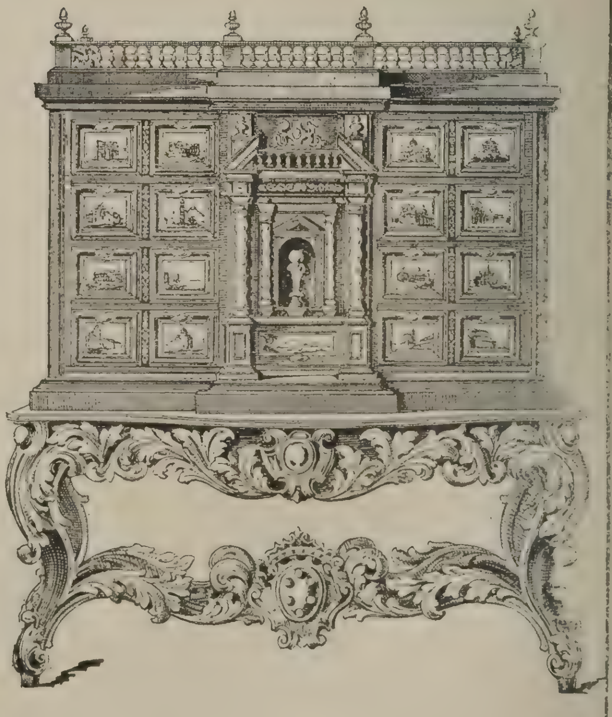
Florentine Cabinet 5 ft wide



Italian Cabinet, 6 ft wide

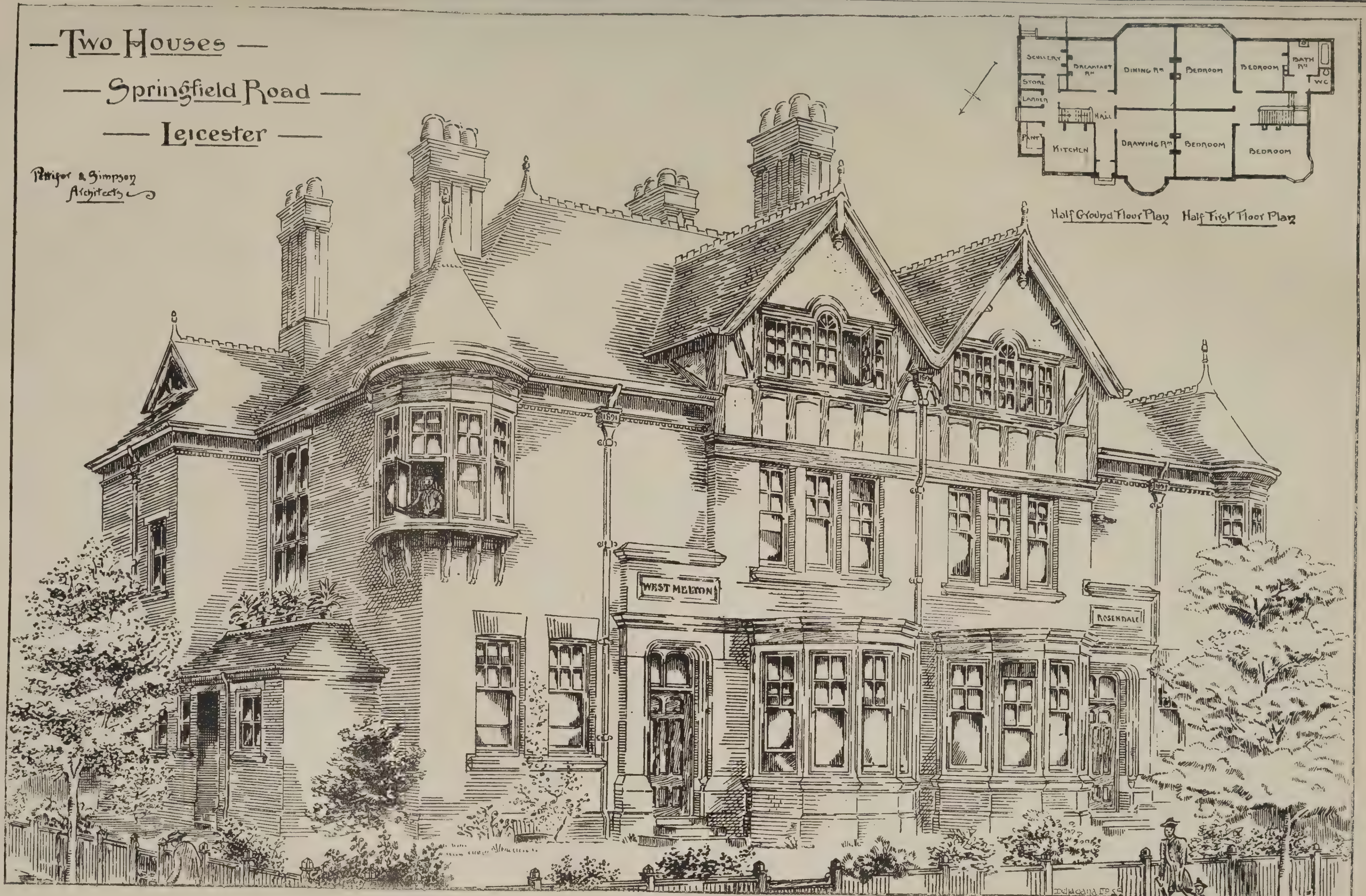


Italian Cabinet, 5 ft wide



Florentine Cabinet, 5 ft. 6 in. wide

Dellagana & Ltd Sc


—Two Houses —
— Springfield Road —
— Leicester —
Pettifor & Simpson
Architects
Scullery
Breakfast Rm
Store
Larder
Panty
Kitchen
Hall
Dining Rm
Drawing Rm
Bedroom
Bedroom
Bedroom
Bedroom
Bath Rm
WC
Half Ground Floor Plan
Half First Floor Plan
West Melton
Rosendale
1891

WAYSIDE NOTES.

READING the late J. D. Sedding's most interesting book on "Garden Craft," I have been thinking a good deal as to what constitutes the real ethical beauty of a garden. It seems to me that the chief beauty should be referable to the "gardenesque," just as we may say that at the root of architectural effect is a certain inexpressible "architecturalism." Thus defects may creep in in both the "formal" and the "landscape" style of gardening. Too much reliance may be placed upon "style." Give me the cottager's well-cultivated garden, or such a garden as we may find at a farmstead where is a good housewife, and the geometrical paths, terraces, and clipped yews of the "old garden," and the snaky walks, meandering lawns, and sham concrete boulders, &c., of the landscape gardener may take their departure. Avoid style; so long as there is care and thought evidenced for all that grows and all that blows, there will be beauty in the garden.

Whilst objecting to the shaped yews of olden times—the peacocks, and what not—we may admire the keeping of trees neatly clipped in certain simple shapes—as cubes and pyramids, and simply curved cuttings. At Brenchley, Kent, which I passed at Easter, the old church is approached from the village street by a short avenue of most stately-looking yews, cut to somewhat of a fat bulrush shape, and the effect seems good and suitable. In some old cottage gardens we occasionally find just *one* clipped yew as a curiosity. So found, they are pleasing, but a garden full of trees cut to all manner of shapes is a fearful eyesore, and an insult to nature.

The garden at Hall-place, Bexley, might be pointed out to those who like old gardens. I do not now remember the details of the arrangement, but the terrace is running away from the house, rather than standing at right angles to it, as is more usually the case. There is a high old brick wall running along the Bexley and Crayford-road, and behind this runs the terrace, a lawn in two levels leading away towards the river. A point not noticed, I think, in Sedding's most pleasant book is that of aspect of garden terraces. If a high wall can be built facing south, and a broad terrace of gravel on its south side, a dry, warm walk may be provided on many an indifferent day in this variable climate of ours, besides an expanse of wall-surface provided for delicate fruit-growing. Thus we have our terrace practically useful, a point that commends itself a good deal to my matter-of-fact mind.

I have had another breezy walk to the Dyke, near Brighton, and find that the proposed Garden of Eden progresses. The little elephants on the entrance piers have been painted "to approved tint," that being genuine elephant-grey. The model of the 81-ton gun has mysteriously disappeared—it may be that the promoters had doubts as to whether a paradise should possess such a weapon, even if only a counterfeit. Kiosks are being erected, and the inevitable camera-obscura is evidently contemplated. Penny-in-the-slot machines, as a matter of course, and all the equipments of the average travelling showman may be expected. How great will be the improvement! Before us will be the glorious panoramic bird's-eye view, and in the stead of such commonplaces as the winds in the downland grass, and the distant lowing of cattle, and faint farmyard noises from the homesteads far down in the plain, will be the steam barrel-organ and crack of the saloon rifle, together with dainty remarks of the three-shilling-there-and-backers and other amenities, as Evelyn would have said. The place will evidently be greatly improved, and people who visit the old Devil's Dyke will say more than ever that once seen, it is never to be forgotten.

The Railway Commissioners' inquiry *re* workmen's trains can result in nothing but good. Anything that will tend to encourage the working classes to go out into the suburbs rather than swell the already overcrowded metropolitan districts must be for the benefit not only of working men themselves, but also the general community. In town a man gets a few small rooms in a densely populated neighbourhood; in the suburbs he can have his own house and garden—which latter he can lay out in the formal old English style or the modern "capability Brown" method! In town he gets a filthy compound in lieu of the breath of heaven, and if the atmosphere of the suburbs does not quite come up to rural standard, it is yet far superior to the air in mid-London. Out of town the working man's Sabbath may be a far better-spent day than otherwise. His wife may not have public washhouses whereat to cleanse the weekly linen heap; but she has her own copper and back garden for the necessary laundry operations. Workmen's trains are indeed one of the boons of the century, being a real blessing to the poorer section of workers in town, and one worth all the other imaginary benefits gained by agitation put together. It is surprising how artisans now move about backwards and forwards to their work. It seems now no uncommon thing for the majority of the workmen on a job to go daily, say, from South to North London and back, and it is pleasant to think that craftsmen and others one daily sees are living comfortably in their own clean homes and not suffering from the misery of overcrowded tenements.

I trust the A.A. will not be "split," as your correspondent thinks, although it is certain there is something like a division of camps. There is also a change evidenced—in the issue of invitations to the *soirée.* Heretofore we have had something like this: "The President and Council of the Architectural Association request the honour," &c., in a dignified manner. I have this morning—"as it leaves me at present"—received a card with, at the back, "Admit the member to whom this card is addressed, to the members' *soirée.*" It don't seem very complimentary; but if the *soirée* be good, perhaps the manner of the invitation thereto is of small account. And there is a practical gain in the card arrangement in point of convenience of despatch for the secretaries. I hear that the entertainment provided is to be very good.

There are some people of a mind not to let Mr. Tate withdraw his offer of pictures without an endeavour to induce him to alter his mind. At a meeting of delegates from vestries and district boards, held on Monday at St. Saviour's vestry offices, Southwark, the matter was under consideration. It appears that the St. Saviour's vestry passed a resolution as follows:—"That this vestry regrets to hear that a suitable site has not yet been found for the gallery of British art, offered to the nation by Mr. Tate (a gift of the value of £150,000), and trusts that the Chancellor of the Exchequer will yet endeavour to find such a site in a central position; or, failing that, that the London County Council will give a site, and endeavour to obtain from Mr. Tate a reconsideration of his withdrawal, that London may yet secure his magnificent offer; and that copies of this resolution be forwarded to the Chancellor of the Exchequer, the London County Council, Mr. Tate, and the vestries and district boards of the Metropolis." There is no doubt that Mr. Tate, though nominally withdrawing his offer, would still give the pictures for the benefit of the public, if a site could be found suitable for the purpose. To so much bother and vexation has the owner of the magnificent collection been, put that one cannot wonder at his being irritated at the delay that has been a great part of this matter. At the meeting in Southwark, a spectator suggested that the site next to the City of London Schools would be a good one, and that the County Council might offer to purchase the same of the Corporation. As the Council is itself becoming interested in this matter, we may hope for something practical being done. It is a thousand pities that so good an offer as that of Mr. Tate's should be thrown aside for the want of a site. The County Council have now an opportunity of doing a really great public service. Pictures do not seem so important matters as bridges and drains, but who knows but what they contribute in a large measure to the health and welfare of us all? Looking at pictures has certainly a moral effect, and moral effects lead to physical ones. This for prosaic and economical L.C.C.'s to consider.

GOTH.

The Archbishop of Canterbury will take part in the reopening of the choir of Peterborough Cathedral on June 2, after restoration from Mr. Pearson's plans, carried out by Mr. John Thompson.

THE UTILISATION OF OUT-OF-DATE MILLS.

AT Ancoats, a Manchester suburb, an experiment is being made in converting a disused mill into model dwellings, and should this prove a financial success, it is probable that many of the manufactories which have gone out of date will be utilised for housing the working classes. The mill, the *Manchester Guardian* explains, which has been taken over and turned into small dwellings is known as Patteson's Mill in Jersey-street, and is seven stories high. Mr. C. J. Maycock, the architect under whose advice the alterations have been made, found the rooms so far adequate to the new uses as to need little alteration. They were from top to bottom fireproof, the floors and outer parts of the walls being of cement. There were sufficient of them to house 148 separate families, and the task was to provide efficient sanitary arrangements for that number of tenements, with gas, water, means of entrance and exit, and window lighting. These matters have been accomplished satisfactorily. The plan adopted by Mr. Maycock was to leave the main building intact, and to put up at either end two new and complete edifices, attached by passages, and of equal height—seven stories—to the main building. These semidetached ends, which contain the sanitary appliances, form square towers. At their outer sides ashpits and water-closets are provided, and between these and the main building an open staircase runs, which permits of a "through and through" ventilation. The drainage of each dwelling has, by double piping, been separately flushed and ventilated above the topmost roof. On the ground, manholes have been provided at each of the junctions with the street sewer. The further exterior alteration in the building is the provision of balconies, which are railed to a good height, and run both front and back outside each story. The "dwellings" are entered from these balconies. A plan which is in some degree novel has, however, been adopted with regard to the balconies, which on either side of the building are parted off in the middle. Thus half the dwellings are reached from one end and half from the other. The advantage of this is that in the case of an outbreak of any kind, it would be possible to isolate one part of the building from another. The dwellings themselves have been arranged in three kinds—larger and smaller "two rooms," and "single" dwellings. The larger two-room dwellings consist of a living-room, which has been fitted with a kitchener, sideboard, sink, and cupboard, with hot and cold water, and a gaslight suspended from the ceiling. The area of this living-room is 184 superficial feet and $1,660\frac{1}{2}$ cubic feet. There is, besides, a bedroom of exactly similar size, including two recesses, which, so standing in the original design of the mill, have room enough for a child's cot or small bed, which could be veiled from sight by a curtain. Gas has been also laid on here. In the smaller dwellings the area of the living-room is about 184 superficial feet; but the bedrooms are 135 superficial and 1,215 cubic feet. The single dwellings have a living-room with a bed recess, the total area of which is 184 superficial and $1,660\frac{1}{2}$ cubic feet. The yard of the mill has been "cindered" and made into a playground of 1,300 superficial yards for the children. Apart from the main building, two large storerooms in the old offices have been allotted as clubs. A washhouse, with boilers and tubs, has also been provided, and part of the playground will be utilised as a drying-ground. The total cost of the mill and the work of conversion has been £19,000. The rents have been arranged in the order of the stories. The ground floors are appraised at the highest rent; 4s. 9d. per week is the rent for the two-room houses, and 3s. 9d. per week for the single houses on the ground floor, with a lowering of 3d. per dwelling per week for each story higher. The return which the company seeks for its outlay in making the conversion is 4 per cent., and any income that may accrue beyond that sum will be applied to a reduction of the rents.

The organ of St. Nicholas Church, Warwick, was reopened on Wednesday week after having been remodelled and enlarged, at a cost of £650, by the Casson Organ Co. of London.

The Bible Christian Chapel, in Perranwell, was reopened last week after reseating with pitch pine pews and other alterations. Messrs. F. and R. Rowse, of Cusgarne, were the contractors.

PUBLIC BATHS AND WASHHOUSES.—I.

> "The public baths and washhouses are among the noblest of the institutions of this favoured country, as they are one of the greatest discoveries of the present age May they meet with the support they deserve."—Erasmus Wilson.

In proposing to deal in a systematic manner with the many questions and problems pertaining to the design, construction, and equipment of public baths and washhouses, it is my object not only to afford information of practical value to the architectural profession, but to endeavour to suggest such future improvements and modifications in existing arrangements as may command the attention of all actively interested in the problem of providing soap and water for the masses, and thus, perchance, lead to desirable reforms. And, further, it is my hope that the publication of matter relating to baths and washhouses may, in however small a way, give some stimulus to the building of such institutions. The public baths and washhouses movement has abundant and vigorous life, which has gathered strength year by year, but further ventilation of the subject—in such measure as may be afforded by a series of technical articles—may prove a wholesome stimulant to the enterprise of such authorities as have the initiation and management of bath-building schemes. I look the more hopefully for this result because of the wide circulation of this journal among those who, in their official capacities as clerks, engineers, and surveyors to boroughs and vestries, wield much unobtrusive power for or against proposals relating to the adoption of bath-building schemes in districts under their supervision.

The importance of the subject cannot be over-estimated, either on the grounds of public well-being or of political economy. Regarded as features in present-day life, the public bath is an instrument of the most powerful order for elevating the masses and stimulating a desire for self-improvement. To make an habitually dirty man clean, is to create in his inmost soul —even if but temporarily—a desire to rise out of the squalor and filth with which he may be ordinarily encompassed. It is only the true public bath that can be made serviceable to this end. The houses of the poor have not, and cannot well have, the benefits of properly-fitted baths; and although it is now so common to find the homes of the lower middle class provided with excellent bathing arrangements, the lowest stratum of society have none. It is this vast mass of humanity that can only be reached by inducements held out by the cheap baths of public bathing establishments; and it is our poorer brethren that the framers of the Baths and Washhouses Act had principally in mind, or they would not have set such narrow bounds on the charges for the baths and washing conveniences.

No less beneficial than the spread of a desire for cleanliness, and the consequent effects for good on national and individual health by means of the provision of baths at low charges, is the system of washing in the washhouses inaugurated and fostered by the same Act of Parliament. It must be a most gratifying sight to all who have had at heart the welfare of the poor to see a hundred or more women at work in a well-appointed public laundry; for here in a few hours they can do a week's washing and drying, saving all the discomfort and misery of "washing-day" at home.* And the hard-headed economist will be reassured to learn that at all existing establishments the washing department has been found an unqualified success, superintendents, at most places, telling the visitor that they could well occupy further washing-stalls, the washhouse being frequently crowded to excess.

Much that is interesting, and not wholly uninstructive practically, will be found in the history of the public baths and washhouses movement in this country. Information upon this point will be found in a pamphlet by Messrs. Ashpitel and Whichcord, published shortly after the passing of the Act, and in a book entitled "Sanitas et Omnia Sanitas," by Mr. Richard Metcalfe, the hydropathist. The first public baths and washhouses in this country were erected at Liverpool, where the St. George's Pier Head Baths were opened in 1828. In 1849 the Corporation of Liverpool increased their bathing and washing accommodation, and erected two new establishments—one in Paul-street, and the other in Cornwallis-street. As with all innovations and reforms, the early progress of the movement in London was slow. In September, 1844, the Lord Mayor convened a meeting for the formation of an "Association for Promoting Cleanliness Among the People," and as a result was established one of the first baths and washhouses in London—a building in Glasshouse-yard, near the London Dock. Such was the success of this establishment that its promoters erected a larger set of baths and washhouses at Goulston-square, Whitechapel. The hopes raised by the first success, however, were not sustained, and this establishment gradually fell into decay, and was closed until taken over by the Vestry of Whitechapel.

In 1846 another establishment of this kind was, chiefly owing to Sir C. Scudamore's efforts, erected by a private association in George-street, Euston-square, the water being gratuitously supplied by the New River Company. This was a successful undertaking, and in addition to its baths and washing conveniences had a department for "cleansing, purifying, and disinfecting the dwellings of the poor," which effected much good; but the New River Company abolishing their reservoir, the establishment had to be closed. It is thus evident from even this slight sketch that public baths and washhouses would not flourish under semi-philanthropic or private enterprise. Public measures were required. In 1835 Mr. J. Silk Buckingham had introduced a Bill into the House of Commons, but, owing to opposition, failed to get the measure passed. In 1846, on the 8th of June, the Bishop of London presented five petitions on the subject to the House of Lords, praying for increased facilities for cleanliness available for the masses, and on the 19th of the same month Sir G. Grey introduced the Bill, which received the Royal assent on the 26th of August, 1846.

Thus the Baths and Washhouses Act, whereby any vestry and borough may, under stated conditions, provide suitable establishments, came into operation, and put in movement a powerful lever for humanising the physically, mentally, and morally debased. The Act has been amended at various times, and is procurable in four sections—the original Act, and the amendments of succeeding years. All who have to do with designing these establishments would do well to make themselves familiar with the provisions of the Act and its amendments, although there is little contained in any of the clauses that actually affects the plans of the architect; and, there being no central authority corresponding to, say, the Education Department for board-school building, no rules and regulations have been drafted for architects' guidance. There is, however, one section of the Act that governs practical planning, and that is that relating to the proportion of cheap baths to those of a higher price, and the architect should also be acquainted with the provisions of the schedule of prices to be charged, and its amendments.

The baths authorised to be provided by the Act, as amended, are:—Swimming-baths, warm slipper-baths, cold slipper-baths, vapour-baths, and shower-baths. The "hot-air" bath* is not mentioned in the Act. At the time of the drafting of the original Bill the vapour-bath was more generally known than the Turkish bath, and the promoters of the Bill appear in consequence to have naturally incorporated the former. Being, however, inferior both as a cleansing and sudorific expedient, it is much to be hoped that some day the hot-air bath, at a low price, may be substituted for, or added to, the vapour-bath.

The object of the Public Baths and Washhouses Act is to promote health among the people by means of cleanliness. The most effective means should therefore be employed. As at present arranged, the value of the several baths, as cleansing agents, included under the Act may be set down as follows:—

1. Vapour-bath.
2. Warm slipper-bath.
3. Cold slipper-bath.
4. Swimming-bath.
5. Cold shower-bath.

The warm slipper-bath is the most generally useful of this list, the vapour-bath being little used, unappreciated, and apparently unpopular. People who use the cold slipper-bath for cleansing purposes—as distinct from a refreshing tonic, as in hot weather—can really get very little cleansing. The cleansing value of such baths, and the swimming-bath and shower-bath, is to be found not so much in the immersion in the water as in the subsequent vigorous towelling. In a pamphlet just issued on the progress and position of the Corporation Baths and Washhouses at Glasgow, there occur some very pertinent, if unconscious, remarks bearing on this point. Referring to the discolouration of the water in the swimming-bath, caused by the clayey matter held in suspension in Loch Katrine, Councillor Walter Wilson, the author, says that while the foreign matter in the water is popularly believed to come off the skin of the bathers, "even if chimney-sweeps or others direct from their work were allowed to enter, they would be almost as black when they left the water as when they entered it—*the oily skin having a greater affinity than the water for what may be called skin-dirt.*" I have italicised the last few words because they should, I think, cause thoughtful readers to reflect a little upon the principles adopted in our public baths, so far as concerns the desired end of cleanliness of persons.

Practically the only cleansing baths in the schedule of the Baths and Washhouses Act are the warm slipper-baths. The swimming-bath is a species of *gymnastic exercise* with a certain slight cleansing power. It would be much more reasonable to say of the swimming-bath that it is a mere luxury, and that cleansing of the body could be far better accomplished by ordinary warm baths, than to cast reflection on the hot-air bath.

When the Paddington public baths and washhouses were about to be erected, application was made to the Local Government Board to ascertain the legality, or otherwise, of including the Turkish bath in the proposed establishment, and the reply of the Board was to the effect that, although the statutes contained no definition of baths, "the schedule to the statutes 10 and 11 Vic. cap. 61 recognises a vapour bath, and the Board therefore apprehend that there would be no legal objection to the establishment of a Turkish bath." As this was some nineteen years ago, it is to be supposed that not the law but those who carry it into effect have so often prevented the addition of the hot-air bath.

From a financial point of view, the swimming-bath is found to be a gratifying success, and it is therefore impossible and undesirable to unfavourably criticise it on the score of its small value as a cleansing bath. Moreover, swimming being an excellent form of athletic exercise, arrangements to encourage the use of such baths are in every way worthy of commendation; and yet another point in favour of the swimming-bath is that its existence doubtless leads many to bathe occasionally who would otherwise seldom or never wash themselves in any way. Unfortunately, the attendance at swimming-baths falls off regularly at all establishments towards the winter months. In the Glasgow pamphlet before alluded to is a table showing how exactly the variation of such attendance coincides with the rise and fall of temperatures throughout the seasons. For this reason, most of the London establishments close their swimming-baths at the end of October, or thereabouts—or, at least, they close the larger baths, and use throughout the winter months only one of the smaller basins. For this reason, also, it is often arranged that the large swimming-bath hall shall be convertible into a place for entertainments, &c., during the winter months, and the architect is frequently called upon to make provision for this conversion.

The question of *class* naturally enters into our consideration at an early stage. Much in this way depends upon the place and position, and the neighbourhood where the baths are erected. In the amendment of the Act of May 27, 1878, the schedule definitely provides for *three* classes of swimming-baths, at sums not exceeding eightpence, fourpence, and twopence for each person. In London parishes the whole three classes are generally required; in the provinces two classes may be found sufficient. In the department of slipper-baths the Act limits the charges of the lowest class baths, and refers only vaguely to "baths of any higher class" as the Commissioners may think fit, the charges not to exceed, in any case, three times the amounts charged for the lowest class. As a rule, two classes of slipper-baths are found sufficient.

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* Some slight misgivings may be felt on the reflection that many of these washers may be small laundresses driving their trade at the expense of the rates. The abuse does exist to a greater or smaller extent, and it would be a useful work for some superintendent to compile a return on the subject.

* I hesitate to employ the designation "Turkish bath," because so to do seems immediately to create in many minds the idea of a luxury pure and simple—the coffee and cigars, apparently, being more obvious than the cleaned skin. Yet if the Turkish baths be simply a sybarite luxury, a change of linen is equally as epicurean. Accordingly, some might argue, a clean shirt is as superfluous as a clean skin.

In the washhouse department, the amendment of the 2nd July, 1847, provides for "washhouses of any higher class" (than the lowest) "at such charges as the Council and the Commissioners think fit." In practice, only one class is required.

In distributing the various classes great care and forethought, and some experience, is required, especially when the exigencies of the site are opposed to any easy solution of the problem. Badly-arranged entrances and an unskilful disposition of the various departments, so far as regards the classes, may militate much against the success of the institution, for reasons that will be given when the question of entrances, &c., is considered in detail.

For the purposes of this work the public baths and washhouse may be divided into three broad divisions—(1) The bath-house, (2) the washhouse, and (3) the engineering and water-fitter's department. In the bathing department will be the question of entrances, waiting-rooms, attendants' and superintendent's accommodation; the slipper-baths, swimming-baths, vapour and shower-baths, and the practical consideration of the provision of hot-air baths, besides the problem of further cheapening baths for the very poor. In the washhouse department will be the washing appliances, drying arrangements, mangling and ironing rooms, and the private laundry for the establishment. In the engineering and water-fitter's department will be the cold-water supply, tanks, cisterns, and fittings, the hot-water supply and boilers for slipper-baths, the heating of swimming-baths by hot water and steam boilers, engines, machinery, stokeries, ventilation, &c.

(*To be continued.*)

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CHIPS.

The Middlesbrough School Board took possession on Monday of the new schools in Grange-road, which have cost altogether £21,000, and will accommodate 1,200 children. The architect is Mr. J. M. Bottomley, of Middlesbrough.

The Lanarkshire County Council and the town councils of Glasgow and Rutherglen have decided to re-erect Rutherglen Bridge, in accordance with designs prepared by Messrs. Crouch and Hogg, engineers. It has not yet been decided whether the bridge shall be executed in granite or steel. The engineers have reported strongly in favour of the stone bridge, as it would be superior in endurance and appearance, while the cost of maintenance would be much less. As to cost, that of a steel bridge would be £57,000 against £62,400 for one in granite.

The March Institute at Woodhouse, Leeds, was opened on Monday. It is built of pressed bricks, with Bradford-stone dressings, and the chief room is a lecture-hall on the first floor, which measures 70ft. by 40ft., and is seated for 600 persons. Messrs. Smith and Tweedale, of Leeds, were the architects, and Mr. Harman the builder.

The Duke of Devonshire laid on Wednesday the foundation of the new church of St. Werburgh, at Derby. The church will replace a modernised edifice, and will be built from plans by Sir Arthur W. Blomfield, A.R.A., at an estimated cost of £10,000. Messrs. Shillitoe and Son, of London and Bury St. Edmunds, are the builders.

Among the adjudications in bankruptcy, announced in Tuesday's *Gazette*, the names appear of George Dollman, of Salisbury, builder; and of Alfred Ellis Grimes, of Great Coram-street, Bloomsbury, and Caledonian-street, Kings Cross, builder.

Operations have been commenced for the widening of the North British Railway in the East Prince's-street Gardens, Edinburgh. Men are engaged in fencing off the ground in the gardens, which is to be taken into the railway property, and Messrs. James Young and Sons, the contractors, will begin the construction of the new lines forthwith.

Mr. Rienzi Walton, one of the Local Government Board inspectors, held an inquiry at the Local Board Room, Heckmondwike, on Friday, as to the board's application for power to borrow £2,100 for the acquisition of land for sewage disposal. The land is situated at Dewsbury Moor, and adjoining 18½ acres of land already possessed by the board, the compulsory purchase of which involved the town in a costly arbitration. Internal drainage scheme is being proceeded with at a cost of £12,000. The principal witnesses were the clerk of the board (Mr. D. S. Sykes) and Mr. Tom Gledhill, the board's surveyor.

Building Intelligence.

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Aberdeen.—A Salvation Army citadel is about to be erected in Castle-street. The site has a frontage of 160ft. to Castle-street, occupying the entire space from Justice-street to Castle Hill, there being at each end a frontage of 100ft. The barracks have been designed in the Scottish Baronial style; and the building will be of blocked granite, finely axed. The ground and basement floors will be occupied as shops. On the first floor there will be a hall capable of accommodating 2,000 persons, the three front windows forming features in the front elevation. Each window will be divided into four lights with circular heads surmounted by a round window. A minor hall will be seated for 500 people. There will also be space set apart for ante-rooms, officers' quarters, and offices. A considerable portion of the upper part of the building will not be required by the Army at present, and will be let for several years as offices or self-contained floors. The walls will rise to a height of 70ft., and will be crowned with a corbelled cornice and embrasured parapet, broken by gables and roof windows. Over the front entrance there will be oriel windows, hung on projecting corbels, and the block at its two chief corners will be flanked by round towers, 100ft. in height. A large tower will form the centre line of Union-street. This tower, 30ft. wide, will be built of stone to a height of 136ft., and the spire will rise to a total height of 175ft. Each angle of the tower will be flanked with a round turret, connected by a corbelled cornice and parapet with embrasures. At the foot of the tower there will be the grand staircase to the citadel, an archway 20ft. wide by 30ft. high. The building, which will cost £15,000, has been designed by Mr. James Souttar, architect, Aberdeen.

Alderton.—The 14th-century parish church of St. Margaret was reopened by the Bishop of Gloucester on the 21st inst., after restoration. The north wall, which was in a dangerous condition, has been entirely rebuilt. An unsightly porch and robing-room by the chancel door have been abolished. On the north side of nave a new porch has been erected. The nave roof has been taken down and rebuilt, all the old timbers which it was possible to use being utilised. The whole external roofs is covered with Broseley tiles in place of the old tiles. The stanchions and iron bars of the windows have been removed, and the plaster has been taken off the walls. A new roof has been built over the south side aisle, and the chancel has been reroofed with pitch-pine and oak ribs. An organ chamber has been added on north side of chancel. The old niches found in the walls have been retained. The remains of the figure of the patron saint find a place over the south door. A Norman piscina is placed in the south wall of the chancel. The passages are tiled, and under the seats the floor is of wood blocks. New pitch-pine seats with oak ends are fixed. The old pulpit has been reframed. There is a new oak lectern and oak reading-desk, and new choir stalls of pitch-pine. The church is heated by Perkins's high-pressure water system. Mr. Thomas Collins, of Tewkesbury, was the contractor, and the work has been carried out under the management of his foreman, Mr. G. Cook. The architect was Mr. Knight, of Cheltenham. The outlay was £1,500.

Bingley.—A new station on the Midland Railway at Bingley will be opened about the beginning of July. The new station buildings have a frontage of over 100ft. to Wellington-street, which will be considerably widened. The plans have been prepared by Mr. C. Trubshaw, the company's architect, and the works are being carried out by Mr. C. Murgatroyd, contractor, Idle, under the superintendence of Mr. Austin, clerk of works to the company. The site is a short distance from the present station, which will be removed, and a large goods warehouse, 174ft. by 40ft., erected in its place. Mr. Trubshaw has designed a stone building for the offices and public rooms. An awning of glass and iron projects 18ft. from the frontage, and leads to a porch 12ft. in width, lined with enamelled brick. On the street level there is a large booking-hall 30ft. by 20ft., a booking-office with two windows 30ft. by 12ft., a telegraph office, and a parcel office 38ft. by 25ft. In continuation of the porch, an iron-girder footbridge 14ft. in width is being erected over the lines. Below the level of Wellington-street, on the down-line, a range of rooms are situated, including a general waiting-room 28ft. by 12ft., a porters' and lamp room, offices for the officials, and two ladies' waiting-rooms, each 19ft. by 12ft. The buildings on the opposite, or the up, platform comprise a general waiting-room 28ft. by 12ft., and two classes of ladies' waiting-rooms, each being 19ft. by 12ft.

Cheetham, Manchester.—Tenders have been invited for the erection of public baths and a public hall on the Bury Old-road, from designs by Messrs. Booth and Chadwick, of Faulkner-street, Manchester, selected in competition by the city corporation. The first-class swimming-bath will have a water area of 54ft. by 27ft., and the second-class bath one of 75ft. by 24ft. The latter will be surrounded by a balcony, and the building can be used as a gymnasium in the winter months. There are 20 slipper-baths and three waiting-rooms. A residence for the superintendent will be placed over the ticket-office and entrances, and over this department there is a clock tower. The laundry and boiler-house are situated between the two large swimming-baths. The public hall will be on the ground-floor level, and will be practically a separate building. The principal room will have a clear floor area of 64ft. by 24ft., and there will also be a gallery. There will also be five retiring and cloak-rooms, with lavatories attached, a refreshment-room, serving-room, and cellar kitchen. The design of the building is based on the Italian style, with some of the earlier features of the Elizabethan introduced in the windows. The main fronts will be faced with Ruabon stock bricks and terracotta. The public hall will have a panelled ceiling, and will be lighted by a series of mullioned windows glazed with tinted glass in lead quarries.

Hawkhead, N.B.—The Govan district lunacy board are about to build an asylum on the estate of Hawkhead, which is five miles from Glasgow and about two miles from the town of Paisley. The estate formerly belonged to the Earl of Glasgow, but was sold by him to Mr. Wm. Stevenson, quarry master, Glasgow, from whom the Govan board purchased about 190 acres. The ground is in the abbey parish of Paisley. The asylum, which has been designed by Mr. Malcolm Stark, jun., 189, St. Vincent-street, Glasgow, is to be on the block principle, and includes an administrative block adapted for 600 patients. There will be a hospital detached from the main asylum, with accommodation for 144 patients; but the main asylum will only be erected to accommodate 324 patients in the mean time—that is, 468 in all. The board have just concluded the contracts for the shell of the building as follows:—Mason work, Messrs. Alex. Muir and Sons, Eglinton-street, Glasgow; joiner work, Messrs. James Harbertson and Son, Bedford-street, Glasgow; plumber work, Mr. John McFeat, Govan; slater work, Mr. Jas. Cuthbertson, Shields-road, Glasgow; and plaster work, Mr. George Nicol, Govan. The amount of these contracts is £102,000. There is an extensive farm standing in connection with the asylum, in course of erection by Messrs. Wm. Shaw and Son, contractors, who were also contractors for the Glasgow Exhibition three or four years ago.

North Eling.—The parish church of St. Mary, North Eling, Hants, was reconsecrated on Wednesday week after restoration and the erection of a new chancel. The stucco on the outside walls has been removed, save the tower, which will be dealt with when funds suffice; the red bricks have been brightened up and re-pointed, and a new chancel has been built. Internally the church has been entirely renovated, a new flooring and open seats having been provided. The pulpit is of carved oak, with walnut rail, as are also the choir-stalls, and in the chancel is a reredos and an altar of carved oak and walnut. The outlay has been £1,900, exclusive of special gifts.

New York.—There is a prospect, the *American Architect* states, that the building of the New York Episcopal Cathedral may be begun this season. About 175,000dols. are needed to complete the payment for the land, and when this sum is raised and paid over, the trustees will feel justified in beginning building operations. It is understood that the choir will be the first portion erected, as has been the custom in such cases for many centuries. The choir itself will seat about 1,500 people, and will cost about 900,000dols., so that, even if nothing more is done for several years, the cathedral services will be tolerably well accommodated. It has been decided to create an endowment fund, for maintaining the cathedral, and two large legacies have already been made to this fund; and the trustees have taken the sensible step of providing that, after the sum expended in construction shall equal the endowment fund, further gifts or bequests, unless specifically intended for a particular object, shall be divided equally between the endowment fund and the construction fund, until the endowment fund shall reach 3,000,000dols. The architects are Messrs. Heins and La Farge, whose competition design was illustrated in the Building News for April 3, 1891. The style is an adaptation of Romanesque details to Middle Pointed outlines, and the plan shows a nave with lofty clerestory and low aisles, apsidal-ended choir with chevet of chapels beyond, transepts and rounded-ended morning chapel on south side. There are to be three spires, one at the crossing, and two smaller ones flanking the west front.

Stafford.—The new public baths have just been opened. They were designed by Mr. Blackshaw, the borough surveyor, and have been erected by Mr. Bromage, contractor, of Longton, but the work has been delayed by an accident last year. The building is two stories high to the main street, and three to the river front, the slope of the ground to the river being utilised as a basement and let as boat-houses. The façades are of red brick, and the roofs are covered with strawberry-coloured tiles. The loggia at front is utilised for four shops and an office for the Baths Committee. The gables are of half-timber framing, and of hanging tiles, and the ground-floor walls below are of brick in panels and pilasters. There is a clock-tower forming the main feature of the Bridge-street elevation. In the basement, above flood-water level, are rooms for the manager, boat, waiting, refreshment, dressing, and store-rooms, and boiler-room. On the ground-floor is the gentlemen's swimming-bath, 80ft. by 33ft., and 3¾ft. to 6ft. deep, the room itself being 91ft. long, 41ft. wide in the clear between the dressing-boxes, and 28ft. high to the apex of the roof. There are 36 dressing-rooms. On the same floor, but with separate entrance and staircase, is the ladies' plunge-bath, 60ft. long, 18ft. wide, and 3½ft. to 5½ft. deep, and Turkish baths. On the first floor there are private baths. The swimming-baths are lined with white glazed bricks. The washhouse and laundry are furnished with special apparatus by Messrs. Bradford and Co., engineers, Bradford. The building contract amounted to £4,500, the engineering part to £1,025.

Winchester.—An oak screen has been placed in the north-eastern chapel of the cathedral, as a memorial to the late Dr. Utterton, Suffragan Bishop of Guildford. It consists of an open arcade and door with carved cresting, an inscription running along a ribbon. Messrs. Thomas and Kitchen, of Winchester, carried out the work. Lightning conductors for the preservation of the cathedral from injury are now being fixed, and as they will enter the earth on the area of the Norman Chapter-house, now a ruin abutting on the south transept, excavations have been made through the grassy floor, with the result of showing that there lie buried great quantities of worked stone and rubbish, the result of the destruction of this building, portions of the encaustic floor of which have been exhumed.

CHIPS.

The new church of St. Mary the Virgin at Horbury, near Wakefield, is expected to be completed next year.

The Duchess of Westminster laid, on Monday, the foundation-stone of a new church at Wybunbury, the cost of which will be £6,000. The site will be that of the old church, and will be central with that of the magnificent 15th-century tower which remains.

The equestrian statue of the famous Austrian Marshal, Radetzky, which has been erected in the Am Hof, in Vienna, was unveiled on Sunday by the Emperor of Austria. The statue itself is 18ft. high, and represents the veteran Radetzky in campaign uniform, with sword on one side of the horse and crutch on the other. The sculptor is Ritter von Zümbüsch.

The Bradford Provident Industrial Society has recently erected new slaughter-houses, cattle-sheds, stables, &c., at Dudley Hill. All the buildings are faced with stone. The total amount of the contracts is £4,175. Local contractors have executed the works, from plans and specifications prepared by Messrs. Rycroft and Firth, architects. Mr. F. Moulson was clerk of the works.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. Passmore Edwards.

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ADVERTISEMENT CHARGES.

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Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., L., LI., LIII., LIV., LVIII., LIX., and LX. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

Manxman. (No, our half-yearly volumes containing them can still be had.)

Received.—J. Hamblin.—G. and S. Co.—F.R.I.B.A.—M. R. T. Co.—Well-wisher.—J. R.

"BUILDING NEWS" DESIGNING CLUB.

Seventh List of Subjects.

I. A Seaside Bath house for a small watering-place.—The site is situated with a frontage towards the parade running at the top of the beach. It is 100ft. long by 45ft. deep, part of the depth to be reserved as a garden or grass forecourt. The accommodation to comprise two sets of six slipper baths supplied with hot and cold sea-water—one set for ladies and one for gentlemen; a drying-room for airing towels; and a small room or office for the attendants (two females and one male). The entrance hall to be commodious enough for waiting-room purposes. A verandah may be put partly along the seaside front. Each department is to have two w.c.'s and a lavatory basin. Provision to be made for a storage cistern at roof level. Elevations in stones and slate roofs. Building to be on one floor. Style bold and simple, suitable for an exposed situation. No skylights. Scale 8ft. to the inch. Plan may be 1-16th if desired. Elevations, section, and view.

Drawings Received. — "Don Quixote," "Spector," "Nil Nisi Bonum," "Perseverando," "Sector," "Koh-i-noor," "Vulcan," "Pastime," "Unitate Fortior."

Q. E. F. (We had not noticed the increase of width over the given dimensions, or we should have pointed it out. It ought not to have been done, and hope it was only an unintentional mistake on the part of "Smilash." However, the 18in. thus acquired do not impart to the design the points of merit for which the first place was awarded. As a matter of fact, the poverty of the other designs in comparison left but little choice.)—Monim Knocker. (Your facetious queries are more funnily expressed than correctly justifiable. There would be a flap of course in the parcels' counter, and the waiting-room would be used by the telegraph messengers. The plan itself answers the other questions. Why did you not send in a plan and show others how to teach the young idea to be up to the Knocker?)

Correspondence.

DARLINGTON TECHNICAL COLLEGE.

To the Editor of the Building News.

Sir,—The Darlington Corporation are about to erect, out of public money, a technical college, and a committee of the council have decided to recommend—by a majority of one—a member of such committee as architect for the building.

Of course he will have to resign his seat on the council before he can *legally* be appointed; but I would ask whether it is not a direct violation of the *spirit* of the law, if even by a timely resignation of his seat he conforms to the *letter*.

The proper and usual course in such cases is to institute a public competition, with a professional referee of eminence from a distance, and not to allow any member of the council to compete.—I am, &c., Fairplay.

EFFLORESCENCE ON BRICKWORK.

Sir,—For many years I held the opinion expressed by the German chemists you refer to in your article on this subject, and indeed still do; but I have never been able to understand why it is that thin articles, such as tiles or very small bricks, similar to those made in some Continental countries, do not saltpetre, or only in a small degree, whereas thick bricks, &c., saltpetre very badly. Possibly someone may give as a reason, that sulphuric acid escapes easier from amongst thin articles; but that is not a correct answer.

Can anyone give me the true reason?—I am, &c., R. A. R.

Intercommunication.

QUESTIONS.

[10764.]—**Carnival Work.**—I have to superintend the execution to designs supplied of the decorations for a series of illuminated evening fêtes in connection with some athletic sports and cycle races, lasting a week, at Whitsuntide. The illuminations will be supported on festooned decorated scaffolding, the main feature being a line of triumphal arches, from the central and largest of which a boy of 14, dressed to represent the god Mercury, is to be suspended by ornamental cords. How can these be attached without hurting him? It will also be necessary to fix wires from each side of the arch to prevent swaying by the wind, which at a considerable height would not be visible after dark. His position will be nearly horizontal, with limbs extended as though flying; but I presume he could be kept in any required attitude by means of the thin iron rods commonly used for such purposes in theatrical transformation scenes, and concealed from view by the costume. Where might these be obtained, or would they have to be made to order? When fixed in position with cords, &c., what form of pulley would be most suitable for hoisting him up and down each evening without disarranging these appliances? A ladder could not be used. The dimensions of the arch are 80ft. high by 40ft. wide, and the lad is to be suspended 20ft. down from the centre, and thus 60ft. above ground. As the boy must be swinging from 7.30 to 11·30 throughout the Whitsun week, he will, of course, have a very uncomfortable time of it, but this cannot be helped. Still, I am anxious to save him all avoidable inconvenience, so that any hints on the subject from an expert in outdoor festivities will be much appreciated by —A Provincial Architect.

[10765.]—**Graphic Method.**—Where can I find an elementary introduction to the method by which the diagrams of strains, such as that in No. 1943 (April 1st) are to be drawn? I have "Goodeve," but I do not find sufficient in his book to enable me to get out the strain on girders.—F. W. C.

[10766.] — **Norman Details.** — Can any of your readers inform me whether it would be in keeping with the style of Norman architecture to stop the ends of window sills with carved bosses or terminals? Also if there are any examples in any of our cathedrals or churches of that period where carving has been used for that purpose?—Perplex.

[10767.]—**Hydraulics.**—Will some reader be good enough to enlighten me on the following questions? If the diameter of a circular sewer were doubled, its inclination remaining unaltered, what increase would result in the velocity and discharge through it? And if the inclination of a circular sewer were doubled, its diameter remaining unaltered, what increase would result in the velocity and discharge through it?—N. S. B.

REPLIES.

[10759.]—**A Curious Question.**—I would have replied to this last week, but expected someone better qualified than myself would have done so. I think "X." may rest assured that it is quite proper and legitimate to insert crests or other armorial insignia in stained glass work in almost all situations, even in churches within certain limits, but more especially in secular buildings—in fact, it is one of the remaining uses to which heraldry is put in modern times. A careful look through illustrations and text of back numbers of the professional papers will give "X." the assurance he desires; but I would warn him not to be led by articles such as appear in the popular penny periodicals. One I read the other day said that ladies (with some exceptions) do not bear arms. This is wrong; they may bear arms, but not crests, the former being charged on a lozenge instead of a shield. Again, I may remind "X." to be sure the arms he blazons are scrupulously correct, for heraldry is but ridiculous if this is not the case.—W. Dreyheller-Watson.

Mr. John Taylor, surveyor, of Stourbridge, and formerly estate-agent to Mrs. Cathcart, whose case excited attention recently, died on Tuesday from the results of an accident on the railway on Sunday.

Legal.

BUILDING LINES.

It is satisfactory to find a Divisional Court giving a really definite decision in the recent case of "The London County Council v. Cross" (April 12), as to what constitutes the offence of building beyond the general line of buildings, where it is committed, and by what evidence it can be proved. The case arose under Section 75 of the Metropolis Local Management Act of 1862, which has already given occasion to numerous legal decisions. Here the defendant objected that the house in question was not in the Barraud-road, Hampstead, the building-line of which he was charged with infringing; and also that the offence, if any, had been committed more than six months before making the complaint, and so was out of the time limited by the statute. He succeeded upon both points before the magistrates, but the council appealed, and now these rulings have been reversed. The facts stated showed that the defendant began his building in April, 1891, that the architect's certificate was only given in the following August, and that complaint was made in October. If the offence consisted in beginning to build then, it was more than six months before the complaint; but if there could be no offence until the architect had certified as to the line—then, of course, the summons was in ample time.

The Divisional Court now decided, by Mr. Justice A. L. Smith, that there could be no offence under section 75 of the Act until the architect had determined what was the ground-line of building, and which he had not done until the August after the defendant began to build in April. Or, as Mr. Justice Denman preferred to put it, the offence indicated by the statute was not the beginning to build, but the building beyond the line, so that the date from which the six months allowed by law should be reckoned ought to be the time of completion rather than of commencement. As to the other point, the magistrates had held that they were not bound by the architect's certificate, and had decided for themselves that the house was not in the road as alleged. The Divisional Court, however, following a plain decision of the House of Lords to the same effect, held that the certificate was binding and conclusive evidence of the offence, and that the magistrates were wrong in going behind it and inquiring further into the facts. This case should, therefore, be a warning to builders against building beyond the line, for it shows that a conviction can be obtained before the building is completed, and that the architect's certificate is in all cases and in all Courts conclusive evidence of the fact.

Fred Wetherfield.

1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

R. J. M.—Road.—Houses.—It does not seem to me safe to go on with the buildings until the consent of the corporation has been obtained by their passing the plans, or by their evincing compliance with the regulations as to new streets, &c.

Extensive alterations have been made to Colney Hatch Lunatic Asylum, embracing the ventilation, the extraction of the vitiated air now being effected by the latest improved form of Messrs. Robert Boyle and Son's patent self-acting air-pump ventilator.

At York Convocation, on Tuesday, a resolution proposed by Canon Champneys, was unanimously adopted, affirming, in the first place, "That the dangers to health and morality caused by insanitary houses and overcrowding, call for some definite action by the Church for their remedy and removal"; and further, calling upon the Archbishop of York to direct the appointment of a committee to consider and report on the subject.

The corner stone of the new parish building for All Saints, Plymouth, was laid on Saturday last by Mr. Shelly, of Plymouth. The cost of the building will be about £1,250, and it is to be finished by October next. The materials for the structure are the same as used for the vicarage, which was built by the late J. D. Sedding—viz., local limestone and red brick. Mr. Edmund Sedding, of Plymouth, is the architect, and Mr. Blowey, of the same town, is the builder.

LEGAL INTELLIGENCE.

Employers' Liability Act.—At the Cardiff county-court on Wednesday week, before his Honour Judge Owen, an action was brought under the Employers' Liability Act by Harry Crowe, carpenter, who sought to recover £300 from Harry Gibbon, builder and contractor, Cardiff. Plaintiff stated that on November 13th last while employed by the defendant on Lloyd's Bank in Mount Stuart-square, through a defect in the scaffolding he fell to the ground and severely injured his right thumb. The defence was that there was no negligence on the part of the defendant, and that the plaintiff had injured his thumb in a fight. His Honour described the claim of £300 as preposterous, and gave judgment for £50 and costs.

Alleged Libel on a Surveyor.—At the North London police-court on Friday, John Matthew Klenck, surveyor, of Bishopsgate-street Within, was summoned for publishing a defamatory libel concerning John Bartholomew, surveyor, of Broad-street-buildings, Liverpool-street. Prior to August, 1890, complainant was, it was stated, in the employ of defendant, who was a surveyor and assessor of fire insurance. The complainant left the defendant's employ, and received a very excellent testimonial from him. Soon after prosecutor started in business for himself in the same line as defendant, and secured clients. The defendant wrote to people from whom the prosecutor sought business, saying he had dismissed Mr. Bartholomew from his employment. The prosecutor applied to Mr. Henry Perry for business in connection with a fire. The defendant had also applied for the business, and Mr. Perry received a letter from the defendant:—"42, Bishopsgate-street Within.—Dear Sir,—We are in receipt of your letter. We understand you have now given the claim to Bartholomew, a clerk who was in our employ, and whom we dismissed." Mr. Perry was called, and said he had no knowledge of either party before the fire. He received the letter quoted, and, as a consequence, he sent to Mr. Bartholomew, saying he was suited. He would otherwise have given him the business. The prosecutor said he voluntarily left the employ of the defendant. Defendant was committed for trial, bail being allowed.

CHIPS.

The Rugeley local board on Tuesday appointed Mr. W. E. Rogers of that town as surveyor and inspector of nuisances. There were eleven candidates for the appointment.

The Royal Commission (Society of Arts, Adelphi, London, W.C.) announce that no charge will be made for space in the British Section of the Chicago Exhibition, of 1893.

A new wing in connection with St. Mary's Catholic Schools, Middlesbrough, was opened on Monday. The building affords accommodation for above 250 girls, and has been designed by Mr. Simpson, of Bradford.

The officials and employees of the Bootle Corporation assembled in the Council Chamber of that town on the 22nd inst., to present a handsome drawing-room clock to Mr. W. N. Blair, the surveyor, who is leaving the borough to take up his duties as surveyor and engineer to the St. Pancras vestry. The mayor presided.

The ratepayers of Ipswich have, by a decisive majority, refused to purchase Christchurch Park, containing 75 acres, and mansion, offered them by the Fonnereau family for £42,000. The land will probably be disparked and cut up into building plots.

The town council of Elgin on Monday appointed Mr. Donald Mackintosh, of Inverness, as their burgh surveyor.

To the collections in the Edinburgh Museum of Science and Art the director, Sir R. Murdoch Smith, has just added by purchase a number of stone and wood carvings from the Villa Ludovisi at Rome, and from Brescia, Urbino, and Volterra.

A new church is about to be erected at Soundwell, Staple Hill, Mr. Walter F. Cave, of London, being the architect, and Mr. A. J. Beaven, the contractor. The style will be Norman, and the total cost between £6,000 and £7,000.

At Sale police-court on Monday, James Hickman, builder, Stretford, was fined £5 and costs for not having properly constructed a cesspool on premises at Broadheath, in the Altrincham rural sanitary district, and 40s. for allowing cottages to be occupied before a certificate of completion had been given by the rural sanitary authority inspector.

An Oddfellows' hall was opened at Cleobury Mortimer last week. The club-room is 60ft. by 30ft., and is divided by a screen from a reading-room, 40ft. by 15ft. The work has been executed in Staffordshire bricks with local stone dressings, and the cost has been £1,500. Mr. Meredith, of Kidderminster, was the architect, and Mr. Thomas Vale, of Stourbridge, the contractor.

WATER SUPPLY AND SANITARY MATTERS.

The Pollution of Aberdeen Water Supply.—Mr. Gale, C.E., has made a report to the water committee of Aberdeen town council on the pollution of the river Dee, from which the city derives its water supply. The points of the river to which Mr. Gale specially devoted his attention were Kincardine O'Neil, Aboyne, Ballater, and Braemar, and he reported that the best and proper course to be adopted is to irrigate the sewage. He expressed very strongly the opinion that extensive pollution takes place, and that the authorities at the places mentioned ought to be compelled to either prevent the pollution altogether, or to render the contaminating matter innocuous. When up the river Mr. Gale also, by request, examined various sources of probable future water supply for the city, including Loch Minck and Loch Callater. He considers that, in the course of ten or fifteen years, it will be necessary for the town council to face the question of increasing the supply, when they could not do less than double the present supply, and to abstract that quanity of water from the river would possibly involve the construction of a compensation reservoir. In this respect Loch Minck was admirably adapted; but the Loch Callater scheme he considers utterly untenable. The committee has instructed Mr. Gale to consider and report on the whole question of sewerage and filtration at Invercannie, and also on the condition of the water supply of the city generally. A committee was appointed to confer with the county council with regard to the outfall of sewage into the river.

STAINED GLASS.

Thorner Church.—On Sunday week, two stained-glass windows which have been placed in this church were unveiled by the churchwardens. The windows are from the studio of Messrs. Powell Brothers, Leeds.

A recreation ground and assembly rooms are about to be provided for the Jesmond district of Newcastle-on-Tyne, at an estimated cost of £7,500, to be raised by shares. The site is in Grosvenor-place, and the buildings will comprise ladies' room, news room, and club rooms, on the ground floor; assembly rooms, supper room, and cloak rooms, on the upper floor. The remaining portion of the site will be laid out as a bowling green (40 square yards), and a cement tennis court. The assembly room will be 60ft. by 30ft. Mr. J. W. Dyson, of Newcastle-on-Tyne, is the architect.

The Bristol City Council, on Tuesday, considered at great length a report by a committee stating that they had on several occasions discussed the terms of the appointment of the city surveyor in all its bearings, and had ascertained that the city surveyor (Mr. Thomas) was not prepared to give the whole of his time to the service of the Corporation. The committee were of opinion that for the present the existing arrangement could not be advantageously altered. No action was taken on the matter.

On Easter Tuesday the Countess of Craven formally started a new clock and chimes at Bishopstone Church, Wiltshire. It shows time on one large dial, strikes the hours on a ton bell, and chimes the Cambridge quarters on four others. It is a very fine specimen of workmanship, and is inclosed in an oak glass-fronted case on the ground floor of the tower. All the latest improvements have been incorporated in the mechanism; the escapement is a Lord Grimthorpe's double three-legged gravity, with compensated pendulum. Messrs. John Smith and Sons, of Derby, have carried out the work. The same firm have also just completed a large chime clock at Callaby Castle, Northumberland.

A monument, erected by national subscriptions in memory of Bishop Morgan, the translator of the Bible into Welsh, was unveiled at St. Asaph, by the Bishop of St. Asaph on Friday, the occasion of the tercentenary of the accomplishment of his work. The monument, designed by Mr. Prothero, of Cheltenham, is 30ft. in height, and built of red Hollington stone, with eight figures in white stone, the principal one, facing the road, being that of Bishop Morgan. The style is that of the 15th century. The site is within the grounds and in front of St. Asaph Cathedral.

A meeting of delegates from vestries and district boards was held on Monday to consider what steps should be taken to secure the offer of Mr. Tate of a gift of £150,000 towards the erection of a gallery of British art. A resolution was adopted that every effort should be made to induce Mr. Tate to renew the offer which he had withdrawn, and it was decided that a representative committee should wait on him.

By her will Miss Amelia B. Edwards has endowed a chair of Egyptology. Her valuable library she bequeaths to Somerville Hall, Oxford.

Our Office Table.

The movement for the reform of the Ordnance Survey is gathering strength. We recently noted that the House of Commons had sanctioned the appointment of a Select Committee "to inquire into the present management of the Ordnance Survey, and the best mode of accelerating the production and publication of correct maps of Great Britain and Ireland," and if the charges made in a pamphlet by Mr. Henry T. Crook, C.E., of Manchester, on "The Maps of the Ordnance Survey: as they are and as they ought to be," can be sustained, the Committee ought to make some stringent recommendations. Mr. Crook shows that the administration of the Survey is far from efficient, and urges that the three chief defects are the neglect of popular (i.e., small-scale) work, the extremely slow rate of progress, and the obsolete nature of a great portion of the maps. Other faults—and not unimportant ones—are the puzzling and imperfect indices to the work already completed, and the high prices at which the maps are sold. The author suggests that all central public libraries should be supplied with copies of the Survey publications relating to the locality, and full explanatory particulars of their objects, purposes, and the means by which copies could be obtained.

Mr. Cameron Corbett, M.P., has introduced into the House a Building Lands Bill, the objects of which are two-fold—first to rate on a fixed percentage of their capital value lands in or near a town which have an exceptionally high value for building purposes; and, secondly, to enable local authorities to buy such lands compulsorily. The Bill proceeds on the principle that the owner of the land may put his own value on it and will be rated, and may be bought out at his own valuation. In case he fails to declare the value, the local authority is empowered to fix it; but in that case, if the purchase powers are put in force, the owner is protected by being allowed to have the price resettled under the Lands Clauses Acts. Provisions are also inserted for the protection of other persons who may be interested in the land. Provision is made for a periodical revaluation: and the power of purchase is to be enforced only within a limited time after the last valuation. As regards rating, where the land is let to a tenant the rate shall be divided between the tenant and the owner, so that the former will continue to be charged on the same basis as before the Bill; and the difference between the old assessment and the new will be payable by the owner.

The forty-third annual report of the Operative Bricklayers' Society, just issued by the recently-appointed general secretary, Mr. John Batchelor, states the net increase of members, after allowing for deaths and exclusions, was 4,318, as compared with 4,551 in the previous year, the net result being that in two years the membership has more than doubled, having been augmented from 8,189 to 17,058. Thirty-five new branches were opened during the year. At the close of 1890 the cash balance to the credit of the society was £33,235 3s. 9½d.; the net income for 1891 was £26,052 5s. 8d., and the expenditure £22,974 14s. 1½d., showing the increase of funds to be £3,077 11s. 6½d. Adding the value of freehold land and general office, £6,549 9s. 0d., with assets at branches, after allowing for depreciation at 2½ per cent., £1,132 6s. 9d., the total worth of the society is seen to be £43,994 11s. 1d., or £2 11s. 6¾d. per member. Forty-three branches have been engaged in trade disputes, at a cost of £3,544 5s. 7d., and twenty-nine branches have been successful in obtaining an increase of wages, while eight have obtained a reduction of working hours in addition. Compensation for injuries to the amount of £225 18s. was recovered for six members during the year. The expenditure on account of superannuation benefit for the year has been £252 4s. 8d.; for funerals, £1,674 17s. 6d.; for sick benefit, £9,025 18s. 10d. Levies amounting in all to 3s. 3d. per member were voted in aid of the carpenters' and joiners' strike. In conclusion, Mr. Batchelor refers to his election in succession to Mr. E. Coulson, who retired from the post of general secretary after 31 years' service.

Mr. J. C. Edwards, whose enterprise in connection with the industry has done more to revive the architectural use of terracotta than anyone else of this generation, has, we are glad to hear, been appointed High Sheriff of Denbighshire. This ancient office is the most honourable distinction an Englishman can hold, and we are sure its duties and privileges will be safe in Mr. J. C. Edwards's hands. People who know what he has done for the neighbourhood of Ruabon, where his works are situate, confidently anticipate that a similar honour will in due course be conferred on him as that which rewarded the cognate efforts and enterprise of Sir Titus Salt.

The fourth annual meeting of the registered plumbers in the Edinburgh and East of Scotland district was held on Monday evening in the lecture hall of the Philosophical Institution, Queen-street, Edinburgh. Sir Alex. Christison, Bart., who presided, in moving the adoption of the report, spoke favourably of the Plumbers' Registration Bill, and stated that it was one which was generally desired by plumbers throughout the country. In Scotland, he said, there were something like 1,500 plumbers who wished to see such a Bill passed. Mr. Robert Little seconded the adoption of the report, and the motion was agreed to. Office-bearers were appointed for the ensuing year. Professor Sir Douglas Maclagan was re-elected president of the council, Mr. R. Little vice-president; and Mr. James Thomas, C.E., secretary, treasurer, and registrar. Prizes and certificates offered by the council for examination in practical and theoretical plumbing work were distributed among successful apprentices who have been students at the Heriot-Watt College.

One of the most attractive features at the International Horticultural Exhibition, Earl's Court, which opens on May 7th, will be the so-called "Insectivorous House," where plants which prey upon insects will be exhibited. This house is now being constructed just outside the north end of the main building by Crompton and Fawkes, of Chelmsford, who are the designers of it. The building is T-shaped, and will be heated by Fawkes' slow-combustion apparatus. The interior will be arranged with staging round the sides, and probably rockwork in the centre, and the entrance and exit will be so disposed that the stream of visitors can always be kept in one direction.

Messrs. Young and Marten, of Stratford, have sent us two of their most recently-issued illustrated catalogues, which are each in their way a perfect *vade mecum* of information. One is a list of the most usually-required stock articles by architects and builders, with trade prices revised to date, and the other a catalogue of plumbers' brasswork, cast iron and earthenware goods, sanitary fittings, &c. Both are well got up and very comprehensive, and the reputation of the firm is a sufficient guarantee for the fitness and good workmanship of everything included.

MEETINGS FOR THE ENSUING WEEK.

Monday.—Society of Engineers. "Dry Crushing Machinery," by S. H. Cox. 7.30 p.m.
Liverpool Architectural Society. Closing address by the President, T. Harnett Harrison. 7.30 p.m.
Tuesday.—Institution of Civil Engineers. Discussion on "Electrial Measuring Instruments." 8 p.m.
Glasgow Architectural Association. "Half-Timber Work," by Arthur Fryers. 8 p.m.
Wednesday.—Society of Arts. "The Bradford Corporation Electricity Supply," by J. N. Shoolbred, B.A.
Friday.—Architectural Association. Soiree. 8 p.m.

The Architectural Association. — Session 1892-93.—Students proposing to join the Association with a view to taking up the courses of instruction at the beginning of next session are reminded that delay will be avoided if their nomination forms are forwarded to the hon. secretaries not later than the end of April. The subscription of an ordinary member elected after the last day of April covers the ensuing Session.

Ernest S. Gale
F. T. W. Goldsmith } Hon. Secs.

A stained-glass window has just been placed in the transept of Largs parish church, Ayrshire. The window measures 26ft. by 14ft., and consists of four lights surmounted by tracery, and was designed and executed by Winfields (Limited), Birmingham. In the upper tier the incidents illustrated are, on the left, Christ Stilling the Tempest; and on the right, Christ Teaching the People out of the Ship; and in the lower, Christ Walking on the Sea and the Miraculous Draught of Fishes respectively; while the theme depicted in the tracery is the Calling of St. Andrew and St. Peter.

Trade News.

WAGES MOVEMENTS.

Arbroath.—The strike of Arbroath masons, which had lasted about a week, came to an end on Friday, the employers having agreed to the demand of the men for an increase of ½d. per hour, making their wages 7½d. per hour, the arrangement to last for twelve months from 2nd May. The masons' labourers had asked for an increase of ½d. per hour, making their wages 5d. per hour, and this also has been conceded by the masters.

Dundee.—The joiners, who had intimated that they would strike on Saturday unless their wages were increased from 7½d. to 8d. per hour, at the last moment withdrew the notice, the masters having withdrawn the notice that wages would be reduced ½d. after the 1st of June.

Harrogate.—The master builders have received notice from the operative stonemasons of application for an advance of wages, to come into operation after the serving of the notice. The master builders consider this insufficient time, and have informed the committee of the operative stonemasons that under the rules three months' notice would be required before any alterations could be made.

Leeds.—A numerously-attended meeting of builders and members of the Building Trades Exchange, was held at the Saracen's Head, Boar-lane, on Tuesday night, for the purpose of taking into consideration the notice given by the bricklayers of Leeds and district for an advance of wages from 8½d. to 9d. per hour. Considerable discussion took place, and the action of the men was strongly commented upon as being inopportune and unjustifiable. A resolution was passed unanimously pledging all present to be united in resisting the proposed advance.

London Bricklayers.—No reply has as yet been given by the London Association of Master Builders to the memorial from the Operative Bricklayers' Society, who, at the end of February, gave three months' notice of a proposed change of working rules for London. These rules, which, if agreed upon, will come into force upon June 1st, provide for a reduction in working time from 52½ to 50 hours in summer and from 47 to 46 hours in winter, while the rate of wages is to be raised from 9d. to 10d., with an increase of pay for overtime. Neither side seems inclined to give way, and it is probable that a protracted strike, similar to that among the London carpenters last summer, will take place.

Taunton.—A strike among the carpenters is threatened. The men demand a rise of 1½d. an hour, and the masters are willing to give ¾d., which the men are disinclined to accept.

CHIPS.

A new church erected near Yeoford Junction was opened on Friday by the Bishop of Exeter. Mr. W. Dart, of Crediton, was the builder, the plans having been prepared by Mr. W. J. Dart.

The mansion house of Charleton, near Montrose, which was burned down about two months ago, is about to be restored under the supervision of Dr. Rowand Anderson, architect, Edinburgh.

The monument to Canon Liddon in St. Paul's Cathedral is to take the form of an altar tomb, with a recumbent figure. It will be placed in the eastern apse, and is to cost £1,200, while £800 will be expended in decorating the chapel in which the monument is to be erected.

Offices at Trafalgar-buildings (north wing), Charing Cross, have been assigned by her Majesty's Office of Works to the Royal Commission on Metropolitan Water Supply, and all communications for the Commission must be sent to that address.

A new organ, built by Messrs. Gray and Davison, has been opened in St. Bede's Church, Hartington-road, Liverpool.

On Saturday, a new Post-office was opened at Stratford-on-Avon. The building is of the Elizabethan style, and harmonises with Shakespeare's house and other buildings in Stratford.

In the Roman Catholic church of the Austin Canons, at Spettisbury, Dorset, a canopy has been placed over the altar; a reredos, also of Bath stone, has been erected, and the chancel walls have been decorated with the emblems of Our Lady. Mr. T. B. Cullen, of Blandford, carried out the work.

The window on the west side of the north transept of Selby Abbey has just been filled with stained glass. The window, which is a circular-headed one, has as its subject "The Crucifixion."

In a paper contributed to the *Journal* of the Franklin Institute, Professor Lewis M. Haupt argues strongly in favour of the construction of a ship canal between New York and Philadelphia, connecting the Delaware and Raritan rivers.

CHIPS.

The designs of Mr. Thomas Brock, R.A., and Mr. E. J. Poynter, R.A., have been provisionally accepted for the new coinage.

The parish church of Hanmer, which was gutted by fire in February, 1889, was reopened, after rebuilding of the nave, on Tuesday week. The work, which has been completed at a cost of between £7,000 and £8,000, has been carried out exactly in the Late Perpendicular style of the old building. The red sandstone font and the oak pulpit are the work of Mr. James Forsyth, Baker-street, London. Messrs. Bodley and Garner are the architects, and Mr. Franklin, of Deddington, Oxon. The chancel has not yet been restored.

A new auction cattle mart was opened at Redheugh, Gateshead, on Monday. The mart covers an area of about 1,350 superficial yards, and it has been laid out and erected within five weeks by Messrs. George Scott and Son, contractors, Douglas-terrace, Newcastle, under the personal supervision of Mr. T. Nelson.

Mr. E. H. Shorland, of Manchester, has just supplied several more of his patent warm-air ventilating Manchester grates to the Longmore Hospitals, Edinburgh, those previously supplied by him having proved satisfactory.

The fourth annual report of the East of Scotland Association for the National Registration of Plumbers states that the past year has been one of great activity, and there has been a steady progress in connection with the work of registration. At the beginning of last year the number of masters and journeymen on the roll for the district was 226, and during the year 26 names have been added. The accounts show a slight debit to the association.

* * *

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*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

Andover.—For new house at Smannell, Andover, for Mrs. Earle. Mr. A. Purkess, borough surveyor, Andover, architect:—

Beale, Andover (accepted)	£534 10 0

Arnold.—For alterations to property, Front-street, Arnold:—

Brickwork, plastering, and plumbing:—

Herring, J., Arnold (accepted) ...	£130 0 0

Carpenter and joiner, slater, and painter:—

Franks, J., Arnold (accepted) ...	£103 0 0

Aylesbury.—For the erection of a new farm house for the trustees of Harding's Charity. Mr. W. F. Taylor, Aylesbury, architect:—

Webster and Cannon	£635 0 0
Grist, S.	588 18 0
Green, G...	577 0 0
Ball and Mayne	530 0 0

All of Aylesbury.

Bermondsey.—For building new coffee factory, Bermondsey, for Messrs. W. C. Shuttleworth and Co. Mr. Arthur Vernon, 29, Cockspur-street, Charing Cross, London, and High Wycombe, architect:—

Cornish and Gaymer	£805 0 0
Brooks, W.	800 0 0
Bullers, J.	795 0 0
Battley, R. G.	734 0 0
Shepherd, W.	700 0 0
Houghton and Son	632 0 0
Philips, C. N. (accepted)	593 0 0

Bournemouth.—For making up roads under Section 150 of the Public Health Act, 1875, for the town council. Loan, £2,300. Mr. F. W. Lacey, A.M.I.C.E., borough engineer and surveyor;—

Saunders, W. H., & Co., Bournemoth	£1,897 7 10
Edwards, J., Boxombe	1,606 4 4
Troke, G., Winton (accepted) ...	1,530 6 2

Bournemouth.—For about 31,000yds. of tar paving, for the town council. Loan, £4,500. Mr. F. W. Lacey, A.M.I.C.E., borough engineer and surveyor:—
White, W. W., Tokesdown, 10 p. c. above schedule prices.
Darby, W. E., Birmingham, 7½ p. c. above schedule prices.
Bradshaw and Co., London accepted at schedule prices.

Bournemouth.—For about 650yds. of wood block crossings, for the town council. Loan, £550. Mr. F. W. Lacey, A.M.I.C.E., borough engineer and surveyor:

Darby, W. E., Birmingham	£377 10 0
Bradshaw and Co., London (accepted)	369 7 6

Bournemouth.—For making roads for the town council:—

Toke (accepted)	£1,530 6 2

For tar-paving and wood-block paving:—
Bradshaw and Co. (accepted).

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Crewe
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Crumpsall
Cullercoates
Cannon Street
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Daubhill
Daybrook
Denholme
Derby
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Drighlington
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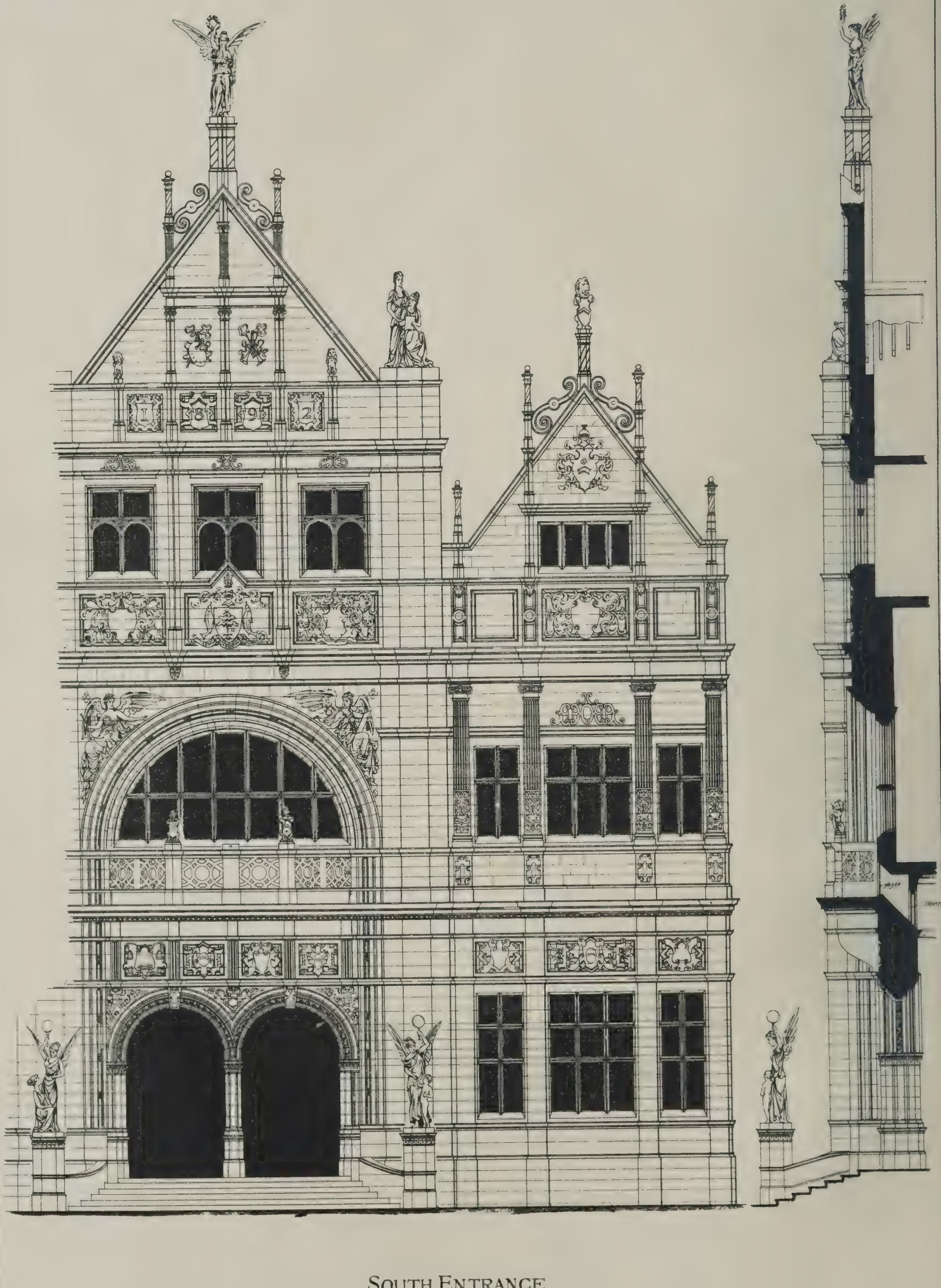

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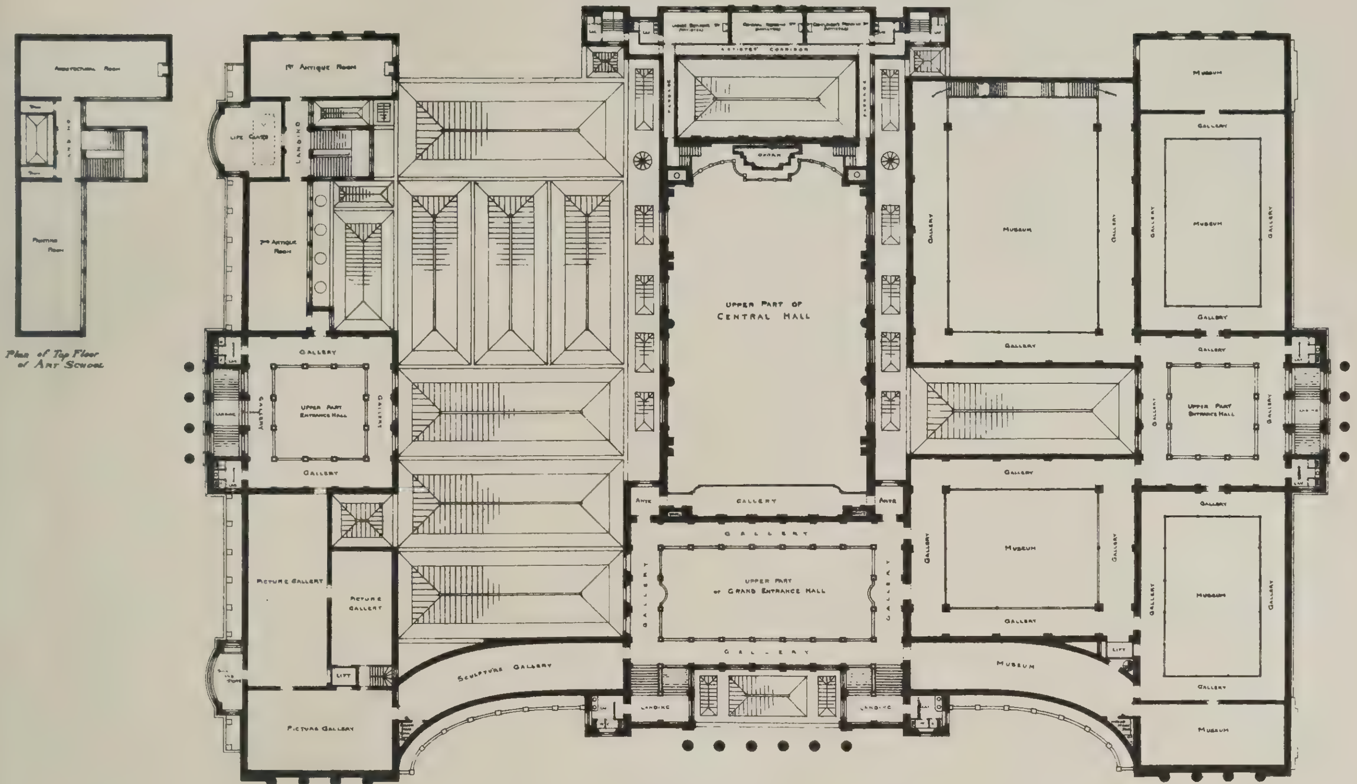
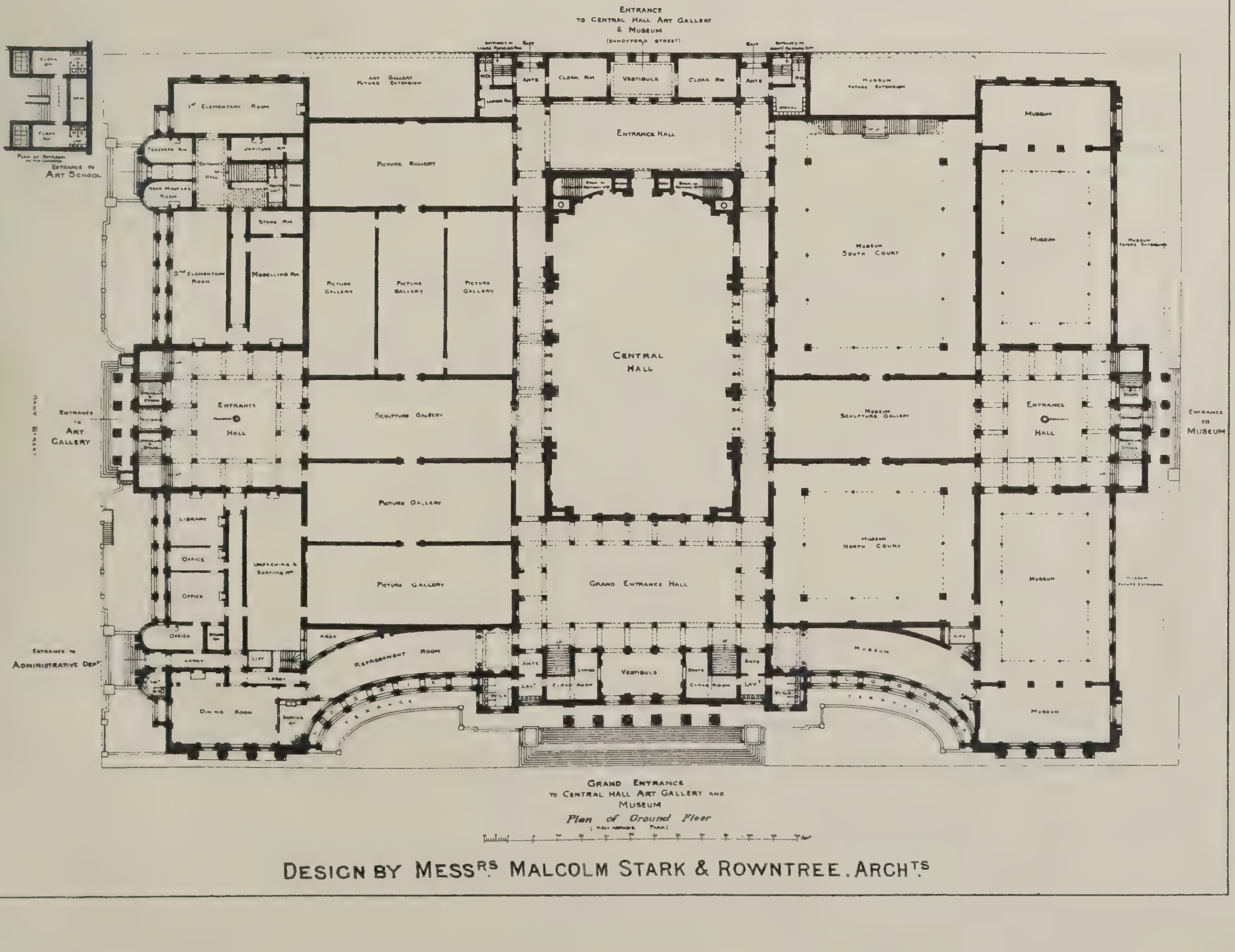


Plan of First Floor



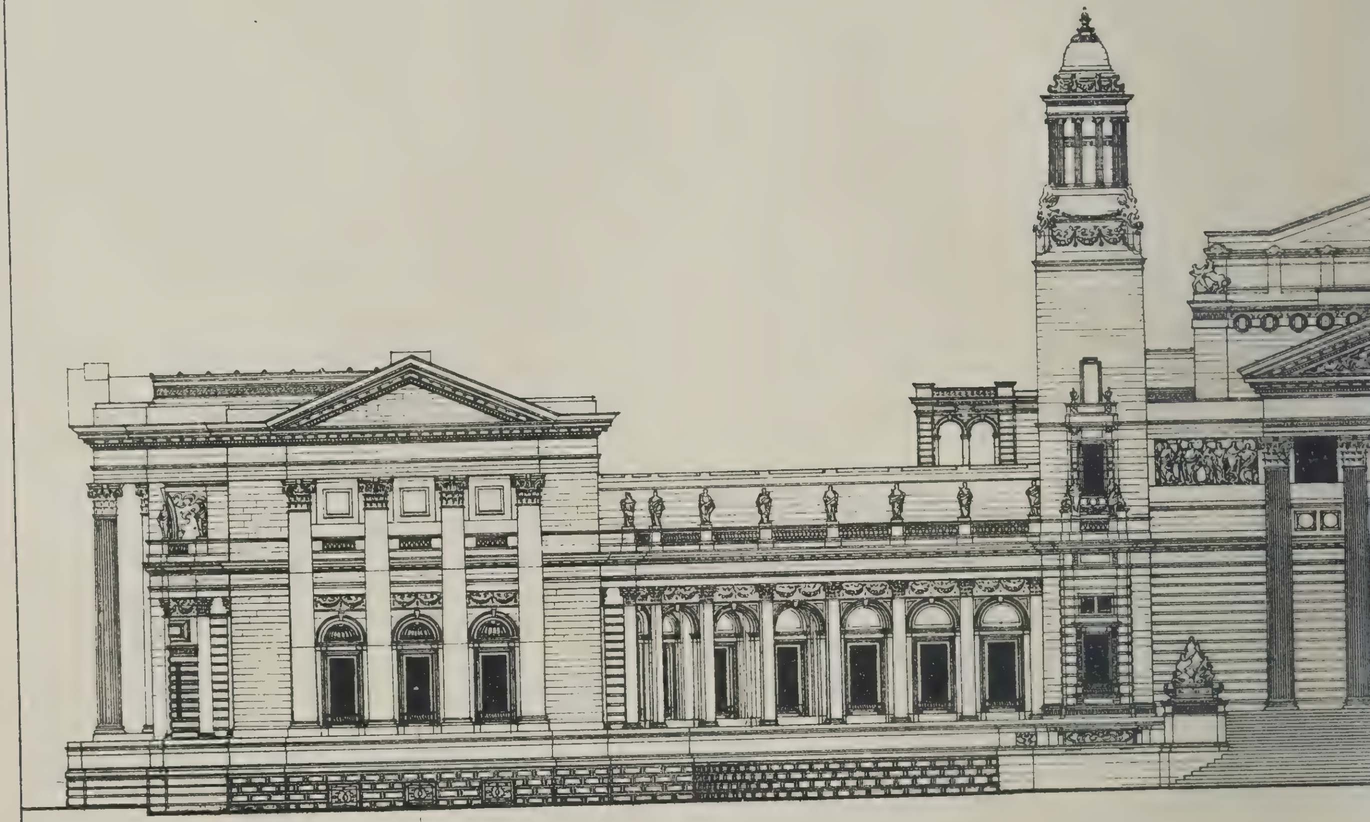
GRAND ENTRANCE
TO CENTRAL HALL ART GALLERY AND
MUSEUM

Plan of Ground Floor
(Kelvingrove Park)

DESIGN BY MESSRS. MALCOLM STARK & ROWNTREE. ARCHTS.

UNIVERSITY OF ILLINOIS

THE GLASGOW ART GALLERIES & MUSEUM COMPETITION. KELVINGROVE, GLASGO



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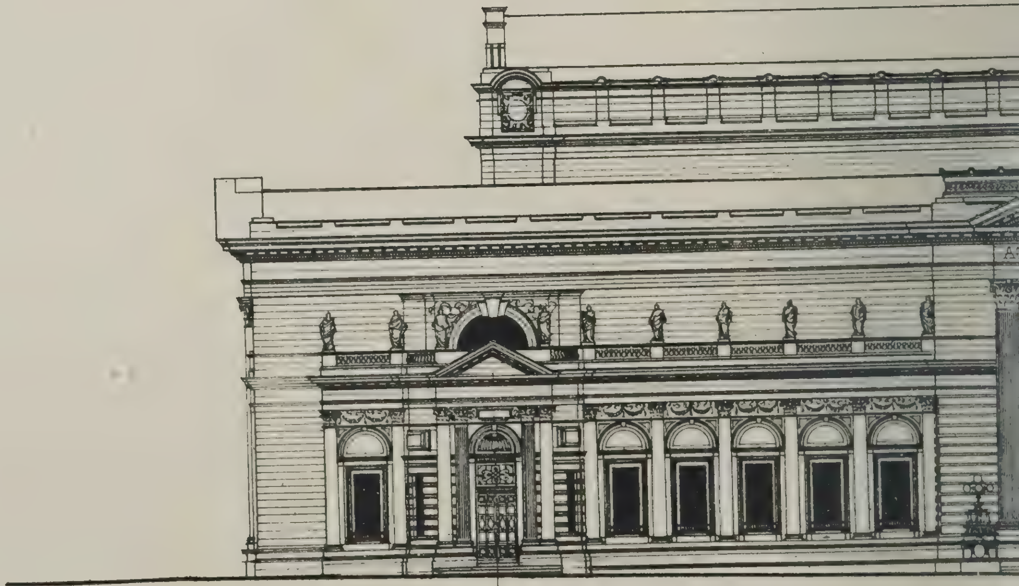

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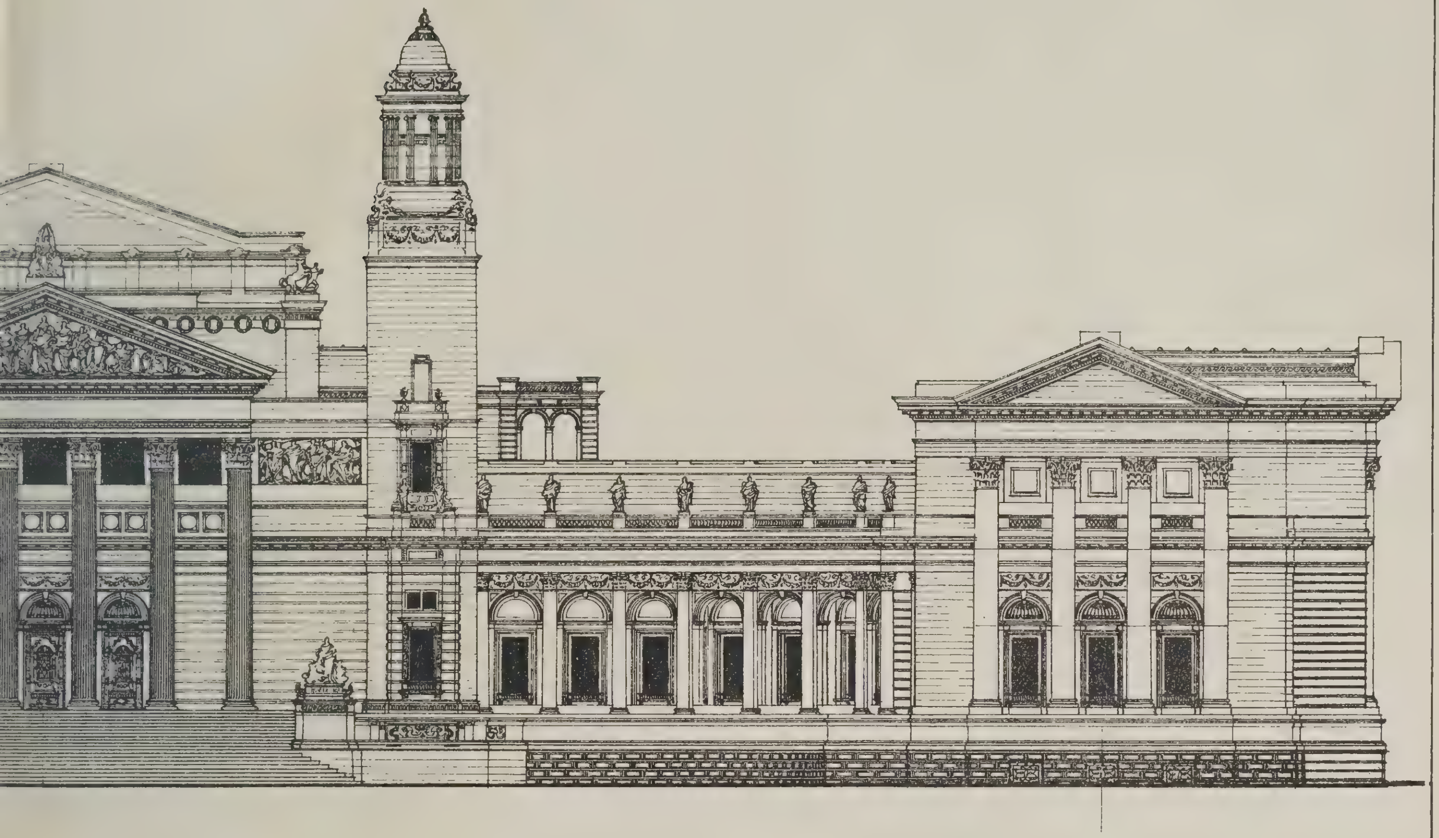

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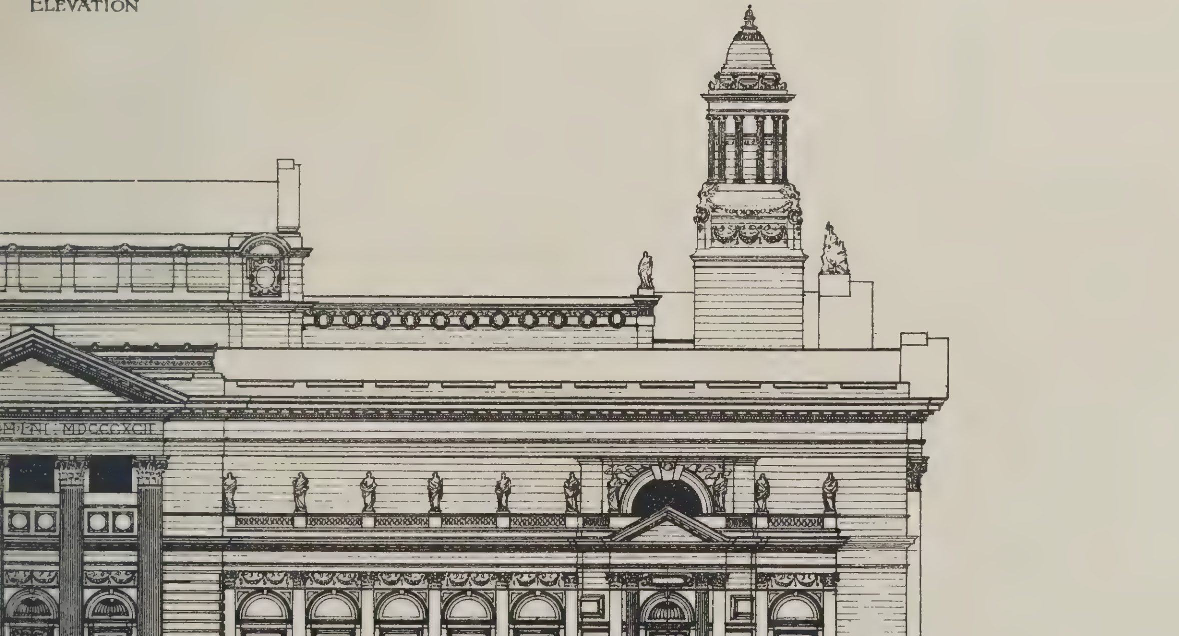

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Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.C

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THE GLASGOW ART GALLERIES & MUSEUM COMPETITION. KELVINGROVE. G

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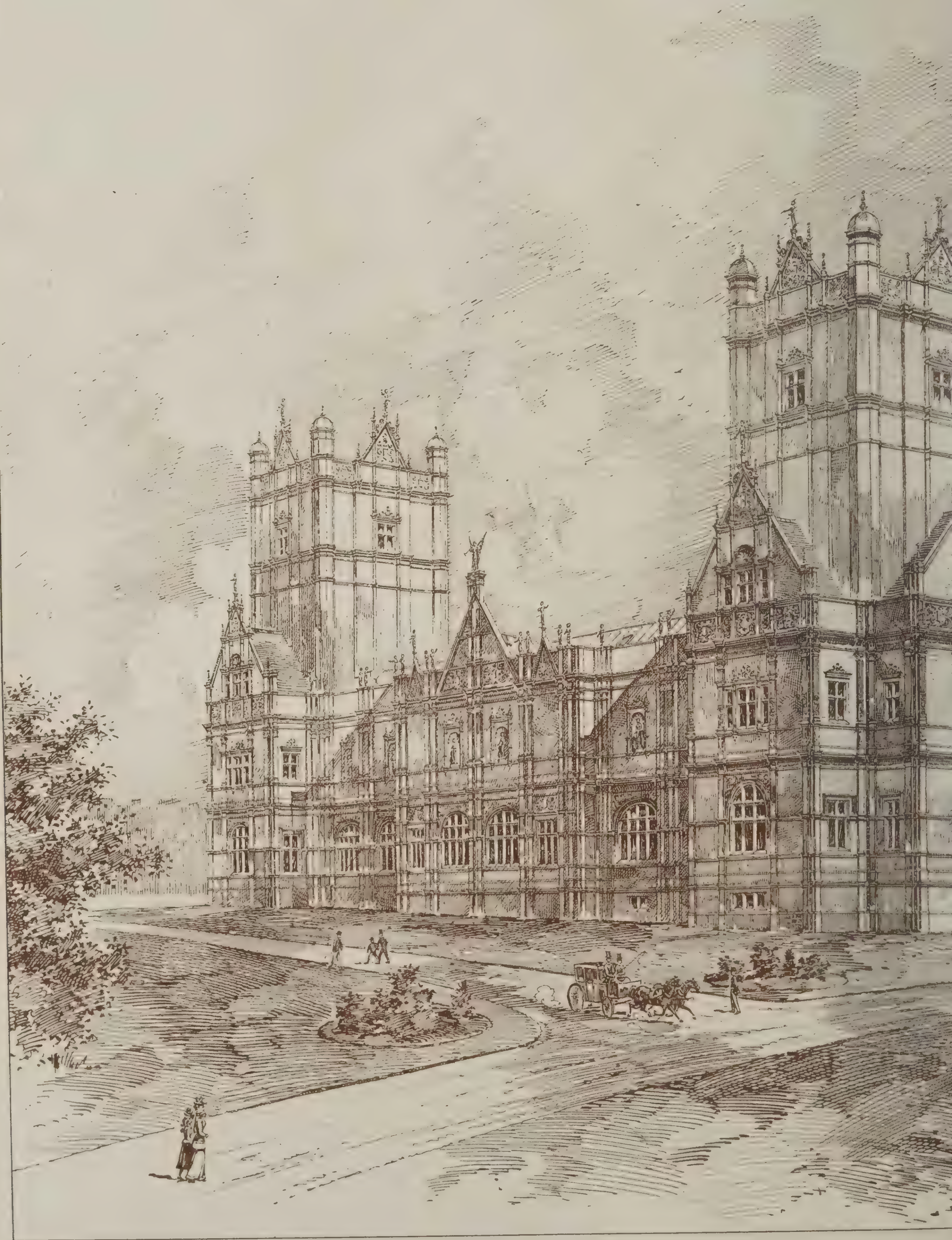

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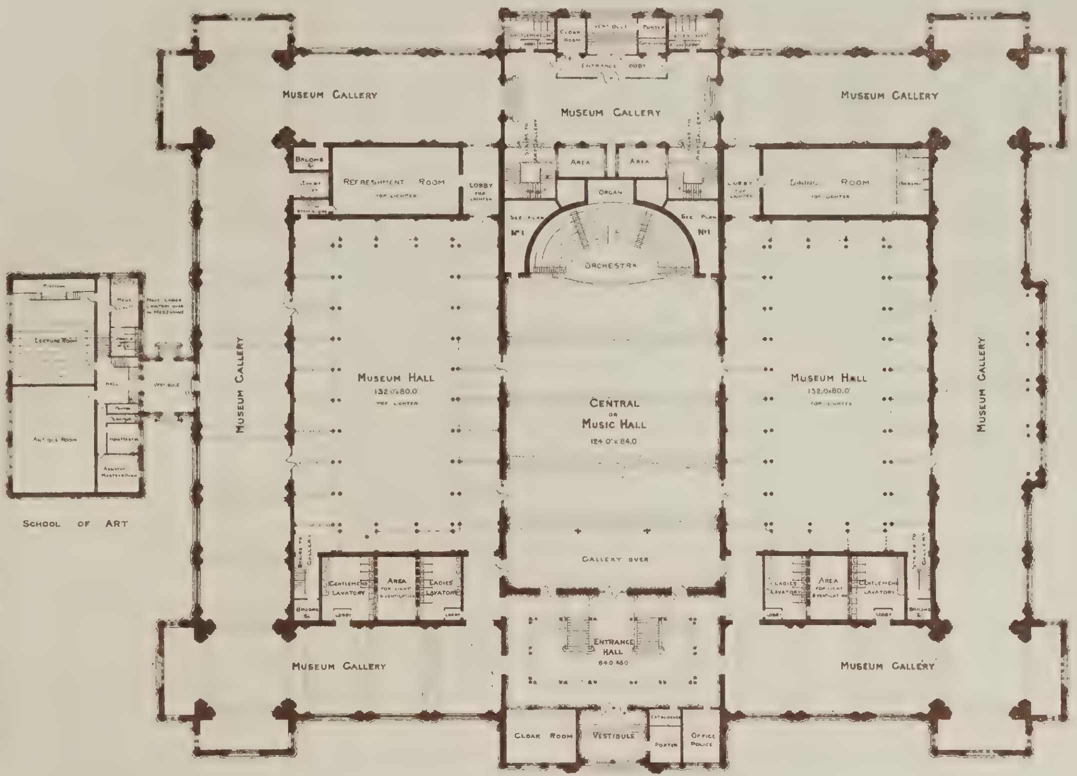
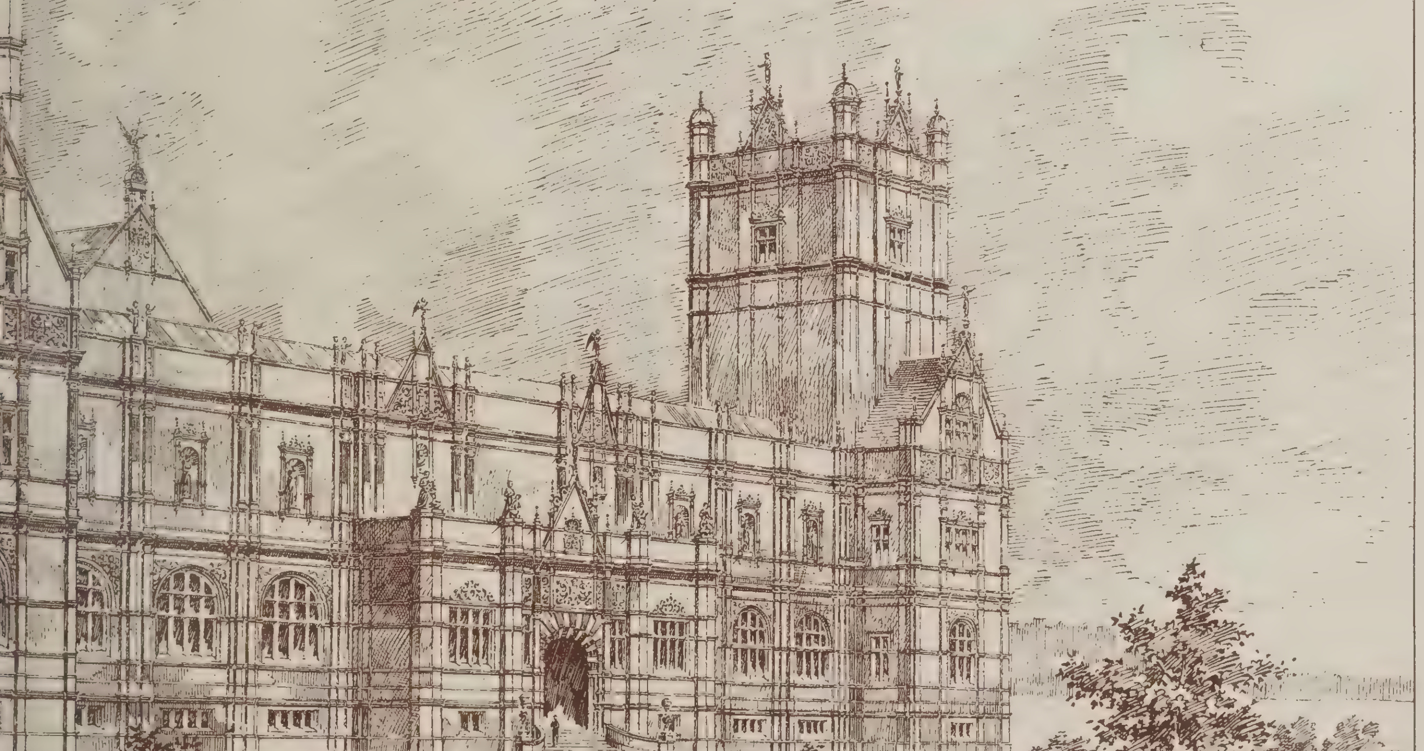


GROUND PLAN



View from the North-East.

Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.C.

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THE GLASGOW ART GALLERIES & MU

DESIGN BY T. M. DEAN

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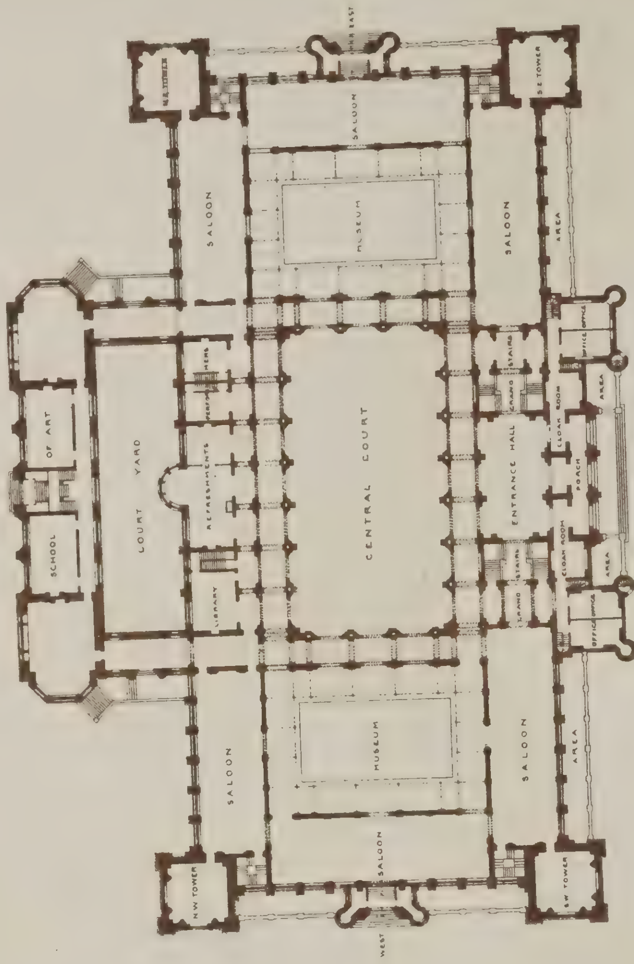

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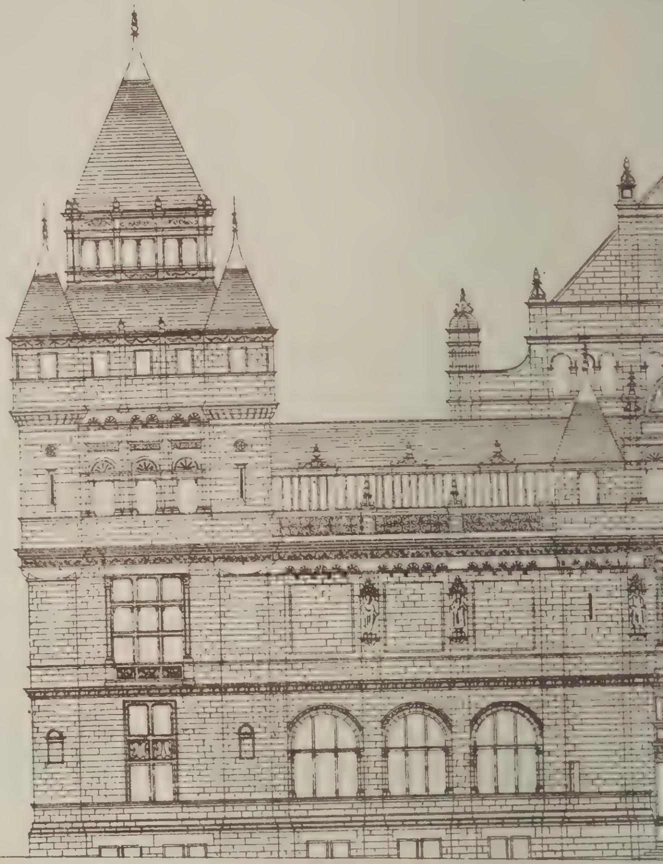

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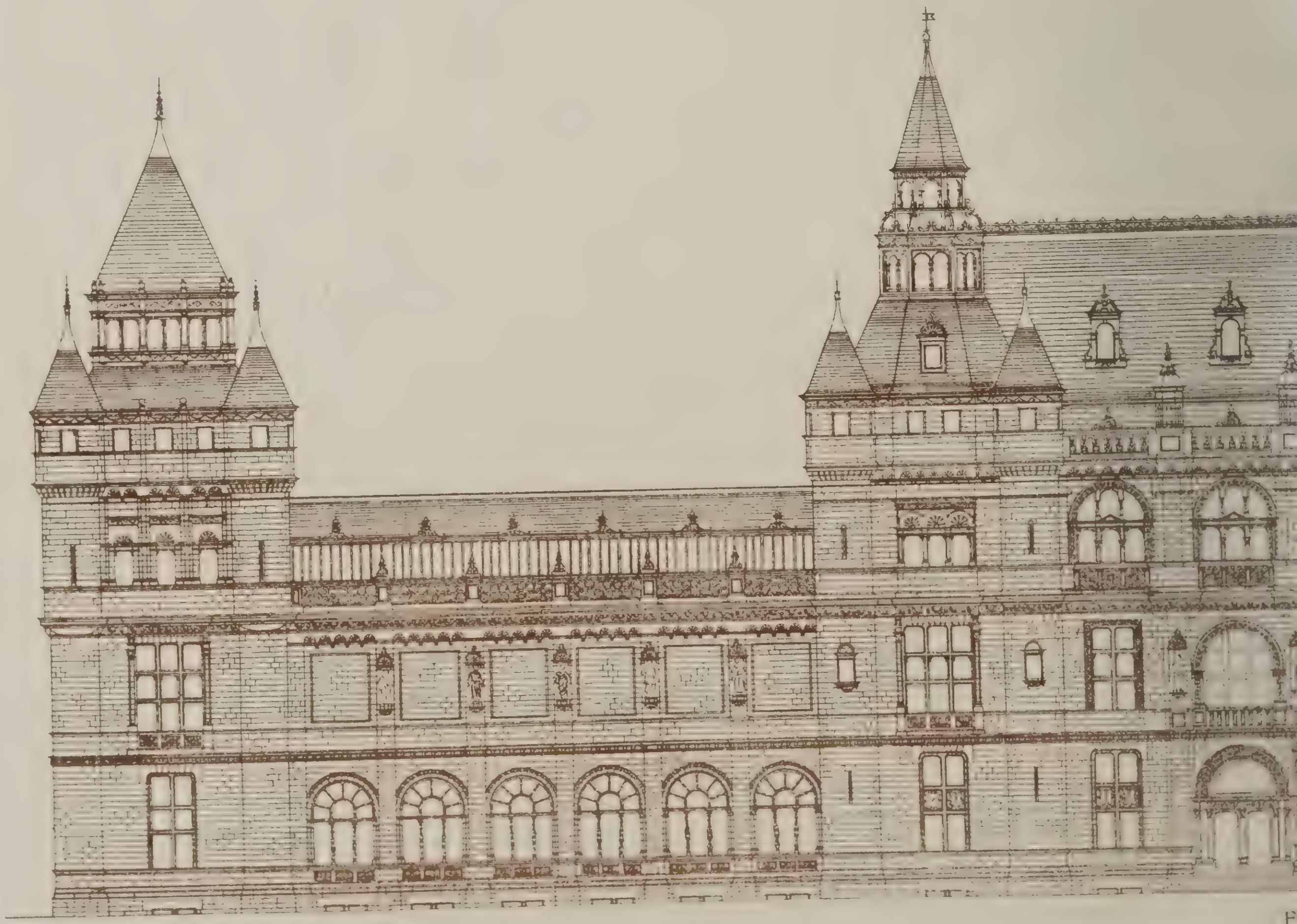

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UM COMPETITION. KELVINGROVE, GLASGOW.

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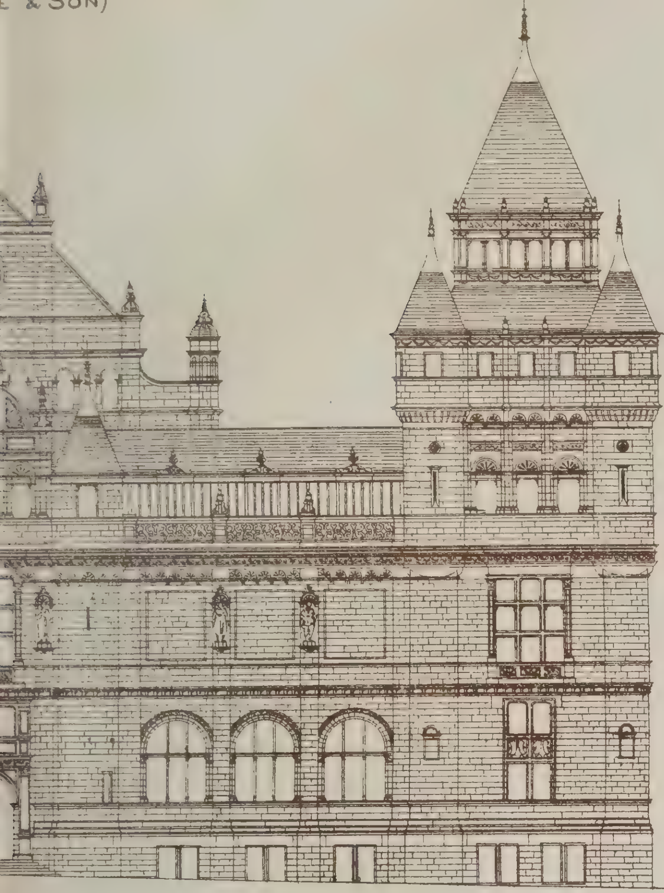

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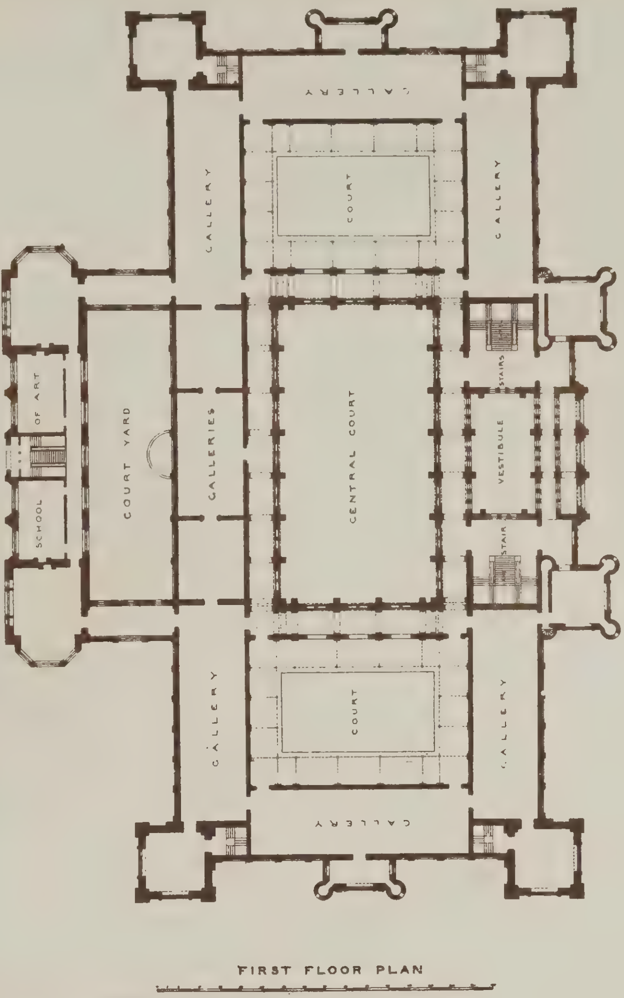

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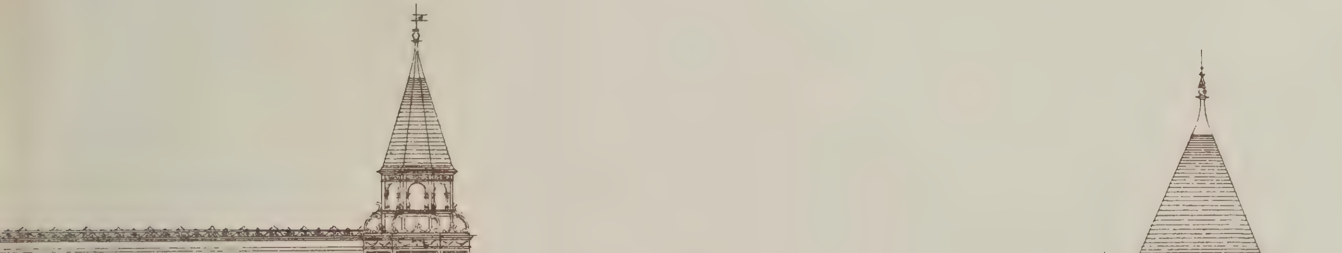

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THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXII.—No. 1948.
FRIDAY, MAY 6, 1892.

ARCHITECTS AND THE PUBLIC.

A SHORT story was lately published in one of the cheaper weekly journals, which amusingly illustrates the popular idea of our profession. A gentleman finds that suddenly, and for no apparent reason, his dining-room fireplace has taken to smoking. The natural course would have been to send for the chimney-sweep; but the writer seems to have thought that a man of means and position would not descend to anything so low. He therefore makes him call at once for "the best architect in London." The best architect arrives with alacrity, and inquires who built the chimney. A rival architect is named, and his *confrère*, with charming frankness, loses no time in calling him an ass. He then devotes a month's time to the subject, and ends by leaving the dining-room in worse case than he found it.

It is fortunate, perhaps, for the architectural R.A.'s and A.R.A.'s that the paper which issued this interesting tale does not circulate much amongst those by whom architects are employed. The "best architect in London"—whoever that may be—would be far from delighted to find himself called in by anybody and everybody who might chance to have a room full of smoke. New openings for architectural skill may be very desirable, but not, perhaps, in this precise direction. The story, however, suggests forcibly what, amongst a large section of the public, is the popular conception of an architect's duties. He is a man kept to prevent the builder from scamping his work; he is somebody to be sent for when the drains go wrong, or the roof leaks, or the chimneys smoke; he is the person who is responsible for all the shabbiness and tawdriness of suburban London, and who ought to have prevented the sins of speculative builders whom he never saw or heard of. This is the lower-middle-class idea of the architect. The mechanic, such as the mason or carpenter, knows better; but then, the mechanic is commonly superior in many ways to most of the class just above him.

One thing which sorely puzzles the average Englishman is the true nature and office of the "surveyor." It is a title which is nearly as vague as that of "engineer." This last may mean almost anything. The man who drives the goods train, and makes night hideous with his scrooping and his whistling, calls himself an engineer; so does the designer of the Forth Bridge. Then there is the electrical engineer, and the heating engineer, and the sanitary engineer, and the ventilating engineer, as well as the engineer who really makes engines, and the other engineer who, when unlucky, gets "hoist with his own petard." The surveyor does not run into quite so many types; but he is, as biologists say, "extremely variable." Throughout the "Parentalia," Sir Christopher Wren is spoken of as "the surveyor." We have still a surveyor of St. Paul's, whose ordinary duties must evidently consist rather in surveying and keeping a watchful eye on the fabric, than in adding to or improving it; but Wren, as its designer, was clearly entitled to a higher appellation. He, if any one could do so, certainly ranked amongst the intellectual nobility whom old Chapman speaks of—

> "Men that are of public use,
> Prophets or poets, whom the Gods produce,
> Physicians for men's life, or architects,
> To such the boundless earth affords respect."

There cannot be much in common between a cathedral surveyor and a surveyor to the Admiralty, nor between the last and a district surveyor, any more than there naturally is between a district surveyor and a land surveyor. A land surveyor and a quantity surveyor, again, are following two widely different callings; and it is also beyond doubt that every architect who merely superintends a building is entitled, if he likes, to describe himself as a surveyor.

All this leads to confusion. For example, the head of an important firm in the City not long since got into some dispute with his neighbours about lateral support and party-walls. To make good his point, he required plans; and to produce the plans, a careful survey was necessary. What he really wanted was the advice of one of the numerous architects whose speciality lies amongst cases like this. But the word "survey" misled him. "To get a survey," he thought, "you must go to a surveyor. What can an architect know about it?" He was not acquainted with any cathedral surveyors, or any Admiralty surveyors, so that he did not call them in. He felt that a land surveyor would not be quite the right person, and ultimately he pitched on a quantity surveyor. The quantity surveyor may have been expert enough at his own work, but not being an architect also, he was completely out of his element here, and the last state of this unhappy man of business was worse than the first.

It is no disgrace to ordinary people that they do not understand all the ins and outs of a complicated profession or group of professions. But from the avowed leaders of public opinion we naturally expect a little more knowledge of what an architect's work really is. It may be hoped, too, that by slow degrees we are getting it. It was the rarest of things twenty years ago to hear a reasonable word on architectural matters from any English journal, except the *Saturday Review* and one or two others of equal standing. Now there are signs of intelligence lower down. Even yet, however, the mass of the papers do not realise that an architectural work is invented and produced by an architect, just as a picture is invented and produced by a painter. The fact does not seem a difficult one for them to comprehend; but it takes a long time to make it familiar to them. To-day they remember it, and act on it; to-morrow it has escaped them again. They would not allude to the feeblest drawing in the poorest show of pictures without giving its author's name; but they will devote half a column or more to a new building, and never state who designed it. They might as well review a new book and purposely refrain from saying who wrote it. If the author, either of the picture, the building, or the book, is a well-known man, the mere mention of his name gives people more idea of the production than they are likely to get in any other way. And if he is not a well-known man, and yet has produced a work worthy of notice, he is surely worthy to be named as its author. It is strange that this should not be clear to those who are responsible for every journal having any pretension to culture. It is strangest of all that it should not be clear to those who are responsible for the illustrated journals, for they, at any rate, might be supposed to have some acquaintance with artistic matters.

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PUBLIC DANGERS.

MANY serious accidents take place from a want of thought and attention in the planning of public and private buildings. The arrangement of entrances, corridors, and staircases is one calling for primary attention, yet very many buildings in London are designed without adequate means of ingress and exit. We do not now speak exclusively of theatres or places of amusement, about which a great deal has been written of late years, but of other buildings of a more or less public character, where means of entrance and communication are often insufficient. A general fault is to provide entrance and passage room for ordinary daily wants, instead of for a maximum, for average instead of for large attendances. The theatre-goer and frequenter of concert-halls quickly finds this out when there is any unusual "draw," much to his inconvenience and discomfort, and it is the same with churches and chapels when any exceptional ceremonial or great preacher attracts a large number.

There are several things besides a narrow entrance or exit which are objectionably obstructive under these circumstances. The position of the entrance may be awkward, as when it causes a block in the street, or where it is placed in a corner at a right angle between two walls or buildings; or the plan or form of the entrance may be inconvenient or dangerous, as when the jambs of a doorway or porch protrude or form a sharp angle to the crowd of people endeavouring to gain admission. Those who have been in a crush at the doors of a theatre or public building in endeavouring to enter know that the least objectionable kind of pressure is that behind or in a straight line with the entrance, but that any side pressure has a tendency to sway the few individuals near the entrance on one side, and cause an unpleasant squeezing next the door-jamb. This side-pressure may be avoided by barriers or walls placed on each side leading to the entrance. Even a great pressure of a crowd directly behind may become less dangerous as two side-streams gradually converging towards the doorway; if these can be directed by barriers or walls placed at right angles to the axis of the entrance, such as would be the case if the main entrance to a building was in the centre of a wall of a corridor approach open at both ends. For ingress, perhaps one of the safest forms is that of two gently-converging curved passages. The handsome double-flighted stairs to a main entrance such as we see to many palaces and residences is a mode of entrance that would prevent "ugly rushes" and crushing on entering a building, though as an exit the steps would be a source of danger in a panic. In short, a safe and well-planned entrance should be rather one to restrict the crowd as it approaches the actual doorway to prevent crushing, and it ought to avoid all sharp angles and projecting door frames. An exit, on the other hand, should be free and unrestricted, without any unnecessary steps or any of those death-traps in the shape of ticket-boxes, which often impede the passage of the people.

The essential conditions of a safe passage are that it should be of one width throughout, be without steps, and not too long in one direction; but many of the approaches to public halls and concert-rooms are deplorably defective in these requirements. The most dangerous arrangement is a wide corridor contracted at the exit end, as in a rush to gain exit there must be a dead lock or crushing at the narrow end.

The staircase, as we have been painfully reminded, is a source of danger whenever certain points are neglected. Among the objectionable features are long, steep flights unbroken by landings, bad lighting, any sudden difference of tread or rise in the steps, wide stairways without handrails, obstructions or diminution in the width, especially at the bottom, and nosings to the steps. Capt. C. Fox, in his evidence with regard to the Hampstead railway station staircase, complained of the approach to the head of the staircase from the street, the ticket-box at the foot, against which the ill-fated passengers were crushed; the iron shoes which secured the iron rails and which projected on the stairway, the difference of material of the railings, which were of wood and iron, and the fastening of the gate. From the evidence it appears the stairway was divided, as they usually are, into two flights, each 4ft. 10in. wide, by a handrail down the centre. There were 14 steps to each flight to the centre landing, a great deal too many. But the main danger was the ticket-box at the bottom of the staircase. Now a crowd descending a staircase is placed in a more hazardous position than a number of people ascending it, and if there is any obstruction at the bottom, the weight of the mass going down acts in a wedge-like manner more likely to produce a crushing at the foot. On a level, as in a corridor, the danger is much less. The evil was intensified, of course, by the hurry to reach the platform, and especially by the fact that approach to the stairs at the top was wider and unimpeded, so that a mass of people already on the staircase had to force their way through a narrow outlet by the side of the box and wall only wide enough for two to pass, and it was this funnel-like shape of the staircase which caused the disaster. We have here a signal lesson to all architects never to reduce or diminish the width of a staircase at its lower end, but to place the ticket-box at the upper or ingress end. By this arrangement the traffic has to pass the narrow end first; the stream of people is thereby restricted, and can be regulated with greater efficiency by a sliding gate or bar before too many is allowed to congregate on the stairs. These are points in planning that, in the interests of public safety, might be made by-laws by local authorities.

The late fatal crush on the railway station stairs at Hampstead, has resulted in a verdict that must, or ought, to lead to a more careful inspection of public approaches and staircases to railway stations. The station at Hampstead was not the only one where the ticket-box was so situated as to diminish the width of the stairway, or had been put at the foot of the staircase. We could mention several stations in the Metropolis where the staircases are much too narrow for a crowded traffic, and where obstructions occur at inconvenient points. The equally terrible fatal panic in the Central Theatre, Philadelphia, following on other similar catastrophes caused by panic-stricken crowds eager to escape from buildings on fire, ought to make architects more considerate in the arrangement of entrances, corridors, and staircases. The objections we have pointed to are all remediable: there should be no reason why an entrance should be awkward or narrow, or the corridors and staircases obstructed or dark, if planned on principles which left nothing to chance or to haphazard arrangements.

PICTURES AT THE ROYAL ACADEMY.

[SECOND NOTICE.]

A SECOND and less hurried survey of the galleries at the Royal Academy disclose many beauties as well as defects. Though there are several pictures which draw our admiration, there are many more whose claims on the walls of a national academy are by no means strong, and in some instances very doubtful. A great deal too many portraits are admitted to be of any artistic interest to the public. Why should so many private nobodies be represented? We can understand portraits of eminent men and women in different vocations of politics, literature, science, and art; but the portraits of wealthy bankers, directors, and their wives and children, even though painted by eminent painters, may become a little wearisome. Then there are many meaningless pictures of *genre*, and not a few mediocre landscapes. Every succeeding academy exhibition seems to show more clearly the preponderance of the commercial spirit in our painters, and how little real inspiration there is. The really great pictures of the year may be counted on one's fingers, and of these we have briefly mentioned the works of Leighton, Orchardson, Alma Tadema, Millais, and one or two others. Our first impression of these may be a little too high in some instances, a little too low in others. We can see beauty in the President's principal picture of the "Garden of Hesperides," but the beauty is chiefly decorative. In the enchanted daughters of Hesperus, grouped round the gnarled trunk of the Juno's golden apple-tree, dreamily reclining under the shade of the foliage falling into slumber or languor, it is the mobility of line of figure and drapery, the delicate reds, pinks, browns, mulberry tints, greens, and lemon that delight us by their harmonious blending, rather than the classic story that is represented. The dragon or serpent embracing in its folds the central tree and the fair nymph, is essentially decorative in its motive and design, and serves still more to bind together the parts of the composition. We admire also the unity of the design, which is also admirably expressed in the more sculpturesque, but less fascinating, composition of the President in the second room. As we said last week, the girl "At the Fountain" is faulty in the attitude of the figure, the raised shoulder and arm on which she is leaning, and the drawing of the right shoulder and arm with the drapery. This spoils the composition, yet we can see exquisite drawing and classical knowledge of detail in the delicate members and scotia of the Ionic base which stands on the white marble podium. In the same category of classical studies we must place Mr. Tadema's beautiful group of bathers on a terrace by a landlocked bay we described last week. Here translucent marble and delicate textures vie with the charm of figures and group; the technical and the natural are balanced, but are in true sympathy. Very near, E. J. Poynter's composition, "When the World was Young" (265) appeals to the same emotions; it is learned, the details and technique are everything—these are predominant. There is less human interest in the three figures of maidens, two of whom are playing with tesseræ on the verge of the bath. The tesselated mosaic paving, the marble relief columns, the couch, the bronze vase, and the Pompeian decoration and textures of the interior are painted with scholarly attention to style. The cool hues of grey marble and the draperies combine with the hills seen beyond the open window and the streak of water of the bay to make a classic picture, but the whole is wanting in life-giving interest.

In the first gallery G. D. Leslie's picture of "The Rose Queen" (60) is a very exquisitely painted and luminous scene, showing a flight of terrace steps leading to a garden, with a group of girls holding staffs, to the tops of which are tied bunches of pink rosebuds, while on the steps is the Queen of Roses, a fair girl in light frock and straw hat, saluted by a child on one side of the ramped stair, who holds a bunch of blossom. Two other subjects, by William F. Yeames, R.A.—"A Minstrel of Mallorca" (37) and a courtyard at Palma, Mallorca (39)—are worth notice for their delicacy of colour, light and shade, refined detail, and figure drawing; they have also an architectural interest in the carved and pierced balustrading of staircase, and the treatment of the hall or court.

Frank Dicksee's "Leila" in the second gallery (97) is redolent of Oriental sumptuousness and gorgeous colour. The reposing young girl—or slave of Byron's "Giaour"—clad in a gold-embroidered costume of scarlet, reclines upon a Turkish ottoman, with hangings of the same hue. The scheme of colour from pale red and orange to deep crimson is bold and startling; but the grace and luxuriousness of the scene—the leopard skin, the hangings, the trellis casement, and the white lily by the side of the maiden, whose face expresses contentment and ease, are in harmony. Luxury and rich colour are here combined. Before passing out of this gallery we may mention P. Norman's "Cromer," with its noble tower rising against the sea and breaking the horizon (86); J. Johnson Inglis's "Idwal" (95), a powerful conception of a stormy mountain side at Cader Idris; Albert Goodwin's grand conception of the fiery city of Dis, from Dante's "Inferno"; and J. E. Millais's "Halcyon Weather" (142), a delightful glade or woodland in all the autumnal tints mirrored in a placid sheet of water. The kingfisher on a bough, and the delicate foliage of the trees in their yellow and rose-tinted hues, suggest the poetic ideal of the painter.

Passing to Gallery III. we have already noticed a few of the leading pictures. From W. Q. Orchardson's great picture "St. Helena, 1816," with its breadth of idea of space, and its subtle pale creamy tone which pervades the whole canvas, we turn to Dudley Hardy's large picture above it of "The Moors in Spain," as the exact opposite in sentiment and colour. The confused jumble of jewelry, plate, fabrics in "The Spoil," the sumptuous habiliments of conquest, and the strong rich scheme of colour are distracting, and set off by contrast the breadth and simplicity of Mr. Orchardson's work. On the upper line is a powerful life-boat launch by W. A. Howgate (171). The great work of G. F. Watts, R.A., "She shall be called Woman" (164), is rather too dreamy a vision to meet with popular appreciation. The floating mist-like hair which surrounds the figure (rather above life size), and the wreaths of flowers, and birds, and luxuriant vegetation round the feet of the ideal woman, suggest rather a splendid fantasy of the imagination than a presentment that will suit our mundane notions of Eve. We cannot afford to undervalue anything coming from so great a master of ideal painting, but this picture is certainly above the heads of the many, though we must be thankful to Mr. Watts for having given us a suggestion and a study of surpassing beauty of colour. In passing, we must pay tribute to B. W. Leader's "Across the Common," one of those fresh, carefully-finished, and luminous canvases of which he has given us two others; Andrew C. Gow's clever historical subject, "The Flag Maidens at Taunton" (180), is an incident of the Monmouth ill-starred rebellion. An array of young girls dressed in white are doing homage and presenting a banner, another a cushion with Bible and sword upon it, to Monmouth, the whole group of maidens, horses, and riders having as a background the old Market Cross. J. B. Burgess's "The Priest's Birthday" is a bright and pleasing figure subject; Marcus Stone's large gardenesque work, "Two's Company, Three's None" (197), depicts a charming girl sitting, listening to the blandishments of a young man, while her companion retires—a kind of scene made familiar to us by the painter; of course it is painted with charming elegance quite French in its *finesse*. The armoured knight of John Pettie, R.A., "The Ultimatum," is chiefly clever as a technical representation of polished steel plate and chain armour. Alma Tadema's portrait of Mr. Alfred Waterhouse, R.A. (222), is a capital likeness of the well-known architect, who sits, in grey tweed coat and vest, in one of his happiest and most easy moods, resting on one arm. Another prominent specimen of portraiture is the Hon. J. Collier's "Miss Julia Neilson," a harmony in crimson, dramatic in pose, but exceedingly graceful. Peter Graham paints with his usual power Highland cattle and landscape full of rainy atmosphere (217); H. S. Marks, a clever figure subject, "The

Great Auk's Egg" (228); John R. Reid gives us one of his vigorous and powerful pictures of fisher folk life (229); and T. Sidney Cooper, R.A., is still fresh, and paints with his wonted skill, coolness, and brilliancy, "In the Meadows at Curfew House" (238). The pair of pictures by J. C. Hook, R.A., "Nereids" (249), and the "Sea-mew's Nest" (255) are fresh and brilliant, the first two ruddy lasses dressing in the rocks after a bath, the latter an equally sunny view of a rocky coast. No. 250, "Distraction," by W. A. Bouguereau, has a position of honour assigned it in the large gallery, and represents a fair girl in white drapery, whose blue eyes are turned away from her bobbin of blue wool, and into whose ears a cupid whispers. The drawing and delicate colour are spoilt by the background, and the theme is rather weak and unworthy of the position. Luke Fildes's portrait (243), Briton Riviere's "Dead Hector" (242), Ernest Parton's large forest scene, "Eventide" (247), and J. Charlton's "Royal Procession Passing Trafalgar-square," a Jubilee picture painted for the Queen (237), may be noticed as other conspicuous examples in this gallery.

Gallery IV. contains a few works. Phil R. Morris's picture of "The Circling Hours" (272), is pretty in motive and decorative in design, the cupids or amorini on the ground are sleeping, others waking, and those on the wing representing the hours of daylight are pleasingly grouped. Allan Stewart's "North Sea Skipper" (271), and Colin Hunter's "Burial of the Macdonalds of Glencoe" (286), are important pictures; but the leading canvas in the room is Stanhope A. Forbes's centrally-hung subject, "Forging the Anchor," one of the ablest works of pure realism in the Academy. Mr. Stanhope Forbes, A.R.A., as a young associate, has never done anything better than this real, hard, workday-life composition. The anchor on the anvil glows with the bright red-heat of the iron, while the boy in front at the bellows is rekindling the furnace. There is animation in the stalwart fellows who are wielding the hammers; the incandescent iron, the bright light on the boy, and the reflections are marvellously real, so cleverly has the painter estimated the values of his dark greys and tones of the interior workshop. Next in merit comes Frank Brangwyn's picture, "The Convict Ship," scarcely equal to former contributions, but imbued with the same qualities of pathetic interest. Mr. Brangwyn always paints with knowledge of his favourite theme, the sea; but we see in this deck scene of a convict ship, with one poor fellow in irons, his hands tied behind him, and the other hapless convicts, a true sympathetic intention. The grey tone and mist which pervade the scene are admirable. Vicat Cole's splendid view of "Westminster" is well chosen in the point of view of the Palace of Legislature, its stately towers lit up by a golden sunset, with its foreground of river and barges. Ernest Croft's scene from "Gunpowder Plot," the last stand the conspirators made at Holbeach House (311), represents the fierce affray in the courtyard of the house. The short and decisive struggle between the sheriff's men at the gate, muskets and staves in hand, and the followers of Percy and Catesby is well told; dramatic interest and animation centre in the groups of soldiers, and the wounded man being led into the house. The architecture of the scene is also correct, and gives interest to Mr. Croft's brilliant canvas. His "Charles I. at Edge Hill" (331) is another characteristic and brilliant incident of the Civil War. Arthur Hacker's "Syrinx" is a very delicate and graceful figure study. The figure of Syrinx stands amidst reeds, which bend over the lovely form of the maiden. The harmony of tone is perfect. In a very different key of colour, gorgeous and brilliant, is Walter C. Horsley's "A Captive," in which the painter depicts a child captive in a harem, an episode of the 18th century. The next gallery, V., has two or three pictures of note. Amongst these is B. W. Leader's grand coast view, "Conway Bay and the Carnarvon Coast" (417), a splendid example of the painter's breadth, sense of atmosphere and light, grey and cool, the sandbanks painted with technical skill. E. Blair Leighton, whose work always claims attention, this year paints "Lady Godiva," in which Tennyson's poem has inspired the conception. In a spacious Norman hall Lady Godiva, in cream-coloured dress trimmed with gold, with large loose sleeves, stands leaning against an oaken table, upon which are placed the elements of a substantial meal; her hair, of light amber, falls in long plaited tresses down her dress. In a well-drawn Norman doorway is Leofric, her husband, in long girdled dark tunic, who bids her "Ride you naked through the town"; a man of rough manner and ruddy hair with his dogs, who is just drawing aside the portière to go out. The details of oak settles, wall hanging, and appointments, also the carved doorway, make a scholarly picture of costume accessories, in which the colours harmoniously combine. Val C. Prinsep's large highly-coloured canvas of "The Broken Idol" (368) represents a Christian slave during the Diocletian persecution defending his iconoclastic zeal before a Roman lady, under the care of a master of the slaves. The figures, some very tender and pathetic in expression, are cleverly introduced in a court of a Roman palace surrounded by columns. The large canvas of Hubert Herkomer (458), "A Board of Directors," claims notice, not so much as an artistic composition, as for the individual portraiture and the lighting on the faces. It is a commercial group full of character, under a top light, but the mahogany details of the room are poor and commonplace. Very pleasing figure studies are Markham Skipworth's "Girl by a Window" (476) and Henrietta Rae's delicate picture of "Mariana in the Moated Grange" in the next gallery —both poetically and sympathetically painted subject studies. A few other noteworthy pictures we leave for another notice.

ARCHITECTURE AT THE ROYAL ACADEMY.—II.

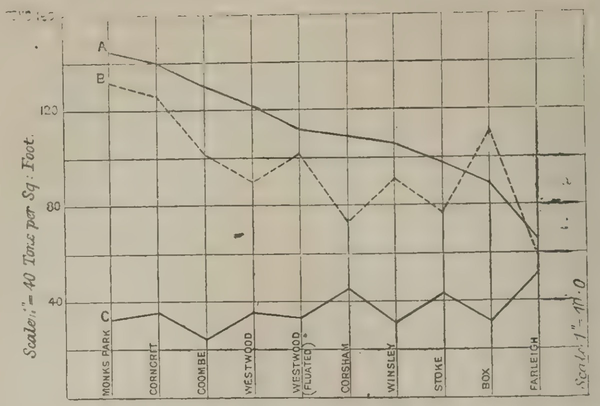
LAST week we briefly alluded to some of the more conspicuous names, leaving necessarily some others to mention to-day. Mr. Charles E. Ponting, F.S.A., contributes four drawings. One of these represents an interior view of Edington Priory, a grand old Wiltshire church, situated near the Westbury White Horse. The nave has of late years been restored by Mr. Ponting, who has replaced the ancient parish altar and renovated the great screen. A drawing of the West End will be found in the BUILDING NEWS for August 12, 1887, with a plan of the fabric. At Latton, in the same county, the same architect is to build a block of almshouses, which, in a homely style of brick and tile, seem well designed for the purpose. Other similar works of his are the picturesque stables at Pewsham, where he has built an artistic house, here illustrated by a pen-and-ink view, which is hardly so effective as his tinted tracings adopted for the other studies. Near the last-named subject hang three views of All Saints' Church, Penarth, a capital little Gothic church by Messrs. Seddon and Carter, while over these is to be seen a view of the proposed Tate Gallery for British Art, the design for which we fully illustrated a fortnight since; Mr. S. R. J. Smith is the architect. Mr. William D. Caröe, at the other end of the Gallery, shows a handsome terracotta Renaissance doorway at Liverpool for the Adelphi Bank, fitted with a pair of massive bronze doors, having bold figure panels of well-modelled boys pleasingly grouped within well-emphasised lines of the framings. Warnham Lodge, Sussex, has had some new kitchen buildings added by Messrs. Batterbury and Huxley in a half-timber style, with bold chimneys; but the older parts appear, from Mr. Knight's pen view, to be scarcely worthy of such a handsome office block. Mr. A. H. Skipworth shows a small study for a narrow slip retable in stone for St. Alban's Church, Teddington, and a sketch of a Connecticut home surmounts the wall from the hand of Mr. E. J. May, whose work evidently deserved a better fate. The big drawing of a somewhat crowded staircase hall from "The Mount," near Wolverhamphampton, by Messrs. Grayson and Ould, has much that is clever and good in detail, and the Ulster Bank, College Green, Dublin, by Mr. Thomas Drew, R.H.A., hanging next to it, is a bold, telling building, treated in a Classic style such as befits its location, and harmonises well with the 18th-century buildings, which go far to make that city famous architecturally. We illustrated this drawing on August 15th, 1890. It is from the pencil of Mr. R. F. C. Orpen, who has done the façade justice. Albion Church, Ashton-under-Lyne, by Mr. John Brooke, we published last year, at the time this drawing was rejected at the Royal Academy, but the interior was then hung. Indeed, the whole business connected with the Architectural Gallery at Burlington House has hitherto been more or less mismanaged to such a degree, as everyone knows, that it has literally become more and more a "toss-up," to use a familiar expression, whether a drawing will be hung or not, accepted or rejected, none can tell. One thing is tolerably well certain, however: when an architect wins a competition and sends a drawing of it to the R.A., his design will be either skied, made "ground game" of, or refused entirely, while designs which have failed to win the job, to speak plainly, are displayed by the judicious Royal Academicians either on the line or in prominent places in the gallery. Take a specimen from this year's show—viz., the R.A. Gold Medal for Architecture Competition, about which, at any rate, the members, one would have thought, ought to know something. Two of the unsuccessful designs appear, however, on the walls, and the prize medal design is nowhere! A similar occurrence happened to our knowledge years ago, when the Gold Medal design of the period did chance to pass muster. It was, notwithstanding, hung immediately under the cornice, while a rejected design in the same contest commanded the line. Again, Mr. Belcher's rejected design for South Kensington Museum has two big drawings on the line in leading positions this year, while Mr. Aston Webb's accepted work has only one, and that displayed in a second-rate place on the splay in the room, none of the other designs being represented at all. In a collection of about two hundred drawings supposed to represent contemporary architecture, more than a third are devoted to the representation of old work, and about about thirty-five more are entirely occupied by designs for stained glass. And this is done while dozens of first-rate drawings of actual buildings by well-known architects were refused—names which have often graced the gallery before, and added to its interest. What incapacity has left unfinished, favouritism and cliquism has completed. Messrs. Demaine and Brierly show a square-towered and sturdily-designed church for Newton-le-Willows, Lancashire, and Mr. Wm. Wallace sends Ridley Hall, Cambridge, conceived in a Late style of Tudor character, somewhat unhappy in outline. Mr. G. C. Horsley shows a pretty little organ front for Bottesford Church, a work of merit, but scarcely important enough for so favoured a position as here assigned to it. The Grafton Galleries entrance, which we illustrate this week, is skied. Messrs. Wimperis and Arber are the architects. The Penny Bank, Bradford, by Mr. James Ledingham, is a common-sense building, amply lighted, and well shown by a monochrome view, spiritedly drawn. Mr. Briggs, though neither the son of a bishop nor of an R.A., has more good fortune here than most architects. He exhibits some of the drawings for houses which figure in his book of bungalows issued last year, and they balance in the hanging Mr. Aston Webb's big work at Kensington, already mentioned. Mr. F. H. Tulloch sends a design for Bury Municipal Buildings, with an overbearing turret on the main roof. This rejected design obtains a good position, and the building now in course of erection by Mr. A. N. Bromley is relegated to associate with the skirting, out of the way, in the same room. Messrs. Bateman and Bateman, Charles Henman, P. H. Tree, and Ernest Newton are contributors of nice little houses. Mr. Arthur E. Street, M.A., shows a heavily-tinted view of St. Agnes School, East Grinstead, which we illustrate this week. The grouping is picturesque, and the building is quiet and effective. "Todenham House, Gloucestershire," is by Mr. E. Guy Dawber, who knows what good work is; and Mr. Halsey Ricardo, longing for new methods, strikes out in an original fashion with a design for "Oxford Municipal Buildings" (1684). Mr. F. W. Bedford shows some exceedingly graceful studies in slight washes of old buildings from Spain and Italy. They are very delicate, and deserved a better chance of notice than being worked in along the skyline as stopgaps. Mr. Francis Hooper has built himself a house at Beckenham (1706), and Mr. Horace Field shows a suitable hall in an Old English Classic style for "The Hoo," at Hampstead. Messrs. Preston and Vaughan send a little church of taste and merit for Brinksway, and Mr. Edmund Sedding, following his late uncle's lead, has designed a quaintly-treated Parish Hall, for All Saints', Plymouth. We must not omit to name also with approval Mr. W. H. Bidlake's entrance block design for Birmingham General Hospital. It is a little overdone, but shows great ability and clever draughtsmanship; the design, however, was not accepted for execution. The Institute for Chartered Accountants is a good building, and has here a detail of some size showing the elevation. Last year the same work was represented in the same gallery. Grantully Castle is an old Scotch house in Perthshire, lately enlarged by Mr. Thomas Leadbetter, who clearly understands the style. Mr. Thomas Garratt shows a competitive facade for St. Bride's Institute proposed in red brick, capitally designed. Mr. Peter Dollar sends a good square-windowed, mullioned house in stone at Chesemore, Southampton, and Messrs. Waller and Son a professor's house at Sunningdale, which we have illustrated. Mr. E. Runtz is represented by a design for the Stoke Newington Free Library, which he sent in in competition. It is very pretty, and would have been an improvement upon that which is built. The Coates Memorial Church, by Mr. H. J. Blanc, is an ecclesiastical work deserving of notice, and Mr. W. F. Unsworth shows another, viz., Christ Church, Woking. The Giralda Tower, Seville, Spain, is the subject of a brilliant water colour by Mr. Seth-Smith, and the new tower, Lynton, is the subject of another by Mr. H. Wilson, who is to be praised for a charming drawing likewise in colour of the late J. D. Sedding's "Pastoral Staff for the Bishop of St. Asaph." "The Delivery of the Keys to St. Peter" is the subject of the group in the crook, the end of which terminates in a jewelled serpent's head. The silver work is charmingly shown. Messrs. Roger Smith, Son, and Gale show a competitive design for the Polytechnic, Battersea, and Mr. J. M. Brydon shares with them the fate of being put up aloft with his accepted design for Bath Municipal Buildings, a work already illustrated in our pages. We overlooked to name a fourth drawing, exhibited by Messrs. George and Peto, last week; but we found it out on our second visit, near the floor. It shows a group of cottages at Eaton Hastings, Berks, built in stone with plain bays, reminding us of some old examples seen in Northamptonshire. They form a quadrangle, and are, of course, admirable, picturesque, and quiet. A competitive design for the Glasgow Art Galleries is sent by Mr. A. N. Prentice, and additions to "Ivanhoe," Reigate, are by Messrs. Read and Macdonald. "Caer-Nun," North Wales, a very good country house by Mr. T. M. Lockwood, is worthy of his reputation, and Baroda Museum, by Mr. R. F. Chisholm, is a typical work suited for India. Other works of more or less merit complete the list associated with the names of Messrs. T. E. Pryce, A. R. Stenning, Basil Champneys, A. S. Jones, and F. L. Pearson. Mr. Aston Webb shows some views of the new transepts to St. Bartholomew the Great, E.C., some of which we have already illustrated.

* * *

BUILDING STONES OF GREAT BRITAIN: THEIR CRUSHING STRENGTH AND OTHER PROPERTIES.*

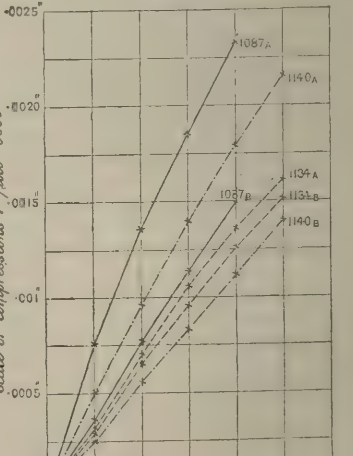
VERY few systematic tests of the various properties of British building-stones have been published since the report of the Royal Commission of 1839 was issued. That commission was appointed to inquire into the question of "the selection of stone for building the new Houses of Parliament"; it issued a very valuable report on the stones then chiefly in use, and the results of the experiments they carried out have formed the standard of reference up to the present day. It is a well-known fact, however, that the qualities of the stone from any particular quarry are by no means constant, and a period of over fifty years having elapsed since the report appeared, the probability is great that the results then ascertained as to any stone may, by the present date, have become untrustworthy and almost useless, since entirely different parts of the quarry beds will now be worked. In view of this, and of the additional fact that many new quarries have since been opened up, it seemed that the time had come for a new series of experiments, and that the results of such an inquiry could not fail to be of service to both the engineering and the architectural profession. The author determined to confine his work entirely to stones of Great Britain, and to carry out tests on the following properties:—Crushing-strength, density, absorptive power as a test of weathering, effects of low temperature, and, lastly, an inquiry into the behaviour of stone under gradually increasing pressures, with a view to determining the modulus or coefficient of elasticity. The author put himself in communication with a large number of quarry-owners throughout the country, with the object of obtaining specimens, and met with a very cordial response. He is much indebted to these gentlemen for the trouble taken in preparing specimens, and for much valuable information as to the use of the stones, &c. Naturally, only a selection could be made of all the quarries now worked, but he endeavoured to obtain as representative a collection as possible. Three specimens of each stone were asked for, in the form of cubes 2¼in. in the side. The author was very anxious to have all the specimens of uniform size, and a 2¼in. cube of the stronger granites was the maximum size which could be crushed in his testing-machine, the capacity of which is 100,000lb. The building stones in ordinary use may be classed as granites, limestones, dolomites, and sandstones. As far as possible, specimens of each of these classes were obtained from each district where they occur.

Fig. 1.



Curve A, Crushing Strengths; Curve B, ditto, after immersion in water for seven days and re-drying; Curve C, Percentage of Water Absorbed.

Fig 2.



Sandstone. Stress-Strain Curves.

1087_3 Prudham .... { A. First test. B. Second test.
1134_3 White Plean .... { A. First test. B. Second test.
1140_3 Dean Forest.................... { A. First test. B. Second test.

Compression measured on a length of 1⅜in.

Appendix A gives a list of the quarries supplying stones, and the districts where they are situated, together with a few notes as to their use. After the specimens were received they were allowed to remain for some time exposed to the dry warm air of the laboratory, till practically all the natural quarry water had been evaporated, and it was in this condition that all the measurements and experiments were made. The general plan adopted was to test one of the three specimens at once for crushing-strength; to use a second for density, absorption, &c., experiments, and then to crush it; and to employ the third for elastic tests before crushing it.

Crushing-tests were carried out in the large

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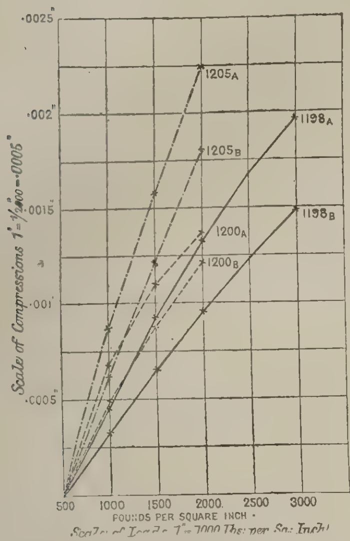
* By Professor T. Hudson Beare, University College, London; reproduced by permission from the *Proceedings* of the Institution of Civil Engineers.

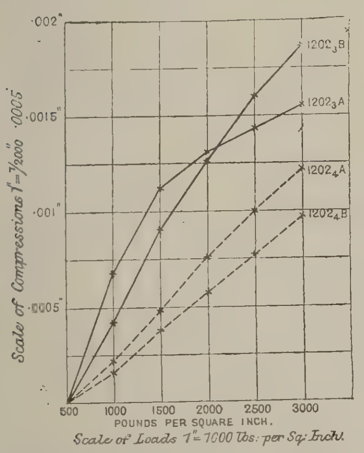
FIG. 3.



SANDSTONE. STRESS-STRAIN CURVES.

1198_3 Darley Top .... A. First test. B. Second test.
1200_3 Bramley Fall .... A. First test. B. Second test.
1205_3 Aspatria .... A. First test. B. Second test.
Compression measured on a length of 1½in.

FIG. 4.



SANDSTONE. STRESS-STRAIN CURVES.

1202_3 Lightcliffe Bed_4 .... A. First test. B. Second test.
Plane of pressure parallel to bedding.
1202_4 Lightcliffe Bed_4 .... A. First test. B. Second test.
Plane of pressure perpendicular to bedding.
Compressions measured on a length of 1½in.

Greenwood and Batley testing machine belonging to the laboratory of University College, London. It is a horizontal machine of 100,000lb. capacity. In carrying out the experiments the small force-pump was driven by a Crossley gas-engine. In all cases the load was applied gradually up to the maximum point. The specimens were carefully prepared at the quarries, so as to insure parallelism of the two sides subjected to pressure; and in every case, except two (1202_2 and 1202_4), the specimens were placed in the machine in such a way that the pressure was applied on the bedfaces—*i.e.*, the axis of pressure was perpendicular to the planes of the quarry-bedding. In almost all cases, in building-work, care is taken, more especially in the use of sandstones and other rocks which show very distinct planes of stratification, to place the stones in the walls, &c., in the position of natural bedding, because, if employed in any other way, they usually disintegrate much more rapidly under the weathering action of atmospheric influences; it did not, therefore, seem to the author worth while to make any tests with the axis of pressure parallel to the planes of bedding. The two exceptions were at the special request of the quarry-owner supplying those stones. The faces of the cube to which the pressure was applied (in addition to the careful quarry preparation) were strickled over in the laboratory with a thin layer of plaster of Paris; when this was dry, it was easily rubbed and pared to a smooth surface, and to perfect parallelism of the two pressure faces. The surfaces thus prepared were applied directly to the steel faces of the dies of the testing-machine, nothing whatever being interposed. This is a point of very considerable importance in the testing of stone and similar materials, and it appears to the author that many of the very discrepant and anomalous results so often obtained in such tests may be easily explained by consideration of the methods adoped for holding the specimens in the testing-machine. It has been a common practice to interpose between the specimen and the dies of the machine sheets of lead or thin pieces of soft wood, with the idea that this would secure a perfectly uniform pressure all over the cube, in consequence of the softer lead or wood yielding, and thus accommodating itself to inequalities in the pressure from want of parallelism or roughness in the two faces of the cube. It it, however, quite certain, whether the above result is obtained or not, that the introduction of the lead or wood very largely reduces the crushing strength of the specimen, and the reason is not far to seek. The compressive forces produce lateral dilatation, and consequently a tension at right angles to the line of pressure; now under the great pressure necessary the lead flows laterally, and the friction thus caused between it and the face of the cube sets up a very considerable tensile stress additional to the one mentioned above, the result being that the cube is torn asunder into a series of prisms parallel to the axis of pressure by this augmented tensile stress, and the fracture is quite unlike the typical one of stone or such material when crushed in the form of cubes. The author investigated this point, and determined the resultant loss of strength in using such interposed sheets of lead, &c., by a series of comparative tests, the results of which are given in the subjoined table :—

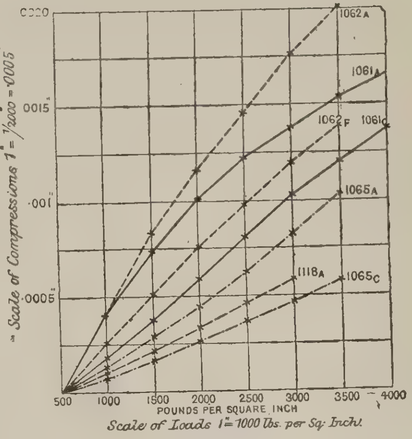
INFLUENCE OF INTERPOSED LEAD SHEETS ON THE STRENGTH OF STONE CUBES.

Name of Stone.	Method of Bedding.	Crushing strength.	Loss of strength by use of Lead between Cube&Dies.	
		Tons per sq. ft.	Tns per sq. ft.	Per cent.
Binnie (1 cube)...	Lead ⅛in. thick.	253·4	154·1	37 8
,, (2 cubes).	Plaster of Paris only.	407·5		
Hermand (1 cube)	Lead ⅛in. thick.	253·4	139·7	35·5
,, (2 cubes)	Plaster of Paris only.	393·1		
White Hailes (1 cube)	Lead ⅛in. thick.	298·1	369·3	55·3
White Hailes (2 cubes)	Plaster of Paris only.	667·4		
Arbroath (3cubes)	Lead ⅛in. thick.	321·1	237·0	42·5
,, (3 ,,)	Plaster of Paris only.	558·1		
Craigleith (3 cubes)	Lead ⅛in thick	408·9	453·0	52 6
Craigleith (3 cubes)	Plaster of Paris only.	861·9		

Note.—For the first three stones the cubes were all cut from one block. This was not the case for Arbroath or Craigleith, the second sets being obtained at a later date.

The enormous reduction of strength, varying from 36 to 55 per cent., is very apparent, and the fact that the loss is greater the stronger the stone points very clearly to its origin—viz., the lateral flow of the lead under the great pressure to which it was subjected. The use of thin pieces of soft pine is still more destructive. Three specimens of Corncockle were tested; two with lead interposed had a mean strength of 195·1 tons per square foot, while one with pine carried only 145·4 tons before breaking up into a number of prisms.* The author is therefore of opinion that, for the sake of obtaining accurate and uniform results, stone cubes should always be prepared and tested in the way adopted in these experiments; in a few cases he interposed between the die and the plaster of Paris face millboard (which is practically incompressible at the pressures used), but it did no good, and if anything, harm. There is no necessity for anything except the thin layer of plaster of Paris, which, to all intents and purposes, becomes part of the stone cube. These interesting results emphasise also very clearly the effects of bad bedding in structures in reducing the strength of the stones used. One cube, or in some cases two cubes were, after drying in the laboratory, tested at once to destruction; these may be recognised in the appended tables, in which all the results are given, by the absence of any figures in the columns for the other tests. As mentioned before, it was the author's intention to use one cube of each set for absorption, &c., tests, before crushing. It so happened that the first stones tested were Bath and other oolitic limestone, and the author found that there was apparently some reduction of strength caused by the immersion in water and subsequent redrying. He therefore, as far as this class of stone was concerned, abandoned this plan, and tested two samples of each set at once to destruction, reserving the third as before for elastic work. For the absorption tests two other cubes of each stone were obtained from the quarries and eventually crushed. No such effect was found in the case of the sandstones, dolomites, or granites, and with them, therefore, the original plan was adhered to. Whether there really was a loss of strength is not quite certain. The curves in Fig. 1 show diagrammatically the strengths of the two series of Bath stones, and it will be noticed that the curve indicating the crushing-loads for the immersed and redried cubes does show a distinct tendency to fall below the one for the series which was not placed in water.

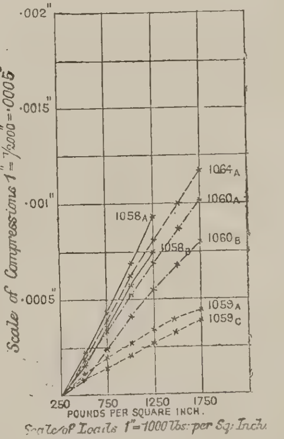
FIG. 5.



DOLOMITES, &c. STRESS-STRAIN CURVES.

1061_2 White Mansfield .... A. First test. C. Third test.
1062_2 Red Mansfield .... A. First test. F. Sixth test.
1065_2 Brown Weather-bed...... A. First test. C. Third test.
1118_2 Yellow Magnesian Limestone .... A. First test.

FIG. 6.



LIMESTONES. STRESS-STRAIN CURVES.

1058_3 Doulting Fine Bed ...... A. First test. B. Second test.
1059_3 Doulting Chelynch Bed. B. Second test. C. Third test.
1060_3 Ham Hill .... A. First test. B. Second test.
1064_2 Ancaster Freestone ...... A. First test.
Compressions measured on a length of 1½in.

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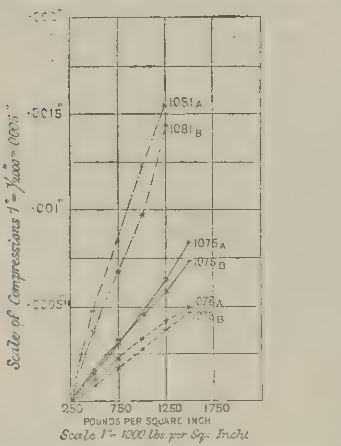
* This point is noticed in Silliman's *American Journal of Science and Arts*, Vol. XXII. pp. 30-38. Also in Unwin, "The Testing of the Materials of Construction."

Fig. 1 also shows by another curve the relative absorptions of the different stones.

In general, there was no preliminary cracking noticeable where it did occur; the load at which it happened is given in the table. Most of the stones gave way quite suddenly. Let a cube or other solid be subjected to direct compressive forces, then on any plane section inclined to the axis of pressure, there will be on this plane a normal component and a tangential component of the axial pressure. The latter will tend to produce shearing strain on this plane, and were it the only internal force present, it can easily be proved that it would reach its maximum value on planes inclined at 45° to the axis; but there can be no doubt that the normal component interferes with this by producing a resistance to the rubbing of the two surfaces over one another in the act of shearing. The plane at which shear does take place is therefore often not inclined at 45° to the axis; furthermore, the lateral dilatation before mentioned effects the result, causing the sides often to break off into prisms.

Were the maximum shear to occur on planes at 45° to the axis, then the cube would tend to break up into six pyramids, with their apices at the centre. Generally, the two corresponding to the top and bottom faces (*i.e.*, the ones in contact with the dies) remained intact, and could be removed from the machine; but the others usually crumbled into irregular pieces or dust. In several cases, however—notably the oolites—the side pyramids also remained unbroken, the fracture being quite perfect. Tables are appended which give in columns the following data: (1) Laboratory test number; (2) Name of stone or quarry; (3) Crushing-load of each cube in tons per square foot; (4) Mean crushing-strength of each kind of stone; (5) Density; (6) Weight of one cube foot; (7) Absorption-power; (8, 9, and 10) Coefficients of elasticity. Remarks occur in the footnotes. In the tables, the stones are grouped under the four heads of sandstones, dolomites, limestones, and granites, and also largely in districts. It will be seen that the figures for crushing-loads are very closely concordant, and, as they speak for themselves, the author does not consider it necessary to discuss them in detail. The means for each class may, however, be useful. They are as follows (crushing-strength per square foot): Granites, 1112·2 tons, mean of thirteen varieties, forty-nine samples; oolites, 141·3* tons, mean of eighteen varieties, fifty-seven samples; sandstones, 489·8 tons, mean of twenty-five varieties, eighty-eight samples; dolomites, 500·5 tons, mean of four varieties, sixteen samples. As a rule, the results are higher than those obtained in the older experiments, and more in agreement one with another. In the case of Bath stones, two means have been given in the tables; the one in brackets is for the cubes of each set, which were not immersed in water, while the other includes them all. Every test which was made is included in the tables.

FIG. 7.



BATH-STONES. STRESS-STRAIN CURVES.

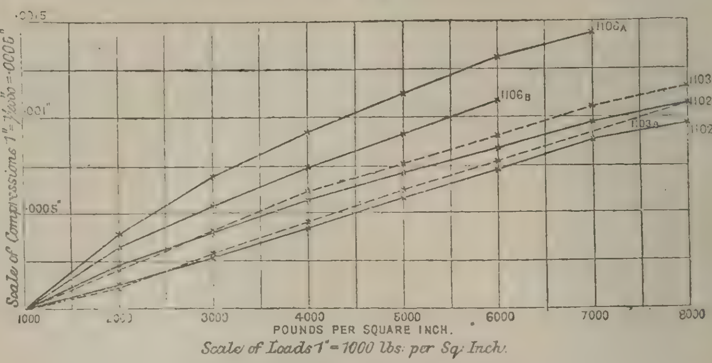
1075_1 Monks Park .... { A. First test. B. Second test.

1078_1 Corngrit .... { A. First test. B. Second test.

1081_1 Westwood Ground .... { A. First test. B. Second test.

Compressions measured on a length of 1⅛in.

FIG. 8.



GRANITE. STRESS-STRAIN CURVES.

1102_3 Aberdeenshire, Peterhead { A. First test. B. Second test.

1103_3 Aberdeenshire, Dyce...... { A. First test. B. Second test.

1106_3 Aberdeenshire, Hill of Fare .... { A. First test. B. Second test.

Density. — Each cube was for this purpose accurately measured to obtain its exact cubical contents, and was carefully weighed, then this weight was compared with the known weight of an equal volume of water at the standard temperature. The very close agreement of the results where two or more cubes of one kind of stone were tested is a sufficient proof of the carefulness and accuracy of these results. In the case of the granites, since the absorption of water is exceedingly small, the specific gravity or density was also determined by weighing the cube in air, and then in water; this method also gave very close results, and in strict agreement with those obtained by the other plan. The weight per cubic foot has been calculated from these density results, assuming 1c.ft. of water to weigh 62·421b.; the mean density is used for the calculation where there are several results. When the stone is removed from the quarry it is practically saturated with quarry water; if it is desired to know the weight per cubic foot under these circumstances, it can easily be determined by increasing the figures given in column 6 by the amount of such water deduced from the proportional assumption given in column 7.

Absorption of Water.—For this test, the cube, after it had been measured and weighed as above described, was lowered gradually into a vessel of water (earthenware crocks were used), and left there for a period of six or seven days. Saturation probably occurs within a few hours, but it is safer to leave the cube under water for some days. At the end of this time the stones were removed, wiped with a dry cloth to remove adherent water, and at once reweighed. The gain of weight compared with the figures for the dry stone is that due to the water absorbed. In column 7 of the tables, the results are expressed as a percentage of the original weight by dividing the gain by the dry weight. It may be mentioned that every care was taken to have the stones thoroughly dry before beginning these tests, and they were allowed to again dry before crushing them. The water used for a few of the earlier specimens—numbers 1059_2, 1061_1, 1062_1, 1063_1, 1064_1, 1065_2, 1077_2, 1082_2, 1087_2, 1088_2, 1080_2, 1089_2, 1091_2, 1092_2—was drawn from the College service-supply, obtained from the New River Company; but for all the others pure distilled water was used. That there was some dissolving action going on in the case of the oolites was shown by the condition of the water in the vessels after the stones were removed; it was slightly cloudy, and there was a distinct sediment. This is quite sufficient, probably, to account for any apparent loss of strength. Of course, to be at all comparative, absorption tests must be made on cubes of the same size, so that the surfaces exposed to the water may bear the same relation to the volume of the cube. It is, therefore, not easy to compare one set of observations with another; in this case they are strictly comparable, as all the cubes were of the same size, and treated in precisely similar fashion. The relative amounts of absorbed water must be a very good guide to the relative weathering power of stones, since it shows to what extent deleterious agents in rain water and fogs will penetrate the stone, and, furthermore, a freely absorbent stone must be very liable to the destructive action of frost. Summarising again, in order of absorption, oolites, on an average of twenty-seven samples, absorb 8·96* per cent. of their dry weight; dolomites, on an average of four samples, 5·43 per cent.; sandstones, on an average of twenty-six samples, 4·68 per cent.; granites, for fourteen samples, 0·27 per cent. Fig. 1 shows diagrammatically for Bath stones the relation between absorption and strength to resist crushing, and also the apparent resultant loss of strength. There are two sets of cubes of Westwood Ground, one set having been treated by Mr. Kessler's process for hardening and preserving calcareous stones; the effect of its application seems to be a slight reduction in strength, with also a slight lowering in the quantity of water absorbed. The process is largely used in France, and seems to be very successful in reducing and checking decay of oolitic and other limestones.

(*To be concluded.*)

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NOTES ON TERRACOTTA.—X.†

THE KILN.

THE form of kiln most in favour for the burning of terracotta was illustrated by an elevation and section in the issue of the BUILDING NEWS of the 21st August, 1891, and is now shown in plan by the adjoining figure. It is a familiar form throughout the Midland counties, and in the coal districts generally, these districts yielding the best clays for terracotta. It is generally known as the cupola kiln, deriving its name from its circular plan and domical covering, which in section should be an ellipse, or an approximation to such, so as to relieve the walls of the kiln of a thrust. The circular form is always to be preferred, as giving a more uniform and equable distribution of heat than any other form is capable of, when all the furnaces (*c* on plan) are kept going and equally attended, and is, therefore, more economical in the working. The kiln in question may be called an over-draught, or an up-and-down draught, kiln, as shown by the arrows indicating the direction of the draught. In some instances the muffled kiln is in favour, as a means of preventing the flame playing directly on the goods, with a chance of imparting to their faces a bluish metallic-like appearance, generally a sign of overburning, and which, unlike the scum sometimes developed in the kiln, cannot be removed from the goods by vigorous scrubbing with sand and water. The muffled kiln differs from that here represented by its having a continuous flue or cavity all round the kiln (except at the entrance to the kiln) to a height of about 7ft., instead of separate flues, as shown in plan in the adjoining figure, in which *c* represents the furnace, *b* the flue, and *a* a perforation in the base of the central extract flue, just above the floor of the kiln, for the egress of the used-up and escaping heated air after it has passed through the wares. There are twelve

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* This mean does not include limestones, which are not oolitic, and does not include the immersed and redried oolites.

* This omits 1059_2 and 1184_2 the Doulting Chelynch Bed Stones.

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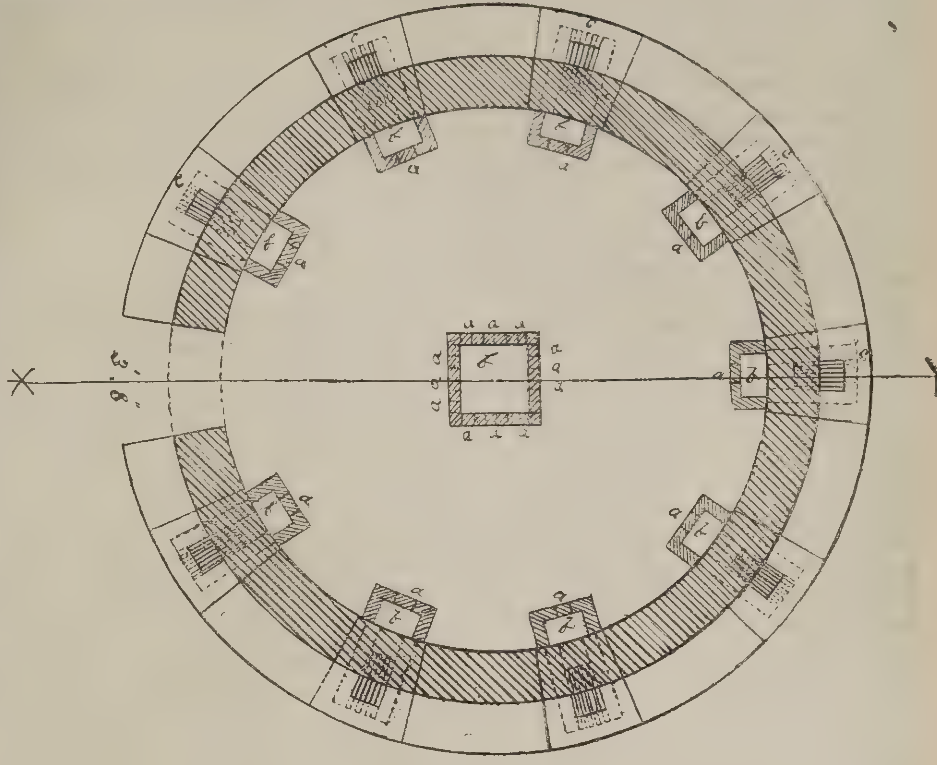

such perforations in this case. Kilns vary much in size, the one illustrated being 16ft. in internal diameter, which, though a small kiln, bore the character of being the most perfect working and economical kiln in the works. There are kilns capable of holding from 12,000 to 16,000 blocks; but these are beyond the ordinary size, and require special arrangements for stacking the goods to be fired. In the smaller kilns the stacking is done by inclosing the blocks in chambers, as it were, formed by bricks in the clay state, the upper portion of the kiln being reserved entirely for terracotta. The blocks, as far as practicable, should be stacked on their ends, as affording a better play of heat through the wares, and as a means of preventing the marking of the finished faces. This may also be prevented by stacking the blocks on their top and bottom beds. The pale bands sometimes seen crossing the faces of kiln-burnt bricks are caused by stacking the bricks crosswise on the kiln, the pale band representing the space covered by the superincumbent brick preventing a free and equable play of heat over the whole surface. One of the advantages claimed for drying the blocks white-dry before placing them in kiln is that little or no very appreciable shrinkage can take place in the process of firing; and where the blocks are stacked without some special arrangement of movable slabs and standards (as at Messrs. Doulton's), forming so many horizontal floors or tables in the height of the kiln, it is best to avoid the possibility of subsidence of the blocks when going through the process of "sweat." The *chemical* moisture of the clay cannot be expelled but by firing, and so tenacious is the clay of this, that the sun-dried adobes of the Pharaohs are said to be in a condition, as a consequence of their retention of chemical moisture during this vast lapse of time, capable of being fired in our modern kilns and converted into ordinary kiln-burnt bricks in their general characteristics. (This article is curtailed, in consequence of an article on the kiln having appeared out of the due order, and anterior to these "Notes.")

THE BUILDING.

On good and well-regulated jobs—especially if the design be of an intricate character—it is usual to detail one of the skilled workmen to sort out the various blocks with respect to their truthfulness of form and general outline, and to lay them out in the relative positions they will occupy one to the other when *in situ.* This he does with key-plan in hand, seeking the blocks bearing the corresponding key-marks stamped or painted thereon, more frequently the latter. This method is also necessary to accurately check the consignment of the wares. At this stage any badly warped or otherwise defective blocks should be unhesitatingly rejected; to provide against such a contingency, the draughtsman on the terracotta works usually provides and forwards to the building a block or two in excess of the actual number required—that is, if they be repetitive in design. It rests with architects to raise terracotta to a higher standard of excellence, in the same way that engineers raised the quality of Portland cement by subjecting it to severe tests and exacting satisfactory results. But in so doing the nature and characteristics of the material should be borne in mind, and the disadvantage its use in some measure entails by curtailing that freedom of expression which the architectural draughtsman employs when designing in stone and plaster, and in a less degree in wood, a disadvantage existing mostly where the design is one of substitution rather than adaptation to the material treated. The writer is led to think that much of the unsuccessful treatment of terracotta in the early stages of its recent revival in England is due to imitating some of the more elaborate earlier Continental work, manufactured probably from the porous clays, which are less susceptible to change of form in the process of drying and firing than the denser, highly-plastic clays of this country, from which are made the most enduring terracottas, owing to the greater and more uniform freedom of molecular action in the mass of the porous clay. In looking at the arcade from the cloisters—Certosa, near Pavia, as illustrated in Grüner's "Architectural Terracotta of North Italy," which is avowedly portrayed as an example for imitation in other countries, the first thought that strikes one is, next to the surpassing beauty of the design, the crowding of ornamentation and detail into every available space and member of the work, the capping members, in the shape of a bead and fillet, being the only unenriched member or space present. From the same work we are led to infer that the fixing partook more of the nature of veneering than of sound construction, the blocks consequently demanding less bulk than is required to-day, a condition much in favour of the successful production of the Italian wares. However truthfully stone may be worked on the banker, with every facility of taking the individual planes of the blocks "out of wind," &c., it is well known that the irregularities of intersecting members at the various joints have to be corrected at the final cleaning down by means of rasps and otherwise. This cannot be done with terracotta, and any irregularities that may exist at the fixing must inevitably remain. The success of all work must always depend upon the appropriate treatment to which the work is best fitted. On the other hand, very much may be done in the various departments of manufacture by the exercise of more care; by the employment of practical men who have passed some of their time on buildings; by the employment of one man (if the job be of sufficient magnitude to warrant it) to be located on the terracotta works to look exclusively after the interests of the job represented by him, acting in a capacity similar to that of a clerk of works, for the defrayment of whose expenses a sum could be provided in the bill of quantities; by the exclusion from trade catalogues of catchy and impracticable sections; by following the example set by Gothic architects up to the 15th century in the use of very small stones in their masonry; and last, though not least, by manufacturers refusing to be unreasonably hurried in the attempted production of the wares. The mortar used for bedding the blocks should be specially made of washed sand and lime, or cement; preferably of lime, on account of the efflorescence that almost invariably occurs in connection with the use of cement, and known amongst workmen by the name of "saltpetreing," but which is said in reality to be the development of a mineral salt composed of nitric acid and potassa—nitrate of potash. The use of washed sand admits of bedding the blocks down to fine and even beds, which should not be less than $\frac{3}{16}$in., nor greater than $\frac{1}{4}$in. Blocks that course in with brickwork should start with the same thickness of bed-joint as that between the brick courses, which, in stock brickwork in London is $\frac{3}{8}$in.; but in joints between consecutive blocks $\frac{1}{4}$in. is ample. It is a great mistake to exact, for appearance sake, very fine joints. The mason's ashlar joint is generally recognised to be $\frac{1}{8}$in., in which case the planes of the beds are very accurately worked at right angles with the face of the stones, and, in some cases, the back portions of the beds are worked a little "lean," to admit of close jointing on the face, the theoretical evil of which it would be superfluous to point out. But in terracotta, as in bricks, the beds are not always at right angles with the faces of the blocks, a consequence of having passed through the kiln, hence the necessity of the bed joints (apart from other imperative reasons) being sufficiently large to admit of "humouring" the blocks or bricks, whichever it may be. A mortar very extensively used for face brickwork and terracotta in the United Stakes is made up of finely pulverised or powdered marble, obtained from the waste cuttings of marble masons. Mixed with the proper proportion of lime, this makes a very good mortar, admits of close and even jointing, and when finished with a jointer during the progress of erection (as all good work should be), presents a surface with an enamelled-like appearance, and is found to withstand the very severe frosts peculiar to some parts of that country.

The writer would like to say, without entering into contentious trade questions, that it is generally found best, both in the interest of the work, and financially, to employ a draughtsman on the terracotta works, practical masons who have been used to the setting-out board, and bricklayers as fixers on the job, for reasons which should be apparent to those acquainted with the peculiarities of the building trades and the work of the artisan classes engaged therein. With respect to the stipulation to be found in most well-drawn specifications that no portion of the walls shall at any time be raised to a greater height than 3ft. above the general level of the work—a necessary stipulation, considering the latitudinarian way in which specifications are sometimes apt to be interpreted, though 5ft. 6in. is the usual working height from scaffold to scaffold; or, in brickwork, twenty courses between the putlog holes of two consecutive scaffolds;—if it be necessary to enforce this in a building wholly of brick or stone, how much more so when the facing is wholly of terracotta and the backing of brick, owing to the differential quantity of mortar joints in the inner and the outer portions of the walls? But, still, if the mortar be of a clean, sharp grit—sand and lime in the proper proportion—and the work raised uniformly level throughout, varying only in scaffold's height, there need never be any anxiety as to the results. Where it is thought necessary to gauge the mortar used in backing-up to prevent possible shrinkage of bed joints, ten of mortar to one of cement will generally suffice. In many stone-faced buildings where cost is no consideration, the backing of brickwork is in compo.—i.e., cement and sand in the proportion of three of sand and one of cement, thus obviating any possible evil likely to ensue from building with two different materials, and compensating for the loss of strength arising from defective bonding, an inevitable result of terracotta or stone-faced brickwork, as compared with walls built exclusively of bricks. The exteriors of all buildings have to be cleaned down during the operation of removing the scaffolding used in erection. The old system of cleaning the façade by means of scrubbing with bass brushes and a copious supply of water, may with advantage be superseded by the application of muriatic acid, the spirits of salts of commerce. Half-pint of spirits of salts to half-gallon of water, applied with a stock brush (a brush half worn out will be found the best), as in the manner of distempering. The diluted acid, having an affinity for the free lime, sets up an effervescing action, resulting in the speedy removal of lime and other surface efflorescent stains. The acid should be used and applied with care when the terracotta is of a sandy or porous nature; but with terracotta thoroughly fired and vitrified, no danger need be apprehended from the use of the acid. The abundant presence of efflorescence—especially about the joints—may be generally taken as an indication of sound workmanship, the writer having noticed that those walls which are well flushed up generally throw out an abundance of efflorescence. The efflorescence will continue to repeat itself until the walls have thrown off the free salts contained therein.

Terracottas that vegetate should be regarded with suspicion of belonging to the light or porous clays, or as being defectively fired, and in some cases the vegetation is likely to be due to both these causes combined. But the presence of vegetation alone is not sufficient reason to condemn the wares, for it is sometimes found upon goods that possess all the appearances and characteristics of enduring material—especially so in the buff colours, which bear the character of being most delicate and difficult of burning.

[These articles are written by F. Walker, author of "Brickwork."]

MR. T. G. JACKSON AND THE ASSOCIATION.

THE recent letter from Mr. T. G. Jackson, A.R.A., to *A.A. Notes* for April, objecting to the plan of preparing students for examination, and recommending the Association to look to the Academy rather than the Institute for help, threw an apple of discord into the Association, and has now resulted in the simultaneous resignation of all the editorial staff who have conducted the *Notes*. In the current issue of that journal, Mr. Leonard Stokes, past-president of the Association, the manager; Messrs. F. M. Simpson and Owen Fleming, the editors; Mr. C. H. Brodie, the secretary; and Mr. W. Campbell Jones, the treasurer, announce their resignation; and Messrs. Brodie, Simpson, and Stokes, together with Mr. T. E. Price, who were nominated in the "House List" for membership of the Association Committee, have withdrawn their names. Mr. Stokes, in the May *Notes*, assumes the responsibility for the resignations of the staff, and, further, resigns his seat on the committee and all subcommittees except the Sketchbook, and withdraws the promise of pecuniary help he had made to the new scheme, as he feels "that in their present state of mind the committee are not likely to make a better use of the money than he can himself." The committee, who have accepted the resignations, explain that as the *Notes* had given too great and extensive prominence to a particular set of opinions, they called for the resignation of one of the editors, and the appointment of Mr. F. R. Farrow in his place, and in future the president of the Association is *ex-officio* to be the manager of the *Notes*. As to Mr. Jackson's letter, the committee think its tone is unfortunate, and that "the demand made upon the Association to alter its scheme to suit the anti-examination views of Mr. Jackson and his friends is unreasonable and palpably unfair, and that compliance with it would inevitably convert the Association into a mere tool of the memorialists." Further, "the committee believe that the Association can only continue to be useful by maintaining the independent position which it has always held and defended . . . . it must not lean either upon the Institute or upon the Academy alone, or upon any support less broad than that of the whole body of architects and students of architecture in the country. It must recognise and take into account in its curriculum all tests, whether by examination or otherwise, of progress or efficiency, established by the Institute, or by the Academy, or by any other recognised authority; and it must seek, as opportunity and means are found, to extend rather than to curtail its programme, until it includes all subjects held by any considerable number of architects to be essential, or liable to be asked for by any considerable number of students."

OBITUARY.

ON the 18th ult., Mr. George Bidlake, of Leicester, and formerly of Wolverhampton, died suddenly at Broadstairs, at the age of 62. Mr. Bidlake was born in London, and educated at the Merchant Taylors' School, and was afterwards articled to Mr. Kendal, a City architect. He was a student at the Royal Academy, where he won silver medals for his measured drawings of the Banqueting House, Whitehall, and for a design for a stamped drugget. Subsequently he commenced practice at Wolverhampton, in which neighbourhood most of his works have been carried out. These comprise, amongst many other buildings, the Town Halls of Pontypool, Oswestry, Sutton Coldfield, and Bilston; workhouses at Dudley and Forden; Tettenhall College, Handsworth Grammar School, Lichfield Museum, Wellington Market, South Staffordshire Hospital Extension, Queen-street Chapel, Wolverhampton, and many other chapels and churches; additions to Albrighton Hall, and numerous houses in the counties of Stafford, Worcester, and Salop. Mr. Bidlake retired from practice in 1872, removing at the same time to the neighbourhood of Leicester, where he resided until the time of his death.

Mr. Lumb Stocks, R.A., died on Thursday in last week, aged 80 years. In 1833 he began as a line engraver, and produced plates for several annuals and for Finden's "Gallery of British Art." Among these were—"Fitting out Moses for the Fair," after Maclise, and "Nell Gwynne," after Charles Landseer. His other works included "The Dame School," 1849, and "The Rubber," 1851, both after Webster; "The Glee Maiden," after Lauder; "The Gentle Shepherd," after Wilkie; "The Birthday," 1859, and "Claude Duval," 1863, after Frith. In 1853 Mr. Stocks was elected an associate engraver of the Royal Academy, and in 1872, in which year he completed "The Meeting of Wellington and Blucher," from the mural fresco at Westminster, he was elected a Royal Academician. Then followed "The Odalisque," 1875, and "The Sister's Kiss," after Sir F. Leighton; "A Souvenir of Velasquez," and "The Princes in the Tower," after Sir J. Millais; "Marie Antoinette," "Dr. Johnson in the Ante-Chamber of Lord Chesterfield," after E. M. Ward; his latest work, produced in 1887, being "The Spanish Letter Writer," after J. B. Burgess. Mr. Stocks, who worked chiefly for the Art Union of London, was a member of the council of the Artists' Benevolent Fund.

* * *

The foundation-stones of a Wesleyan chapel were laid at Shadwell, near Leeds, last week. The style is Decorated Gothic, and the building will accommodate 170 persons. Constructed of stone, with an interior lining of brick, the edifice will have an open-timbered roof. A classroom and minister's vestry will be provided. The woodwork will be of varnished pitch pine, and the roof will be covered with Welsh slates. The cost is estimated at about £800. Mr. G. F. Danby, of Leeds, was the architect, and Messrs. G. Nettleton and Son, of Roundhay, and Messrs. H. Atkinson and Son, of Leeds, have taken the contracts.

A bazaar was held in the Corn Exchange at Wakefield at the close of last week, having as its object the raising of £1,000 to defray the cost of rehanging and quarter-turning the cathedral bells, restoring the chimes, remodelling the organ, and making some improvements in the furniture of the cathedral. During the last few years the sum of £30,000 has been raised for the restoration and repair of Wakefield Cathedral.

The Ruthin rural sanitary authority adopted on Monday a scheme for supplying water to the four villages of Llandyrnog, Llangwyfan, Llangynhafal, and Llanychan, in the Vale of Clwyd, submitted by Mr. Thomas, C.E., of Wrexham. The spring water at Llangwyfan is to be used. The construction of the work will cost over £3,000.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

Leeds and Yorkshire Architectural Society.—A general meeting of this society was held on Friday. The hon. secretary, Mr. W. Carby Hall, read the annual report and balance-sheet, which were adopted. The report was of a favourable character. There has been a gratifying increase in the number of associaties; the lectures were of great merit, and listened to by better audiences than usual. The library has been considerably increased, and now contains most of the standard works appertaining to the profession. The society has made a grant of £10 10s. to the Yorkshire College towards the payment of a lecturer on sanitary science. The financial condition of the society is satisfactory, there being a considerable balance at the banker's. The society's travelling studentship, with £5 5s. added by the president, was awarded to Mr. T. Denton Brooks, he having submitted the best set of drawings. A vote of thanks to the retiring president was passed on the motion of Mr. Habban, seconded by Mr. Beevers, and supported by Mr. Hall.

CHIPS.

At Glasgow University on Friday, Archbishop Eyre received the degree of D.L., in consideration of his great eminence as an archæologist.

The committee in charge of the Murdoch memorial have commissioned Mr. D. W. Stevenson, R.S.A., Edinburgh, to execute in marble a bust of William Murdoch, the inventor of gas lighting, to be placed in the Wallace Monument, where he will be in the company of his friend and partner, James Watt. The model has been approved of by the committee, and the bust will be unveiled this year, the centenary of gas lighting.

New board schools were opened at Gretton, near Winchcombe, on Wednesday in last week. Mr. J. T. Darby was the architect, and Messrs. A. C. and S. Billings were the builders. The school is of stone, accommodates 130 scholars, and cost £2,100.

The foundation stone of a bridge over the river Ffrome was laid at Longworth Mills on the main road between Ludwardine and Sufton, by Lady Emily Foley last week. The bridge will be of stone, and will consist of three arches. The contractors are Messrs. Brothers, of Fownhope.

The excavations on the site of the Roman city at Silchester were resumed for the season on Saturday last. It is proposed this year to excavate the extensive area on three sides of the Basilica and Forum, and to commence work in the southern part of the city near the baths.

A monolithic Celtic cross, covered with interlaced Runic ornament, has been erected in Dawlish cemetery as a memorial of the late Gertrude Jackson. It was executed by Messrs. Hems and Sons, of Exeter.

A chancel which has been added to St. Andrew's Church, Wolverhampton, has been consecrated this week. The chancel is raised above the floor of the nave, from which it is separated by a low stone wall. The choir seats will accommodate 16 men and 20 boys. The altar and super-altar are of polished Devonshire marble. A morning chapel, to seat 96 people, and a choir vestry have also been added. Mr. H. Lovatt, Wolverhampton, has executed the work, from the designs of Mr. F. T. Beck. The east and south windows of the chancel have been filled with stained glass, in memory of the late Mr. P. Horsman.

Mr. J. T. Wimperis, architect, of Sackville-street, W., has become a member of the Plumbers' Company.

The town council of Evesham have adopted plans by Mr. Mawson, C.E., for the sewerage of portions of the town at an estimated cost of £1,430.

The sale of the Murietta collection of paintings and water colours, which took place on Saturday, Monday, and Tuesday, realised a total of £50,092.

The Aberdeen Art Gallery Committee have resolved to hold an exhibition during the months of July, August, and September.

The esplanade at Fowey, Cornwall, is about to be fringed with villa residences. The first block has been designed by Mr. Sampson Hill, architect, of Redruth, and the work is in active progress. The block, which is being put up by Mr. N. Penter, of Polruan, is to be completed by October, and will have balconies and a central tower.

The corner stone of new co-operative stores was laid at Low Wortley, near Leeds, on Saturday. Mr. C. F. Williamson, of Leeds, is the architect, and Mr. W. H. Haley, of Bramley, the builder.

Mr. Burne Jones has been elected correspondent of the Academy of Fine Arts, Paris, in the place of Mr. Alma Tadema, now a foreign associate.

CONTENTS.

Architects and the Public 625
Public Dangers 625
Pictures at the Royal Academy... 626
Architecture at the Royal Academy.—II. 627
Building Stones of Great Britain: their Crushing Strength and other Properties 628
Notes on Terracotta.—X. 630
Mr. T. G. Jackson and the Association 632
Obituary 632
Architectural and Archæological Societies 632
Our Illustrations 633
The Surveyors' Institution... 633
Competitions 633
Yorkshire College, Leeds 651
The BUILDING NEWS Directory XIII
Wayside Notes 652
Engineering Notes 652
Municipal Engineers' Association 653
Building Intelligence 654
Correspondence 654
Intercommunication 654
Legal 655
Legal Intelligence 655
Water Supply and Sanitary Matters 655
Our Office Table 655
Meetings for the Ensuing Week 656
Trade News 656
Tenders 657

ILLUSTRATIONS.

THE "MADONNA AND CHILD," FROM AN ALTAR-PIECE IN THE NATIONAL GALLERY—YORKSHIRE COLLEGE HALL, LEEDS.—GRAFTON GALLERIES, BOND-STREET.—NEW WING, ST. AGNES' SCHOOL, EAST GRINSTEAD.—SIR THOMAS N. DEANE AND SON'S DESIGN FOR THE GLASGOW GALLERIES AND MUSEUM.—BRASS TABERNACLE ON THE HIGH ALTAR AT THE R.C. PRO-CATHEDRAL, KENSINGTON.

Our Illustrations.

ALTAR-PIECE, BY CARLO CRIVELLI.

OUR illustration shows the three central subjects from an altar-piece of the "Madonna and Child," enthroned with Saints, by Carlo Crivelli, now in the National Gallery, London. It is dated Carlo Crivelli, Venice, 1476. The work is executed in tempera on wood, some of the ornament and jewels being in relief and gilt. There are thirteen compartments in all; in the upper tier St. Jerome, the Archangel Michael, St. Lucy, and St. Peter Martyr; below these being half-length figures, St. Francis with the "Vulna Divina," St. Andrew Apostle, St. Stephen, and St. Aquinas; in the central tier, St. John Baptist, St. Peter, in Pontifical vestments, the Blessed Virgin with the Infant Christ, St. Catharine of Alexandria, and St. Dominic. The centre panel is 4ft. 10½in. by 2ft. 1in., and the flanking panels 4ft. 5in. by 1ft. 4in. We are indebted to Mr. W. Samuel Weatherley for the loan of these plates of the "Spring Gardens Sketch-Book," from which we have produced our illustration. They were drawn by Mr. Weatherley in his student days, and subsequently lithographed by him for the Sketch-book, which was dissolved in 1890. They were given among a series of stone images from Henry VII.'s Chapel, Westminster, a very large number of the 95 at present existing having been drawn by Mr. Weatherley at Sir Gilbert Scott's wish at the time they were taken down, and casts made by Brucciani and Co.; many of these casts are in the Architectural Museum. The complete set of the volumes of the "Spring Gardens Sketch-Book" has been lately acquired by the Royal Institute of British Architects.

YORKSHIRE COLLEGE, LEEDS.

(SEE description and plan on p. 651).

NEW GRAFTON GALLERIES, GRAFTON-STREET, BOND-STREET, W.

THE drawing which we illustrate this week is taken from that now hung in the Royal Academy. It represents the house, No. 8, Grafton-street, which is being remodelled to form an entrance to these new Galleries. The porch will be in Aberdeen granite and Portland stone, with hardwood joinery; the upper part of house having a deep frieze in modelled Portland cement. The galleries will extend from the back of this house the full length from Grafton-street to Bruton-street, and will consist of four fine galleries, some 250ft. long in all. In connection with the picture and sculpture galleries there will be a club, under distinguished patronage, and for which ample accommodation will be provided on the other floors for the use of the members. Besides forming a fine set of galleries and a handsome club-house, these buildings will effect a first-rate improvement in clearing away the tumble-down and insanitary buildings which existed on the site. The contractors are Messrs. S. and W. Pattinson, of Sleaford and Whitehall, and the architects Messrs. J. T. Wimperis and Arber, of 25, Sackville-street, Piccadilly, W.

NEW WING TO ST. AGNES SCHOOL, EAST GRINSTEAD.

THIS illustration is from a drawing in this year's Royal Academy Exhibition, and represents an addition being carried out to the Schools of St. Agnes, East Grinstead, by Mr. Arthur E. Street, M.A.

GLASGOW ART GALLERIES AND MUSEUM COMPETITION.

WE give this week a transverse section and back elevation of Sir T. N. Deane and Son's design submitted in this competition.

TABERNACLE, PRO-CATHEDRAL, KENSINGTON.

THE tabernacle, of which we give an illustration, has been erected as a mission memorial on the high altar at the above church. Its plinth course starts from the marble altar-table, and against its sides the grenadines stop. The external casing, with all the ornamental details, is constructed of wrought brass, finished gold colour, over a safe of wrought iron. The interior has a lining of silk-covered poplar-wood, with rich curtains within the doors. The emblems on the door-panels are engraved; the foliage and rest in the tympanum are repoussé, laid on a ground of rich coloured morocco leather; the pelican and angels have been modelled and highly chased. The design was supplied by Messrs. Goldie, Child, and Goldie, architects, and the work executed by Messrs. Hart, Son, Peard, and Co.

◆

CHIPS.

Messrs. Jones and Willis, of London and Birmingham, have just completed their contract for the carved canopied stalls, gallery, and tribune at St. Mary's Priory, Princethorpe, which has been executed from the designs and under the superintendence of the architect, Mr. Joseph S. Hansom. The work is in oak throughont, and has cost over £900.

Alterations have been made to the School of Science and Art, Kidderminster, embracing the ventilation, which is now carried out on the Boyle system, the latest improved form of the self-acting air-pump ventilator being adopted for the extraction of the vitiated air.

The new church of All Saints, South Wimbledon, will be consecrated by the Bishop of Rochester to-morrow (Saturday) afternoon, at 4 p.m.

The Liverpool City Council at their meeting on Wednesday requested the mayor to make arrangements for publicly inaugurating the supply of water to Liverpool from Lake Vyrnwy, Mr. Deacon, the engineer, having reported that the connection would be completed with permanent pipes before July 14. These great works will secure to Liverpool fifteen millions of gallons of water per day from Vyrnwy.

On Saturday last the English church of St. John the Evangelist, Grasse, was formally dedicated by the Bishop of Gibraltar. The church contains two stained-glass windows, one of which was erected by the Queen in memory of her visit to Grasse.

A new Conservative club at Roath, near Cardiff, was opened on Wednesday. The style is Italian Renaissance, and the cost has been £1,400. Messrs. Veall and Sant, of Cardiff, were the architects, and Mr. R. Dinham, of Clifton-street, Cardiff, was the builder.

Newton Abbot Congregational Church, Devon, was reopened on Sunday last. The interior has been improved; the structural alterations have been made by Messrs. Parker Bros., Newton. The cost of the renovation has been £300.

The College, Bromsgrove, is being warmed and ventilated by means of Shorland's patent Manchester grates, the same being supplied by Mr. E. H. Shorland, of Manchester.

The Archbishop of Canterbury laid, on the 27th April, the foundation-stone of a church for the recently-formed parish of St. Mark at Weeping Cross, London-road, Salisbury. The total cost of the church will be about £9,000. The first section will consist of chancel, organ-chamber, vestries, and heating apparatus, costing about £2,000, and the transepts will be next added. Mr. J. A. Reeve is the architect, and Mr. Hayes, of Bristol, the builder.

THE SURVEYORS' INSTITUTION.

THE following candidates have passed the Fellowship examination:—

Ernest Anscombe, Frederick Henry Brackett, Harold Castle, Athelstane Corderoy, Henry Thomas Davey, Edgar Dudley, Arthur Norman Garrard, Osman Horton Giddy, Alexander Ernest Green, Hedworth Herbert Grogan, Arthur Grover, Frederick George Hayward, James Frederick Kemp-Smith, Thomas Martin, Arthur Walker Merry, George Sharman Mitchell, John Joseph Muller, Michael Guy Ogden, George Osenton, jun., Joseph Wm. Palamountain, Samuel David Preston, Oliver Archer Richardson, Edwin Savill, Charles Frederick Slater, Joseph Arthur Walker, Hugh Calthrop Webster, Harry Austin Lindsay Young.

Crawter Prize to be awarded to Oliver A. Richardson.

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COMPETITIONS.

AYR.—The committee of St. Andrew's proposed new Free Church, Ayr, received seven sets of competitive plans, and they have chosen the set prepared by Mr. J. Bennie Wilson, A.R.I.B.A., Bath-street, Glasgow. The building is to cost £4,000.

GLASGOW.—The plans for the new Deaf and Dumb Institute for Glasgow were sent in on Monday by the competing architects, who all belong to the west of Scotland. It is estimated that the building and furnishing of the Institute will cost from £6,000 to £7,000, and towards this sum the trustees have £4,000 on hand. The Institute, which is to be erected at the corner of West Campbell and West Regent-streets, will consist of a chapel to accommodate 200 persons, a hall for meetings, offices, reception, reading, and recreation-rooms, billiard and smoking-rooms, a gymnasium, and a show-room for the exhibition of work made by deaf mutes.

THE GLASGOW FINE ART GALLERIES PLANS.—It is asserted that objections to the decision of the committee who selected the design of Messrs. Simpson and Allen, London, for the Fine Art Galleries at Kelvingrove Park, have been lodged by the local architects, who allege that the selected design does not comply with the conditions which were set forth by the committee. The preparation of the case for the objectors has been intrusted to a firm of lawyers.

NEWPORT, MON.—The plans sent in by architects and landscape gardeners for the competition promoted by the corporation of Newport, for designs for the laying out of the new park were exhibited for public inspection in the assembly-room of the Town-hall on Friday. Twenty-five sets of designs were sent in. The ground treated of has an area of 23 acres. It rises from Cardiff-road, and is bounded by the Waterloo-road and the Friars-road, giving the site the contour of a triangle. Mr. Mawson, landscape gardener, of Windermere, carried off the first premium of £50 with a set of designs under the motto "A Sea Breeze." The plans show a system of walks, with shrubbery and timber, tennis ground in corner nearest the Friars, a pavilion with terraces, situate near the top of sloping ground, and having a small lake in the immediate forefront. The estimated cost of Mr. Mawson's treatment of the park is £10,761. A set of joint plans by Mr. Lawrence and Mr. Fox, architects, of Newport, bearing the motto, "East or West, Home's Best," have been awarded a prize of £20. The estimated cost of laying out the land in this instance is £9,780. The pavilion is placed on the highest spot in the site, with a lake in front and terraces approached by stone steps. Spaces are marked off for cricket, tennis, quoits, &c.

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St. Mark's Church, Low Moor, Leeds, was reopened last week, after the addition of a chancel, with morning chapel on south side, and organ chambers and vestries to north.

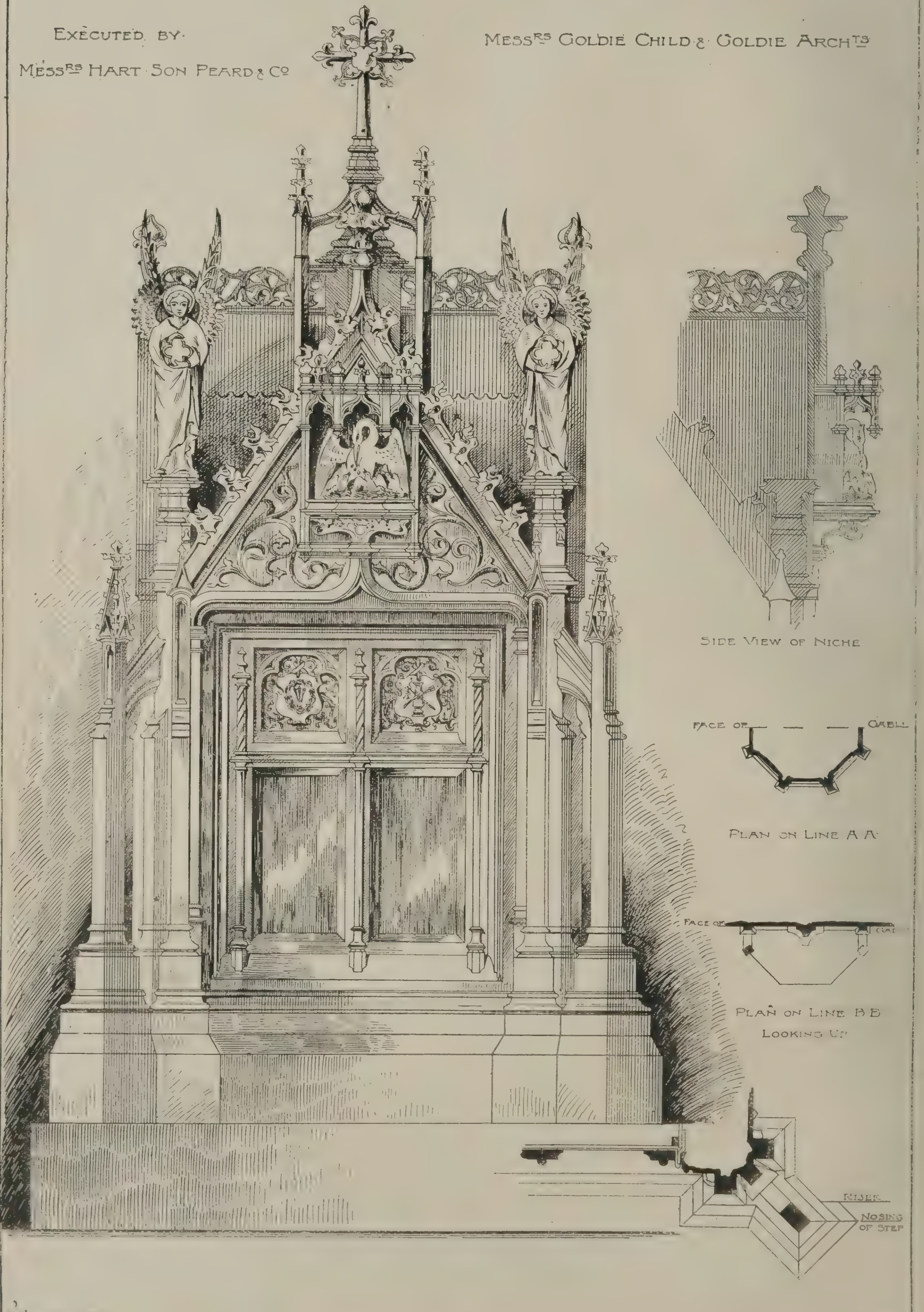
The first pipe in the Pontypridd subsidiary drainage works (which will be carried out by Mr. W. Jenkins, contractor, of Cilfynydd, at a cost of £19,881 7s. 9d.) was laid on the 27th ult. by Mr. Leyshon, the chairman of the Pontypridd local board. Mr. Leyshon, before descending the trench, was presented by Mr. Edward Reeves, surveyor to the local board and engineer of the works, with a silver trowel and a rosewood mallet.

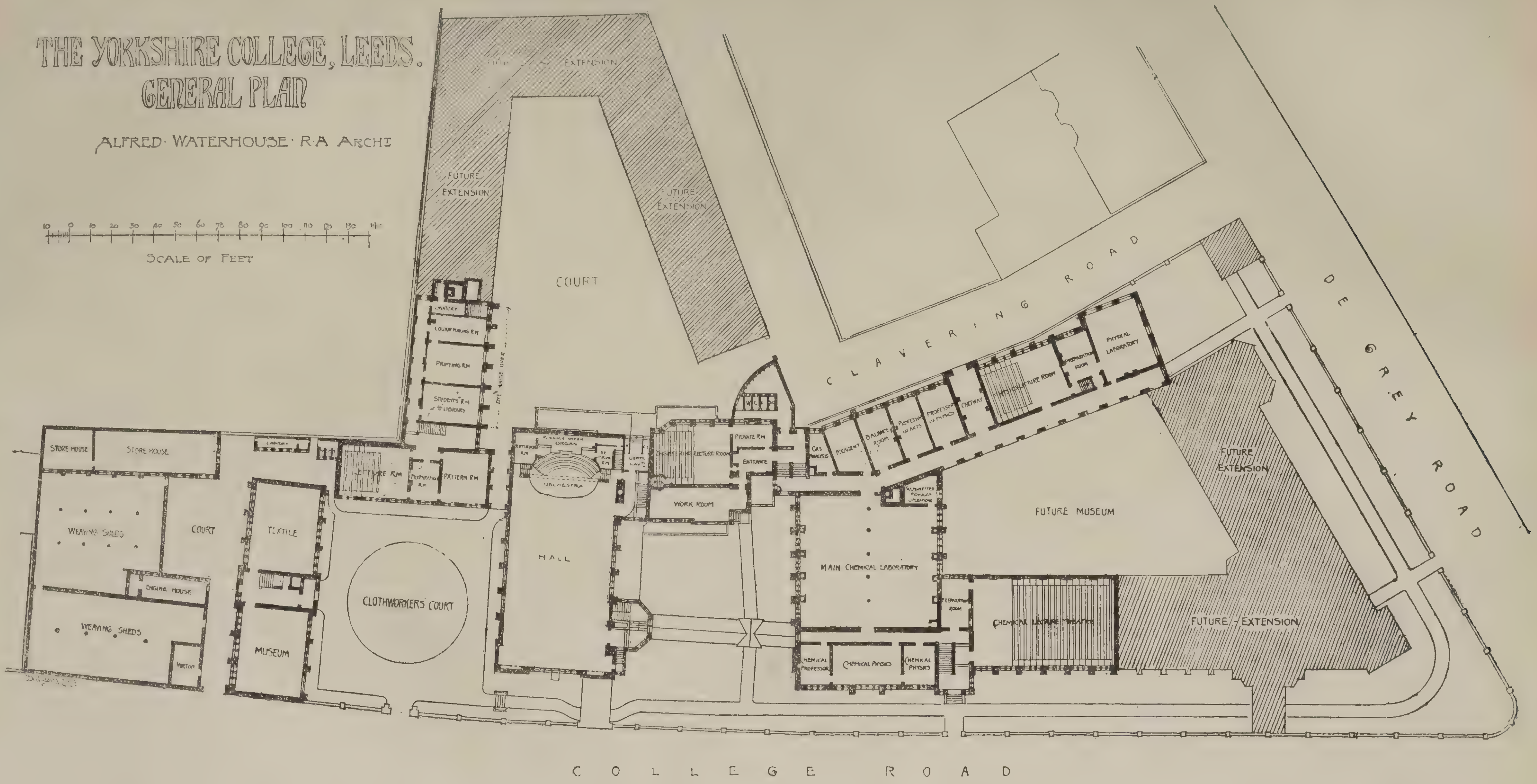
The markets committee of the Halifax Corporation have let the second portion of the contracts for the new markets. The total amount of these contracts, including the market itself, is £37,743 11s. 2d. The contract for covering the roofs has been secured by Messrs. Helliwell and Co., of Brighouse, Yorks, and 9, Victoria-street, S.W., for their well-known patent system of glazing without putty.

BRASS · TABERNACLE · TO · THE · HIGH-ALTAR · PRO · CATHEDRAL · HIGH STREET KENSINGTON ·

EXECUTED BY · MESSRS HART · SON PEARD & CO

MESSRS GOLDIE CHILD & GOLDIE ARCHTS





THE YORKSHIRE COLLEGE, LEEDS.
GENERAL PLAN

ALFRED · WATERHOUSE · R.A ARCHT

YORKSHIRE COLLEGE, LEEDS.

THE Yorkshire College will have, when completed, a frontage of 700ft. to College-road, 270ft. to De Grey-road, and upwards of 400ft. to Clavering-road. Of the portions already erected, the Textile Industries Department was begun in 1878, and added to in 1884 from funds supplied by the Clothworkers' Company in London. The main block was erected in 1881 as a memorial "to commemorate a life of earnest and fruitful endeavour in the cause of national and scientific education"—viz., that of the late Sir Edward Baines.

In 1885 the extension for the Engineering Department was carried out, and in the intervening space between that and the Textile Industries Department is now being erected the Examination Hall and Library, of which we illustrate a plan at the first-floor level. On the ground floor there is a large library, book-store, students' and professors' dining-rooms, kitchen, &c., and in a mezzanine floor over the portion not occupied by the library there is an Arts lecture-room, professors' private room, additional book accommodation, and retiring rooms.

Mr. Alfred Waterhouse, R.A., was architect for the whole of the previous buildings; and Messrs. A. Waterhouse and Son are the architects for the Examination Hall, of which we to-day give a perspective view, together with plan.

Mr. Robert Kingdom, surveyor to the Rolle estate, while driving on Wednesday in a pony trap from Bicton to Exmouth, was thrown from the vehicle and killed.

WAYSIDE NOTES.

WHETHER the public as a whole, or any particular section thereof, had the power to veto the erection of unsightly buildings on Mr. Balfour's plan, the result would scarcely be regarded in any hopeful light by the architectural profession. Of the indirect control of the B.P. I have always held great ideas. Without a vast body of common-sense, matter-of-fact criticism, we might drift into many extravagances; such, for example, as insufficiency of window space, and all the other practical considerations daily ignored by the architect in his striving after the picturesque. This seems to me to be applicable to every art, music, painting, or architecture. The tendency of every professor of whatever art would appear to be towards technics and technical mannerisms, and in travelling in this narrow rut broad effects are altogether missed. That usefulness to humanity which underlies all art is forgotten until the layman in many and varied ways calls the attention of the professional man to some neglect of the practical requirements to be subserved by art.

Before there can be any direct public control of the architecture of public buildings there must be a lively interest in architecture. If there were any serious interest in architectural matters outside the architectural world, there would, for one thing, be interest displayed in the architectural room at the R.A. exhibition. This we know to be wanting, and to have ever been wanting. The room is very handy as a quiet ante-room to the picture galleries, and its one central seat is pretty well patronised by the fair sex; but excepting for architects and their friends, the architectural designs would go uncared for. It may perchance be that there is no "sweetness" to waste on the desert air, and that the room and its contents may be itself at fault as actually lacking in interest. Considering, however, that the exhibition is mostly composed of perspective views, and that plans, elevations, and sections are in a very small minority, there seems no excuse on this score. At the Paris *Salon*, with its geometrical drawings, there might be some excuse for neglect by the public. I am glad to see that "the" room has at last proved of some true service to some one. I read that on press day, "one of the most distinguished of critics came well provided with a compact luncheon, to which he generously invited a brother pen in the Architectural Room."

The L.C.C. are doing their best to forward the workmen's trains movement. At the Council's last meeting the following motion was agreed to:—"That it be an instruction to the Parliamentary Committee to take all possible steps to urge upon the House of Commons the insertion in the Manchester, Sheffield, and Lincolnshire Railway (Extension to London) Bill of a clause requiring the Company to run cheap trains between the London terminus and all stations within the distance of ten miles thereof, at fares not exceeding 2d. the return journey, such trains being timed to arrive at the terminus up to eight o'clock in the morning, and the tickets issued to workmen being made available for return third-class by any train leaving the terminus." There should be a great reduction in price for these tickets; but 2d. for 20 miles seems cutting it rather fine for the company, and the tickets should only be available for return by certain trains. Moderation in all things. Speculative builders with a bold spirit should be on the look-out for desirable plots of land in the track of the new railway. There may be a prodigious quantity of small houses and cottages "run up" near the suburban stations. This will certainly be the case if the recommendation of the County Council has any effect on the Parliamentary Committee in question.

There should be some solid fruit from the labours of the Select Committee of the House of Commons now considering the question of the regulation of theatres and music-halls, &c. The committee is prosecuting its inquiry in a most thorough manner.

A member of Parliament has complained of the signal light from the Westminster Clock Tower, and questioned the First Commissioner of Works as to the cost of substituting the electric light. From Mr. Plunket's reply, it appears that the light and attendance cost per session £60. The electric light would cost £750 to instal, and not less than £150 per session. It must often have occurred to persons looking at this light that electricity would more effectually serve the purpose. Yet it seems to me that I recollect a statement that electricity had been tried, and the present gas apparatus found the most satisfactory in working.

The battle of—what?—rages in the columns of *A.A. Notes*. One might almost say it is craftsman v. anti-craftsman, or craftsman-architecture v. ordinary commonsense architecture. I take it to be really a development of a rupture that threatened about the time of the introduction of the new order of things in the way of the educational system. Let there be, at any rate, an armistice this evening, even if the discussion of the questions involved is to be continued later on.

A.A. Notes gives the "house list," as announced at the last ordinary general meeting, with Mr. H. O. Cresswell for president, and Messrs. Paul Waterhouse, M.A., and E. Woodthorpe, M.A., as vice-presidents. The "general tone" of *A.A. Notes* hasn't pleased everyone apparently, and so Mr. Stokes and his co-workers have resigned their positions as editor and sub-editor, apparently because the "general toners" appear to have slighted Mr. Stokes and his staff in a manner not to be ignored. All I can say is, may their successors do no worse, and may the A.A. pass through this tremendous crisis without splitting up altogether. Some of us who knew it thirty years ago wish a little more of the old harmony and unpretentiousness remained.

The *Notes* seem all "statements by the Committee." Succeeding the statement that the Committee has done its best to spoil the Association journal, comes one with regard to Mr. T. G. Jackson's letter in the last number. The opinions of the Committee are here in accord with my views, and I recommend the statement to the notice of members. Just now the committee of the Architectural Association should hold the reins with a firm hand, and remember the fable of the man, his son, and the ass. There is no pleasing all parties, and so it is best to pursue, calmly and methodically, the even tenor of one's way. It is always open to the malcontents to start another association, or form themselves into a mutual admiration society. According to the writer of the "Notes," it is "Cut the Institute and cling to the Academy, or shun Mr. Jackson and his friends and cling to the Institute." To my way of thinking, it is a matter of simply pursuing the policy decided upon, and let grumblers have their grumble. Heaven and earth will not be changed thereby. It is simply impossible to continue in any work in any walk of life and give ear to the suggestions of people from all sides. There is only one way, and that is to keep a firm hold of the steering-gear when storms arise, and if the old ship be sound she will weather them all safely enough. Goth.

Messrs. Jones and Willis, of London, have recently executed and fixed at Portsmouth Cathedral (from the designs and under the superintendence of the architect, Mr. Joseph S. Hansom) the wrought-iron entrance gates, porch, lamps, brass pendants and brackets, the ornamental door furniture in white metal, and additions to the oak choir stalls.

Mr. Kenilworth Hedges, C.E., writes cautioning artists against making sketches in any fortified town in France. He explains:—"A few days ago I was making some notes of the old houses in the frontier town of St. Jean Pied de Port, and was stopped by a *sergent de ville*; my sketch was confiscated, and I was informed that, as I had not asked for permission to make architectural drawings, I was liable to arrest for having infringed the *ordonnance*."

A new eight-day turret clock, showing the time on two external dials, and striking the ding-dong quarters upon two bells and the hours upon a large bell, was started on Friday last in the tower of the new stables near the residence of Mr. E. B. Hall-Watt, Bishop Burton Hall. The above was made and fixed by Messrs. Wm. Potts and Sons, clock manufacturers, Leeds, who are making a large clock for Sharrow Church, Sheffield; Wollaton Church, Nottingham; Great St. Mary's, Cambridge; the Liverpool University College, and other important work.

Engineering Notes.

Preston.—On Monday the task was commenced of admitting water into the Preston dock. There were present most of the members of the Ribble Committee and others, including Mr. Nott, one of the executors of the late Mr. T. A. Walker, the contractor. The area of the dock is 40 acres. It is 3,020ft. long, 600ft. broad, and 40ft. deep from the coping to the floor. The first sod was cut on the 11th October, 1884. The channel of the Ribble has been so far improved that there is now a navigable depth for a vessel drawing 18ft. 6in. at ordinary spring tides, and on the lowest tide of the year there is a navigable course for a vessel with a draught of 12ft. 6in. into the dock from the sea. The depth of the river since the improvements were commenced has been doubled. It is expected that the ceremony of opening the dock will take place about the middle of June.

CHIPS.

A cast of Barye's "Lion Crushing a Serpent," in bronze, has been acquired by the South Kensington Museum. The original is in the Tuileries Garden.

Plans by Mr. Edmund Sedding, of Plymouth, have been adopted for a new church to be built at Sheldon, at an estimated cost of £2,500.

The executive of the Belfast branch of the Amalgamated Society of Carpenters and Joiners have communicated with the Trades Council in that city withdrawing their representatives from attendance at the meetings on the ground that "political matters were being too freely discussed.

The Mersey Docks and Harbour Board have voted a further sum of £65,000 for deepening the water on the Mersey Bar. The operations carried on during the last 15 months have resulted in an increased average depth of 6ft., extending 500ft. across the bar. The new dredger to be constructed will increase the deep-water channel to 27ft. or 28ft., and so render Liverpool Harbour always accessible by Transatlantic liners.

The local board of Southborough, Kent, have appointed Mr. Frank Noble, assistant surveyor of Croydon, as their surveyor and inspector of nuisances at a salary of £120 a year, with 2½ per cent. commission on the collection of rates.

In the Divorce Court of Justice on Friday, before Mr. Justice Jeune, the case of Leach *v.* Leach was heard. This was a petition of Mrs. Amelia Leach, of 88, Brackenbury-road, Preston, for a divorce on the ground of the cruelty and adultery of her husband, Mr. James Leach, described as a builder. He did not appear or defend the action, and a decree nisi was pronounced.

Mr. Henry Harben, L.C.C., has defrayed the cost of erecting a village hall and club near his Sussex residence at Warnham, Horsham, the site having been given by Mr. C. T. Lucas, of the firm of Lucas and Aird. The building has been erected at a cost of £3,500 from designs prepared by Messrs. Batterbury and Huxley, architects, London. The formal opening took place on Monday.

The improvement commissioners of Ross, Herefordshire, have increased the salary of their surveyor, Mr. Llewellyn, from £56 to £100 per annum. Mr. Llewellyn has held his appointment at the said salary first named since 1866.

Mr. Malcolm Paterson, C.E., of Bradford, has been instructed to examine and report upon the sanitary condition of Brotherton, with a view to the prospective sewerage and drainage thereof. Since the opening out of the Frystone Colliery, the village has largely increased in population.

On Saturday afternoon the Mayor of Bradford laid the foundation-stone of a new chapel and school, Ingleby-road, Brownroyd, which is to be built at a cost of £1,770. The church itself will provide accommodation for 650 worshippers, and the schools for 500 scholars.

The frieze stone in the principal elevation of the Burns Ring Spinning Co.'s mill, which is in course of erection in Burns-street and Manchester-street, Heywood, was laid on Saturday. The building will have 40,000 spindles. The walls will be of brick with stone dressings, and the floors will be fireproof and of concrete. The contracts have been let as follows: Cast ironwork to Messrs. Astin and Barker, Todmorden; rolled steel girders to Dorman, Long, and Co., Limited, Middlesbrough; millwrights' work to Carter Bros., Rochdale; boilers to Tinker Bros., Hyde; builders' work to Messrs. E. Taylor and Co., Littleborough. Messrs. Stott and Sons, of Manchester and Oldham, are the architects and consulting engineers, and the clerk of works is Mr. John Henthorne, of Shaw.

MUNICIPAL ENGINEERS' ASSOCIATION.

THE annual meeting of the Incorporated Association of Municipal and County Engineers was held on Friday and Saturday at Nottingham.

The proceedings took place in the Exchange Hall, and the chair was occupied by the president, Mr. T. de Courcy Meade, of Hornsey. A paper on "Municipal Works in Nottingham" was read by Mr. Arthur Brown, M.Inst.C.E., borough engineer. He declared it to be a blot on our boasted civilisation that when a pipe had to be taken up in a busy and crowded thoroughfare, the system usually adopted was to tear open the street, whatever might be the class of pavement, lay in the pipes, and then "make good" the surface. The phrase make good was somewhat misleading; it was as much an engineering impossibility to immediately restore the paving over a newly filled up trench to its original condition as it was a physical impossibility to heal a serious wound on a human body without leaving a scar. The only remedy was for large towns to lay down, where possible, subways in the principal streets and crowded thoroughfares, and especially in the case where new streets were made in connection with public improvement schemes. The first subways constructed in this country were in London, about the years 1860-62, and the first subway outside the Metropolis was constructed in Nottingham in the years 1861-2, in Victoria-street and Queen-street; these were followed a year or two later by subways in Lister-gate and Market-street, and in the year 1886 the author designed and carried out subways in Albert-street and Wheeler-gate. To show the value of such works, in Victoria-street, Nottingham, in which were situated the General Post-Office, there were, besides the gas and water pipes and connections, no less than six pipes containing telegraph wires in this subway, but not one single stone was disturbed in that carriageway for 25 years, and in that period not one single penny was spent on repairs in this street. Mr. Brown proceeded to describe some subways which were now being constructed under his direction, on what was known as the condemned area. This site, which was a Y-shaped space of about 12,500 square yards, was declared an unhealthy area, and was purchased under the Artisans' and Labourers' Dwellings Act, 1875; it was covered with a wretched and disreputable class of property, and was very much overcrowded. The street on the west side was 48ft. wide, and that on the east side 50ft. wide, the short length of street forming the tail of the letter Y being 60ft. wide. The subway proper was 10ft. wide and 8ft. 6in. high, with semicircular arch, and was ventilated by means of gratings at the surface level of street about 48ft. apart, also by three side entrances and by open grating in refuge at lower end of 60ft. street. The sideways, which formed the means of communication between the subway and the vaults, were placed ordinarily about 40ft. centre and centre, and were 4ft. high and 3ft. wide. The sewer was constructed under the floor of the subway, and was a 15in. earthenware pipe, with Hassall's patent single-lined joint. Under the causeways on each side of the streets vaults were constructed, each 8ft. 6in. wide by 9ft. 3in. long, and about 7ft. high; these vaults were rented by the purchasers of the building lots adjoining. The floor of the subway was laid with cement concrete brought to a smooth surface, and the floors of the sideways and vaults were laid with bricks. Along and under each sideway was laid a 9in. pipe with a Buchan's disconnecting trap and air inlet, and beyond was a right and left-hand junction for receiving the drainage from the properties. In the subway were fixed brackets, upon which might be placed pipes containing telegraph and telephone cables, the gas, water, and any other pipes being laid on the floor of the subway, or on iron standards fixed to the floor of the subway. At certain distances hydrant chambers were built over some of the sideways, in which were placed the fire hydrants and valves. By this method of construction access could be obtained to, and any alterations and additions made to, sewers, gas, water, and other pipes, and the house connections therewith; the fire hydrants and valves could be examined, repaired, and renewed without taking up or disturbing one single stone in the surface of the street. The life of the iron pipes and connections in the subway was practically everlasting, as there was no rust, and the expense of relaying mains, and especially gas services, through this cause was saved. In the execution of the works very considerable difficulty was encountered in consequence of the number of rock cellars which were met with during the operations. One cellar was 370ft. long, and would hold a regiment of soldiers; on the site of all the main walls, borings were made 10ft. deep in order to discover these cellars; the bulk of them were within a few feet of the foundation walls of the subways, and these walls, of course, had to be carried down to the solid. The cost of the subway was rather heavy; the cost of the subway proper, including side-entrances, sideways, and everything appurtenant to the subway itself, was about £10 per lineal yard. This did not include the cost of the sewer, for this would be common to any method of forming streets with or without subways, nor did it include the cost of the concrete foundation for roadway. The vaults under the causeways cost about £20 each, and there being vaults under each causeway they cost, therefore, about £12 per running yard of the street; these vaults were let on a rental of £1 each per annum, or 5 per cent. on the outlay. The subways proper cost about £3,000, and there were 169 vaults, costing about £3,380; 3½ per cent. interest on £3,000 was £105, but the profit on the vaults was 1½ per cent., as the money was borrowed at 3½ and 5 was charged, and this equalled, say, £50, so that it resolved itself into the question, Was it worth £55 a year to have subways in these two streets? In referring to sewerage works and manufacturing refuse, Mr. Brown called attention to one of the difficult problems which borough engineers had to face in some large towns—that was, what was to be done with the large amount of liquid and semi-liquid manufacturing refuse which was delivered from works where such processes as bleaching and dyeing were carried on? The problem had been recently occupying the attention of the Nottingham Town Council. The total sewage flow of the borough in dry weather was 6,150,000 gallons in 24 hours. Of this quantity about 2,150,000 gallons per day gravitated down to the farm, and the remaining 4,000,000 gallons per day had to be pumped; the larger portion of the low-level sewage was brought down the Leen Valley sewer, and it was in the valley of the Leen where the principal difficulty regarding the manufacturing refuse was encountered. The river Leen was a small tributary of the river Trent, was 13¼ miles long, measured along its course, and the area of its watershed was about 40½ square miles. The flow of this river fluctuated according to the seasons from 5,634,681 to 38,293,600 gallons per day. The normal discharge of the river in ordinary weather would be from 15 to 16 million gallons per day. The water used by the bleachers was not taken from the river Leen, but was pumped from springs in the magnesian limestone. The works were not concentrated in one particular district, but were scattered about in the valley of the river over a distance of four miles. The waste waters turned into the river from these works was about three million gallons per working day when the local trades of lace and hosiery were fairly good. The chloride of lime in the waste waters effected a precipitation of the soap and other solids when those waters reached the river Leen, and the result was the accumulation of offensive and noxious slime and mud on the banks of the river. This was an invitation to the residents on the bank to still further pollute the river by throwing in all manner of rubbish, &c. To make matters still worse, the river Leen did not deliver direct into a fast-flowing river of large volume, like the Trent, but entered the Nottingham Canal, which flowed through a densely populated part of the town, and did not reach the river Trent for upwards of two miles. In this canal, which was practically stagnant water, the deposition of mud and slime was continually going on, and in warm weather the nuisance was considerable. The problem was to effect the purification of the river, and the solution of this problem was not a very easy one. However, in reporting on this question to the town council, there appeared to be three methods of solving the difficulty:—(1) To connect the bleach and dye works in the district with the system of sewers, and allow their waste waters to mix with the ordinary sewage and flow down the main intercepting sewer. Eventually it would be pumped and delivered on the sewage farm, and therefore purified by broad irrigation on land. (2) To connect the waste waters from the works referred to with an entirely new and independent sewer, and conduct these foul waters to some convenient site and purify the same by precipitation and filtration. (3) To compel owners of works to abstain from polluting the river, and put down on their own works a plant or apparatus for purifying their waste waters, either by precipitation or filtration, or both. The first scheme would involve somewhat heavy engineering works, but nothing of any very particular difficulty; it would be necessary to increase the pumping plant at the pumping station, to provide an additional pumping main, and to buy about 225 acres of additional land at the sewage farm; this would make the total area of the sewage farm 1,134 acres for, say, 9,000,000 gallons of sewage per day. There were several very grave objections to this scheme. In the first place, the 3,000,000 gallons of bleach and dye water had very little if any manurial value. Further, it was at one time a matter of doubt whether the bleach and dye waters when mixed with the ordinary sewage would have any harmful effects on the crops at the farm, but experiments showed that there was actually no difference at all in the crops, and that the crops treated with sewage plus bleach and dye waters throve just as well as those treated with ordinary sewage only. The second scheme, although presenting no great engineering problems, would be very costly; it would have to be 4½ to 5 miles long, and in consequence of the strata through which it would pass would be rendered difficult. The whole of the waste waters would have to be pumped, and an area of land acquired of 12 to 15 acres for the precipitation works. As regards the system of precipitation to be adopted, he had come to the conclusion that the best system of precipitation and filtration was that of the International Company's, using ferozone as a precipitant, and polarite as the filtering medium, but Lockwood's system, as adopted at Salford, if it gave a good effluent, would be much cheaper. The author feared it would not be easy to adopt the third course, and put in force the provisions of the Rivers Pollutions Act, 1876, and so stop the pollution of the river. He therefore thought they must adopt one of the other two schemes, and that of the two the first or broad irrigation scheme was the preferable one.

In the afternoon, Mr. Wm. Spinks, of Leeds, read a paper on "Public Health Acts Amendments," in which he offered a number of suggestions in relation to private improvements.

On Saturday the members assembled at the Shire Hall, under the presidency of Lord Belper, chairman of the Notts County Council. The subject for discussion was "County Management of Main Roads." His Lordship said that members of their body had a good right to feel that their work should not be needlessly hampered by regulations made by Parliament, and the experience of the last three years had shown that there were points in the law with respect to the management of main roads which might, with advantage, be altered. Especially was this the case with regard to the arrangements which the county councils had to make with local bodies under them. A paper was then read by Mr. J. Robinson, the Hampshire county surveyor, who contended that as the county authority had to provide the funds for the maintenance of the roads, they should have the first voice in the expenditure of those funds.

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At the annual general meeting of the Royal Anglo-Australian Society of Artists, held on Friday, the following artists were elected members, viz.:—Mr. David Murray, A.R.A., the Hon. John Collier, and Mr. Arthur Lemon.

The question of builders' right to import dressed stone into the town has cause a hitch in the building of a chapel at Cardiff. To save tonnage, the builder had some granite which was specified in his contract dressed at the quarries in Scotland. Upon its arrival in Cardiff, the men refused to fix it, as it had not been dressed in the town, and the builder was obliged to send it back to the quarries.

The death is announced from New York of Marc Eidlitz, a prominent builder in the city. Among the buildings which he constructed are Steinway Hall, the Astor Library, the Seamen's Savings Bank, the Metropolitan Opera-House and the Eden Musée, and many of the hospitals in New York. He was president of the Germania Bank and of the Building Trades Club, and was one of the founders of the Mechanics and Traders' Exchange. He was born in Prague sixty-seven years ago, and emigrated to the United States in 1847. Two of his sons were associated with him in business.

Building Intelligence.

Budleigh Salterton, Devon.—New business premises were opened here on Monday last by Mr. H. C. Perriam in High-street. The shop, which is 28ft. square, has been divided into different departments for groceries. The building, which is in the Renaissance style, is executed in red rubber Bracknell bricks, with Corsham stone dressings. The general contract for the works has been carried out by Mr. F. Grace, of Exmouth, from plans prepared by Mr. Edward Geo. Warren, M.S.A., of Post Office Chambers, Exeter.

Cardiff.—On Saturday last the Bishop of Llandaff opened the new chapel situate in the grounds of the St. Margaret's House of Mercy at Roath. The chapel is dedicated to the Holy Name, and consists of a nave and sanctuary with a small vestry; accommodation is provided for 60 adults. The building is Early English in style, the windows pointed with recessed and moulded jambs and arches. The material used is native stone, with Box-ground stone dressings and weatherings. The roof is boarded and felted, covered with green slating and red tile ridge crest. Internally the walls are plastered and finished buff colour, the dado marked with five red lines. The whole of the works have been carried out by Messrs. Shepton and Son, of Cardiff, from designs and under the superintendence of Messrs. Veall and Sant, architects, of the same town.

Manchester.—The new buildings of Charter-street Ragged School and Working Girls' Homes at Manchester were opened by the Baroness Burdett-Coutts on Friday. Messrs. Maxwell and Tuke, of Manchester, are the architects, and Messrs. Peters and Sons, of Rochdale, the contractors. On the ground floor is a mission hall accommodating 500 persons. On the first floor is a large schoolroom, with space for 700 children, and with two classrooms for 40 children each. There is a schoolroom for 500 infants on the ground floor. The Girls' Home provides accommodation for about 40 young women. Most of the girls will have separate bedrooms or cubicles, and in no case will more than two girls sleep in the same apartment. A sitting-room is provided for the use of the girls. There are also a girls' kitchen and a laundry. The cost has been £4,500.

CHIPS.

Rusholme Public Hall, now converted into a free public library and handed over to the Manchester Corporation, was on Saturday afternoon opened for its new purpose in presence of a large gathering, presided over by the Mayor of Manchester. The hall was built in 1860 at a cost of £3,000.

The London County Council have now obtained possession of the Homestall Farm, Peckham Rye, for which they have paid £50,925. The area is nearly 49 acres, so that the well-known Rye, which is 50 acres in extent, will be doubled in size.

The appeal on behalf of the restoration of Gloucester Cathedral, from plans by Mr. Waller, has been well responded to. Up to the present time £5,650 has been promised out of the £6,000 required.

A window is about to be erected by public subscription in the south transept of Chester Cathedral, in memory of the late Right Hon. H. Cecil Raikes, M.P., Postmaster-General. The design, which is by Mr. C. E. Kempe, of London, contains a four-light window, showing the figures of St. Chad, St. Anselm, St. Martin, and St. Asaph, with scenes connected with the lives of these saints in the lower portion. In one of the lower compartments will be the shield of arms of the late Postmaster-General, and an inscription setting forth the various offices he held.

On Saturday the foundation stone of Christ Church, Lower Birling, near Snodland, was laid. The church is estimated to cost £2,000 without the tower, and is to seat about 270 persons. Mr. H. P. Monckton, F.R.I.B.A., of 32, Walbrook, E.C., is the architect, and Mr. Robert Langridge, of Birling, is the builder. The church is to be built in the Early English style.

On Saturday there was formally handed over to the managers of Ardler Church a stained-glass window, executed by Messrs Cottier, London. The window consists of four principal lights, each containing a life-size figure of Moses, Elijah, St. John the Baptist, and St. Paul respectively, together with a representation of an incident in the life of each character.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. Passmore Edwards.

TERMS OF SUBSCRIPTION.

One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 0d. (or 6dols. 30c. gold). To France or Belgium, £1 6s. 0d. (or 33fr. 30c.) To India, £1 6s. 0d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front Page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No front page or paragraph Advertisement inserted for less than 5s.

Situations.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is One Shilling for Twenty-four Words, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., L., LI., LIII., LIV., LVIII., LIX., and LX. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

Received.—M. and R. T. Co.—Surveyor.—B. M. S.—J. M. Co.—F. Hollingshead.—J. R. S. (Brighton).

"BUILDING NEWS" DESIGNING CLUB.

Smilash the Goth. (Small room in the bath-house is really intended to be a sort of general office for the use of all the attendants in common. The entrance-hall is to be used by both male and female bathers as a waiting-room. The heating apparatus would be in the basement, with an entrance out of sight from the front of the building).—Hardwick. (The last subject will be published for the current series in June).—Vulcan. (The bath-house is to be between the parade and the land, not between the parade and the sea. You may show a basement plan if you like).

Drawings Received.—"Smilash the Goth," "Black Prince," "La Cigale," "Excelsior," "Black and White," "Vulcan," "Hardwick," "Wit," "North Pole," "Udolpho."

Correspondence.

TERRACOTTA SCUM.

To the Editor of the Building News.

Sir,—We are pleased to find that this terrible evil has at last gained the attention it deserves among terracotta manufacturers. We read with great interest the series of articles which have appeared in your paper, and criticisms on this head that they evoked. We would have added our opinion to the consensus but for the fact that we were at the time completing our protection in a patent affecting scum itself. With regard to the opinions as to the time when the scum appears, &c., we say this: That having given the subject our diligent attention for some years, we find scum is the condensation of the evaporated moisture given out in the "drying" process. We noticed that none of the writers have attempted solving the problem of *prevention*, but only methods of *removal* are suggested. Now we say at once that scum is not "adherence of foreign matter deposited upon the soft clay." We prove it thus: Cover your blocks with paper to keep them free of such particles, and you will have scum; nor is it due to plaster of Paris moulds, for we know that of whatever material the mould is made, be it wood or iron, the result is the same—scum. We could discuss the various other points at great length, but not wishing to enter into the controversial side of the matter, we will concisely try to describe our protected process. Scum is the condensed evaporation: prevent evaporation and you prevent scum. But the goods must be dried, say you. Certainly; but dry the goods in such a manner that evaporation takes place through those sides of the block which are not intended to be seen, and you have the faces entirely free from scum. Therefore, we have applied and have been granted a patent for our process, which simply put is this: that by the application of an hermetic coating upon the face of the clay whilst the clay is wet—that is, immediately after the blocks or goods are "finished"—and before evaporation is completed, allowing evaporation to take place through the surfaces which are not coated only, scum is prevented from forming thereon, the superficial face being left on until burnt off in the kiln.

We have gone fully into the many methods of eradication in our specifications; but desire only to lay before your readers, as concisely as it is practicable with lucidity, our patent process, and shall be glad to fully clear up any point not understood if applied to.—We are, &c.,

Edwards Brothers and Co.

The Depot, Rhosddu, Wrexham.

Intercommunication.

QUESTIONS.

[10768.]—**Dry Rot.**—Will some reader of the "B.N." kindly tell the writer a ready and reliable method of distinguishing dry rot from wet rot, or natural decay of the timber from old age, &c.?—C. J. C.

[10769.]—**Whitening Ceilings with Gypsum.**—Mr. George Howe, according to *Chambers's Journal*, March 28th, 1891, advocates the use of gypsum for this purpose as being more lasting and washable. I should feel greatly obliged if some of our readers would kindly state whether this is used in this country, and whether the material can be so composed as to make as good work as ordinary distemper, and also kindly give directions for use?—May Fever.

REPLIES.

[10764.]—**Carnival Work.**—I was amazed at the inquiry in your columns as to hanging a boy for four hours at a considerable height for six consecutive evenings. Surely your questioner is joking; at least, I hope so. The transformation scene is bad enough, but then it only lasts a few minutes. As it is to be in the evening, surely a figure would serve every purpose. This might be made of wood, and gilded or done anything else with. But a boy of 14 or so! save the mark! Is it possible that there are parents who would allow it? And if there are, what say the police? This is a case for the Society for Prevention of Cruelty to Children.—T. W. F. Newton.

[10764.]—**Carnival Work.**—"A Provincial Architect" proposes, as part of his Carnival work, to suspend a boy "swinging from 7.30 to 11.30" 60ft. above the ground throughout the Whitsun week, and asks for advice on the subject. Would it not be well that the execution of his design be suspended till the police or Society for Prevention of Cruelty to Children be consulted? or he might possibly find himself suspended *per col.*—No Name.

[10765.]—**Graphic Method.**—In reply to "F. W. C.'s" question *re* above, I may state that I have found "Graphical Arithmetic and Statics," by Gray and Lowson (published by Wm. Collins and Son), very useful as an elementary introduction to the method by which the diagrams of strains on girders may be drawn.—A. S.

[10767.]—**Hydraulics.**—When the inclination of sewer remains constant, the velocity will vary directly as the $\sqrt{\text{dia.}}$, and the discharge directly as the $\sqrt{\text{dia.}^5}$; when diameter remains unaltered, both the velocity and discharge vary directly as the $\sqrt{\text{head}}$. This may be seen by inspection of the following formula—

$$V = c\sqrt{\frac{H d}{L}}$$

$$Q = V A = \cdot 7854\, c \sqrt{\frac{H d^5}{L}}$$

where V = velocity, c is a coefficient, H = head in slope, L = length, d = diameter, Q = discharge, A = area. Consequently, if the diameter of the pipe is doubled, and the inclination unaltered, the discharge will be increased 5·657 times (= $\sqrt{2^5}$). If the inclination is doubled, and the diameter remains constant, then both the velocity and discharge will be increased 1·414 times (= $\sqrt{2}$).—F. E. Gay.

A new reredos has been placed in St. Mewan Church, East Cornwall. It was executed by Mr. W. Doney, of St. Austell.

A memorial stained-glass window over the Lady altar in the Church of the Sacred Heart, Mount Vernon, Liverpool, was unveiled on Sunday. It has been designed by Messrs. Hardman and Co., of Birmingham. The central figure represents Our Lady of Lourdes, to the right of which is St. Francis de Sales, and to the left St. John the Evangelist.

Legal.

THE BILLS OF SALE ACTS.

ALTHOUGH building agreements have hitherto been kept out of the Bills of Sale Acts, and so have been held valid even without registration, notwithstanding the strong forfeiture clauses they usually contain, the point has often been contested. There are, indeed, a whole series of cases showing how this question has been fought over, with victory generally going to those supporting the agreement. Still, looked at broadly, it must be admitted that the object of these clauses always is to secure the building owner, to the prejudice of other and trade creditors. That being so, it is very probable that when the law relating to bills of sale does come to be amended, an opportunity will be taken to remove this anomaly, especially in these democratic days. There is a Bill now in Parliament, and promoted by the Lord Chancellor, to codify and amend the law of bills of sale—a course which is assuredly very much needed; and in this Bill it is proposed to repeal the present statutes of 1878 and 1882, which have led to a mass of litigation, and put the whole question on a better basis. Of course, much of these two Acts will be re-enacted; but the important point is that an entirely new clause, defining a bill of sale, is proposed. This is drawn shortly, but in very general terms, the idea being to describe the object of a document, rather than the document itself; and if this clause is passed as drawn, or, indeed, in any such broad language as is there used, it will not be possible any longer to keep building agreements with usual forfeiture clauses outside the operation of the law requiring registration of bills of sale.

Another way in which those interested in building are sometimes affected by the Bills of Sale Acts is in regard to attornment clauses in mortgages. It is not unusual for a deed of mortgage to contain a clause under which the mortgagor who is in occupation of the property agrees to become tenant of the mortgagee at a stated rent, which is, in fact, the amount of the annual interest payable thereunder. The object of this clause is to further secure the mortgagee by enabling him to distrain upon the mortgagor's furniture and chattels for the interest, as if it were rent; and, indeed, a special power of distress is usually added. The Bills of Sale Act, 1878, by sec. 6, declared such attornment clauses should be void unless registered as bills of sale. But in a recent case ("Green v. March," April 9) it was argued that the section had been repealed by the Act of 1882, and the confused shape in which that Act was ultimately passed would support any argument. Still, the Court of Appeal decided that this section was in force, and so that the attornment clause by which it was attempted to secure the mortgage interest under guise of a real rent, was a proceeding to keep secret the power of distress, and so was within the mischief aimed at by the Bills of Sale Acts. FRED WETHERFIELD, Solr.

1, Gresham Buildings, Guildhall, E.C.

NOTE.—All questions for reply in this column must be headed "BUILDING NEWS," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

ARCHITECT—PUBLIC HEALTH ACT—LONDON.—No doubt by-laws and regulations have been made under this Act by which the sanitary authorities can claim the ventilation of the drains they now require. But the inspector should be asked to show you that he is entitled to the form of ventilation to which you object, though your reasons for that objection could not be of much avail, if there is a specific regulation to that effect.

LEX.—RENT.—DISTRESS.—If the rent is made payable in advance, it is legally due in advance, and so can be distrained for when it is overdue—that is to say, when the day has passed upon which it should have been paid, although in advance. It is a very good plan to make the last quarter's rent under a tenancy agreement payable in advance, because then the landlord can distrain for it, if necessary, before the term ends, instead of having to sue for it afterwards.

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The death is announced of Mr. Yates Carrington, the well-known animal painter, who died on Sunday morning at his residence in St. John's Wood, at the early age of 35 years.

A new store in connection with the Midland Industrial Co-operative Society was opened in Gordon-road, Wellingborough, on the 21st ult. Mr. J. W. Fisher was the architect, and Mr. H. Dorman the builder.

LEGAL INTELLIGENCE.

SERIOUS CHARGE AGAINST A BUILDER.—At the Teddington Sessions on Monday, Charles Oades, a builder, carrying on business at Queen's-road, Egham, was charged with having, while an undischarged bankrupt, obtained credit from the London and Provincial Bank at Staines to the amount of £371 8s. 6d. without informing the manager that he was on undischarged bankrupt. The prisoner was adjudicated a bankrupt in the Kingston Bankruptcy-court in March, 1886, on his own petition. His liabilities were £1,769 6s. 3d., while his assets were only £260 3s. 6d. The prisoner had never obtained his discharge, and the bankruptcy had not been annulled. On June 26, 1888, the prisoner opened an account at the London and Provincial Bank, and paid a deposit of £600. That amount had been withdrawn from time to time, and the account had been overdrawn. The case was adjourned till next Monday, prisoner being allowed out on bail.

WATER SUPPLY AND SANITARY MATTERS.

HENLEY-IN-ARDEN.—The question of a water supply for Henley-in-Arden is now in a fair way of being settled. A local company has been formed, and Mr. J. E. Willcox, C.E, of Birmingham, has been called in to advise and to submit a scheme.

BIRMINGHAM.—A Select Committee of the House of Commons resumed on Monday the consideration of the Bill promoted by the Birmingham Corporation for obtaining a supply of water from South Wales. The scheme involves the acquisition of 32,000 acres of common land, forming the basin in which the rivers Elan and Claerwen take their rise, and originally the Bill proposed to acquire all rights of common over this great area, and to empower the corporation to convert it into private ownership. On the instruction of Mr. Shaw-Lefevre, clauses have now been agreed with the promoters by which the commoners' right will be preserved, subject to securing the purity of the water supply, and giving the public a statutory privilege to resort to the common land for air and recreation. The practical result of this is that the public will have secured to them one of the finest mountain tracts in South Wales in perpetuity as an open space.

CHIPS.

New parochial buildings erected in connection with the Clayton Memorial Church, Jesmond, Newcastle, were opened on Tuesday. The style of the buildings is a free treatment of Tudor. The external walling is composed of snecked rubble, with stone dressings. The architects for the work are Messrs. Plummer and Burrell, and the contractor is Mr. S. B. Burton. The outlay was £2,500.

A mosaic figure of St. Barnabas has been placed in Stoke d'Abernon Church, in memory of the late Bishop Harold Browne.

The President and Council of the Royal Academy have purchased for the nation, under the terms of the Chantrey Bequest, Mr. George Cockram's water-colour, entitled "Solitude," which hangs on the centre of the line in the Water-Colour Room at this year's exhibition.

New market buildings are in progress at Gainsborough for the local board, and will be opened in July. Mr. Wood is the contractor.

On Monday, April 25, the Duchess of Westminster laid the foundation-stone of a new church at Wybunbury. The church now in course of progress is being built on a slab of Portland cement concrete covering the entire area. The work is being carried on by Messrs. Treasure and Son, of Shrewsbury and London.

At a meeting of the W. H. Smith Memorial Committee, held on Tuesday, it was agreed to take steps to obtain designs for a proposed memorial window in St. Margaret's Church, and any surplus which may remain after the expenses of the window have been paid will be expended upon a bust to be placed in the House of Commons library.

A new school-church at Pensard, Llangwstenin, near Llandudno Junction, was opened recently. It seats 100 children, and has been built from designs by and under the superintendence of Mr. G. H. Humphreys, M.S.A., of Llandudno, the contractor being Mr. John Roberts, of Colwyn Bay.

At Tuesday's meeting of the London County Council it was announced that the Shaftesbury memorial fountain, the work of Mr. Alfred Gilbert, A.R.A., was almost ready to be erected in the position already alotted it at Piccadilly-circus. At the same meeting it was resolved to instruct the Improvements Committee to consider and report on the desirability of preparing a complete plan showing the extent and boundaries of all freehold properties in the county of London, and also a list of the names of owners, and the probable cost of preparing the plan.

Our Office Table.

A CORRESPONDENT of the daily papers points out that just eight years ago an effort was made, now renewed under the auspices of Sir F. Leighton, to remove the Wellington Monument from the Consistory Chapel of St. Paul's to the archway in the nave. The memorial was signed by over ninety members of Parliament, and by many architects and other artists. At the same time the Royal Academy, as a corporate body, made a similar representation to the Prime Minister. A year or two later the authorities of the South Kensington Museum purchased Stevens's original sketch-model of the monument surmounted by the equestrian figure of the Duke of Wellington; and a short time afterwards Stevens's drawing in pen and ink of the monument standing beneath the arch in the nave of the cathedral, which it was designed to fit into, was also acquired by the South Kensington Museum. The model and drawing are now exhibited in the Architectural Court of the museum. Stevens's original full-size equestrian figure of the duke on his charger is, the correspondent asserts, stowed away in a lumber closet in the crypt of St. Paul's Cathedral. It is to be hoped that the present movement will be prosecuted with more vigour and success than was that of 1884.

THE blasting away of the faces of the Abbey Craig by the county council of Stirlingshire, in their endeavour to procure cheap supplies of road metal, has been effectually checked by the vigorous action taken by the town council of Stirling in their capacity of trustees of Cowane's Hospital. Mr. Campbell-Bannerman has drafted a new clause to be added to the Roads and Bridges of Scotland Amendment Bill, which will protect the Craig from further injury, and the county council have prudently decided to offer no opposition to the amendment provided they are afforded time to make fresh arrangements for obtaining road materials. Action has not been taken too hastily, for no fewer than 130,000 tons of rock have been removed, and a dangerous and unprotected quarry has been brought to within a score yards of the most frequented path to the Wallace Monument.

THROUGH the beneficence of Messrs. Marsh, Son, and Gibbs, of the Bath Stone Works, Box, the men and youths employed at their stone quarries at Rudloe and Corsham, were entertained at a repast on Saturday evening, at Rudloe. The dinner was laid in a barn decorated for the occasion, and a sumptuous supply of edibles was placed upon the tables, to which over 100 sat down. The dinner was presided over by Mr. R. J. Marsh, the senior partner in the business, the vice-chair being filled by Mr. F. H. Gibbs. The chief toasts drunk were "the Health of Sir J. D. Poynder," from whom the Hartham Park Quarries were leased four years since; and "Success to the firm of Marsh, Son, and Gibbs," proposed by Mr. A. H. Latham, and acknowledged by the chairman, the vice-chairman, and Mr. Alfred Marsh.

◆

The new Kenyon public hall at Holt, Flintshire, was opened by the Duchess of Westminster on Wednesday week. It is of iron and wood, was built by Messrs. Dixon, of Liverpool, and cost £600.

The first sod of the Wrexham and Ellesmere Railway will be cut by the Hon. Mrs. George Kenyon on June 10. The contractors, Messrs. Davies Brothers, have commenced to collect plant on the land.

The churchyard of the parish church, Sheffield, has been converted into an "open space." It is now proposed to convert two other churchyards in that town to a similar purpose—viz., those of St. George's and St. Mary's.

A new department added to the Park Board Schools at Sheffield was opened on Monday. It will accommodate 370 scholars, and cost £6,260 exclusive of site. The contractors were Messrs. Thomas Lowe and Sons, Burton-on-Trent, Mr. Cartwright being clerk of the works. The architect is Mr. C. J. Innocent, 17, George-street, Sheffield.

The Manchester, Sheffield, and Lincolnshire Railway Company opened on Monday the remaining portion of their new suburban railway at Manchester. The first section of the line, from Chorlton-cum-Hardy to Fallowfield, was opened in October last, and the section now opened extends from Fallowfield, through Levenshulme and the Gorton Valley to Fairfield on the one hand and to Gorton on the other, junctions being effected at both these places with the main line from London-road station to Sheffield. The zone system of fares is charged.

MEETINGS FOR THE ENSUING WEEK.

SATURDAY (TO-MORROW). — St. Paul's Ecclesiological Society. Visit to St. Paul's Cathedral, under the guidance of the Rev. Lewis Gilbertson. 2 15 p.m.

MONDAY.—Surveyors' Institution. "The Scientific Study of Timber," by Professor G. E. S. Boulger. 8 p.m.

TUESDAY. — Society of Architects. "Monumental Brasses," by the Rev. J. E. Field. St. James's Hall, Piccadilly. 8 p.m.

Institution of Civil Engineers. "The Distribution and Measurement of Illumination," by A. P. Trotter. 8 p m.

WEDNESDAY.—Society of Arts. "Uses and Applications of Aluminium," by G. L. Addenbrooke. 8 p.m.

THURSDAY. — Edinburgh Architectural Association. Valedictory address by the President, John Kinross. 8 p.m.

FRIDAY.—Architectural Association. "The Relation of the Architect to the Workman," by C. R. Ashbee, M.A. 7.30 p.m.

Dundee Institute of Architecture. "Sanitary Plumbing," by James Thomson, Edinburgh. 8 p.m.

SATURDAY. — Architectural Association. Visit to the National Portrait Gallery, Charing Cross. 3 p.m.

* * *

The Architectural Association. — May 13th, the Thirteenth Ordinary General Meeting at 7.30 p.m. Paper by C. R. Ashbee, Esq., M.A., on "The Relation of the Architect to the Workman," practically illustrated.

May 14th, Seventh Spring Visit, at 3 p.m., to the National Portrait Gallery, Charing Cross-road, Mr. Ewan Christian, architect.

ERNEST S. GALE
F. T. W. GOLDSMITH } Hon. Secs.

Trade News.

WAGES MOVEMENTS.

ABERDEEN.—A dispute has arisen between the master plumbers in Aberdeen and their workmen over a new code of by-laws, which threatens to lead to a strike. The principal difficulty relates to the number of apprentices that should be employed in the trade. The men await the result of the final decision of the masters on the draft copy of the new code.

ASHFORD, KENT.—A general strike of bricklayers and carpenters commenced on Saturday, when the men ceased work in consequence of the masters declining to give an increase of ½d. an hour and to adopt a set of working rules, one effect of which would be to give the men a Saturday half-holiday. There are no very large contracts now on.

BELFAST.—The demand made for an advance of wages by the different sections of men employed in the building trade not having been conceded on Saturday, a general stoppage of work began on Monday. The demand was made by the stonecutters, hodsmen, and carpenters for an increase of wages and for shorter hours. The masters have also given notice of a reduction of wages, and the dispute, therefore, is expected to last some time. The bricklayers' and plasterers' assistants, 370 in number, ask 2s. per week extra, with time and a quarter for overtime to ten p.m., and time and a half for night work; the stonecutters, 250 in number, ask for a cessation of work at twelve o'clock on Saturdays; the plasterers, who are 300 in number, want ½d. an hour extra, and a day ending at twelve o'clock on Saturdays; and the carpenters desire the continuance of the same conditions of labour as in the past.

CARDIFF.—On Saturday midday the whole of the carpenters and joiners, masons, bricklayers, plasterers, plumbers, and builders' labourers, to the number of about 4,000, forming practically the whole of those employed in the Cardiff building trade, struck work upon the non-concession of a demand by the Cardiff Master Builders' Association for a slight reduction in hours and an advance of 1d. per hour in wages all round. Two years ago an advance of ½d. per hour was given, and six months ago notice was served by the men's committee upon the Master Builders' Association terminating the then existing code of rules. Various conferences have been held during the past month, but the men refused to discuss any matters until a clause as to free labour, suggested by the members of the Master Builders' Association, had been withdrawn. The employers then offered an advance of ½d. per hour should that clause be agreed to, but the men refused to entertain the proposals. The carpenters, acting independently of the other trades, ask for no reduction in hours, and send their own negotiators to the employers. To this branch the employers offered an advance of ½d. per hour, and to eliminate their suggested free-labour clause altogether, if, on the other hand, the men would strike out from their proposals any prohibition of piecework or sub-contracting. The carpenters have refused to agree to this proposal.

GREAT LOCK-OUT IN THE POTTERIES.—The dispute between the masters and men in the pottery trade has reached a critical stage, and, after long-continued negotiations, the masters have decided to close all the works as from last (Thursday) night for an indefinite lock-out. The many differences between the employers and employed chiefly affect the employment of apprentices and the system of reckoning up work. About 10,000 operatives are affected by the lock-out.

GLASGOW.—As a result of a conference with the employers, the masons have obtained an advance of a ½d., making the wages 8½d.

HARROGATE.—The building trade here is now practically at a standstill, the stonemasons being out on strike for an advance of wages. The masons only gave a week's notice before going out, and the master builders maintain that such a short notice is unjust, as they are entitled to a month's notice before any alteration should be made in the rate of payment.

LEEDS.—A joint meeting of the Leeds master builders and operative stonemasons has agreed that the masons' wages shall be at the rate of 8½d. per hour, the change dating from Monday last. Some alterations in the working rules have been amicably made.

LUTON.—The bricklayers and carpenters have asked for a rise from 6d. to 7d. per hour, to come into force on June 1st.

STAFFORD.—The bricklayers of Stafford, in order to be placed on a similar footing with the bricklayers of the neighbouring towns, ask for an advance of wages at the rate of ½d. an hour—viz., from 7d. to 7½d.

* * *

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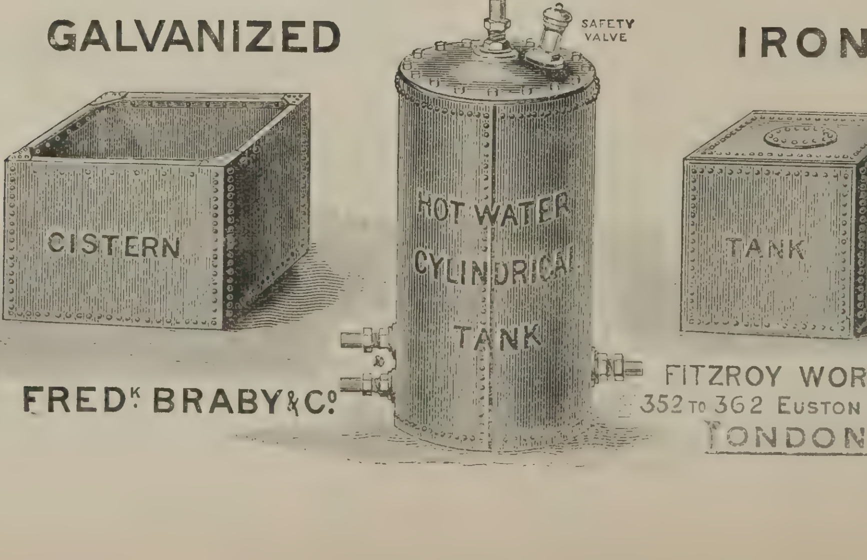

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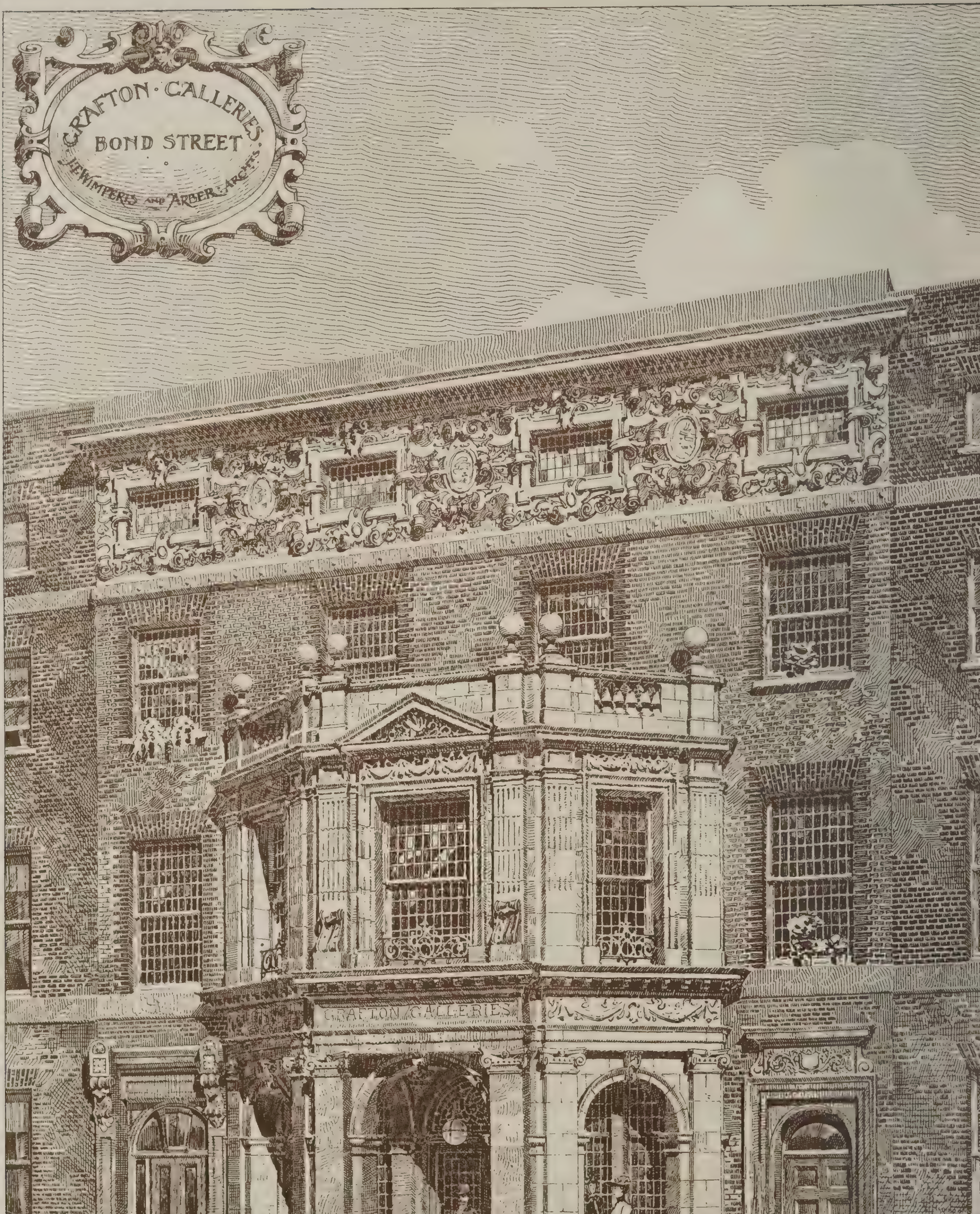

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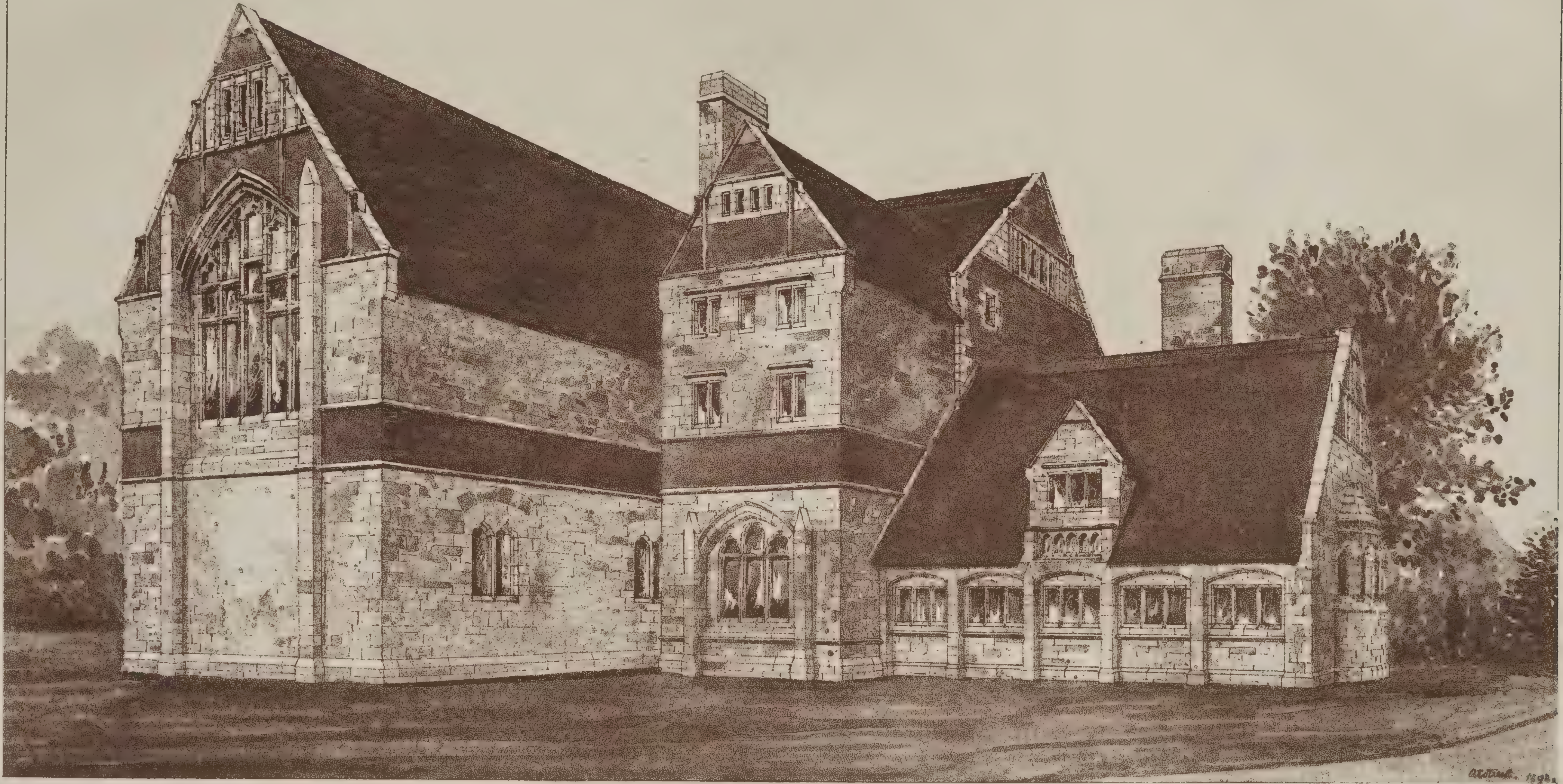
A E Street. 1892.

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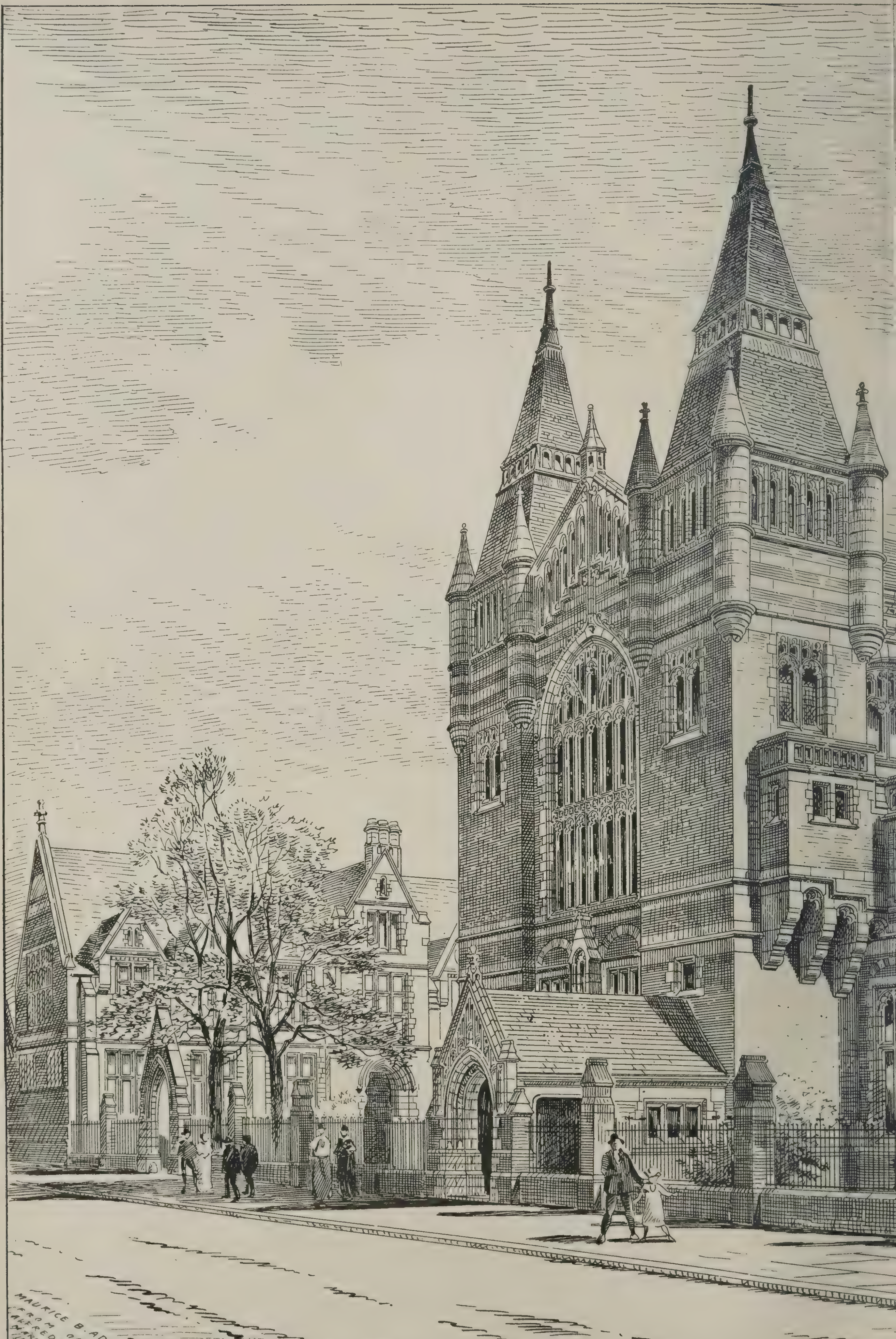

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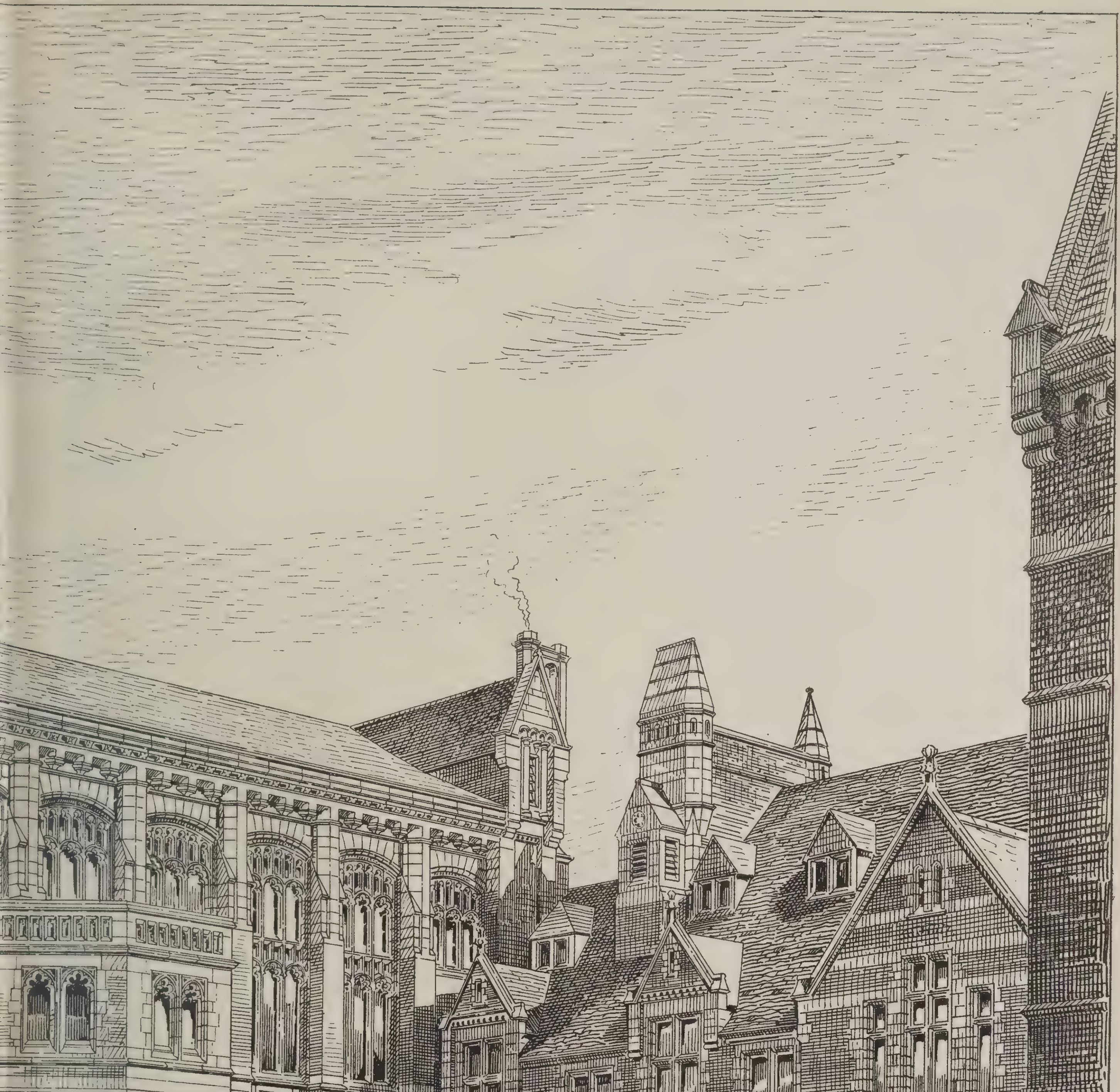

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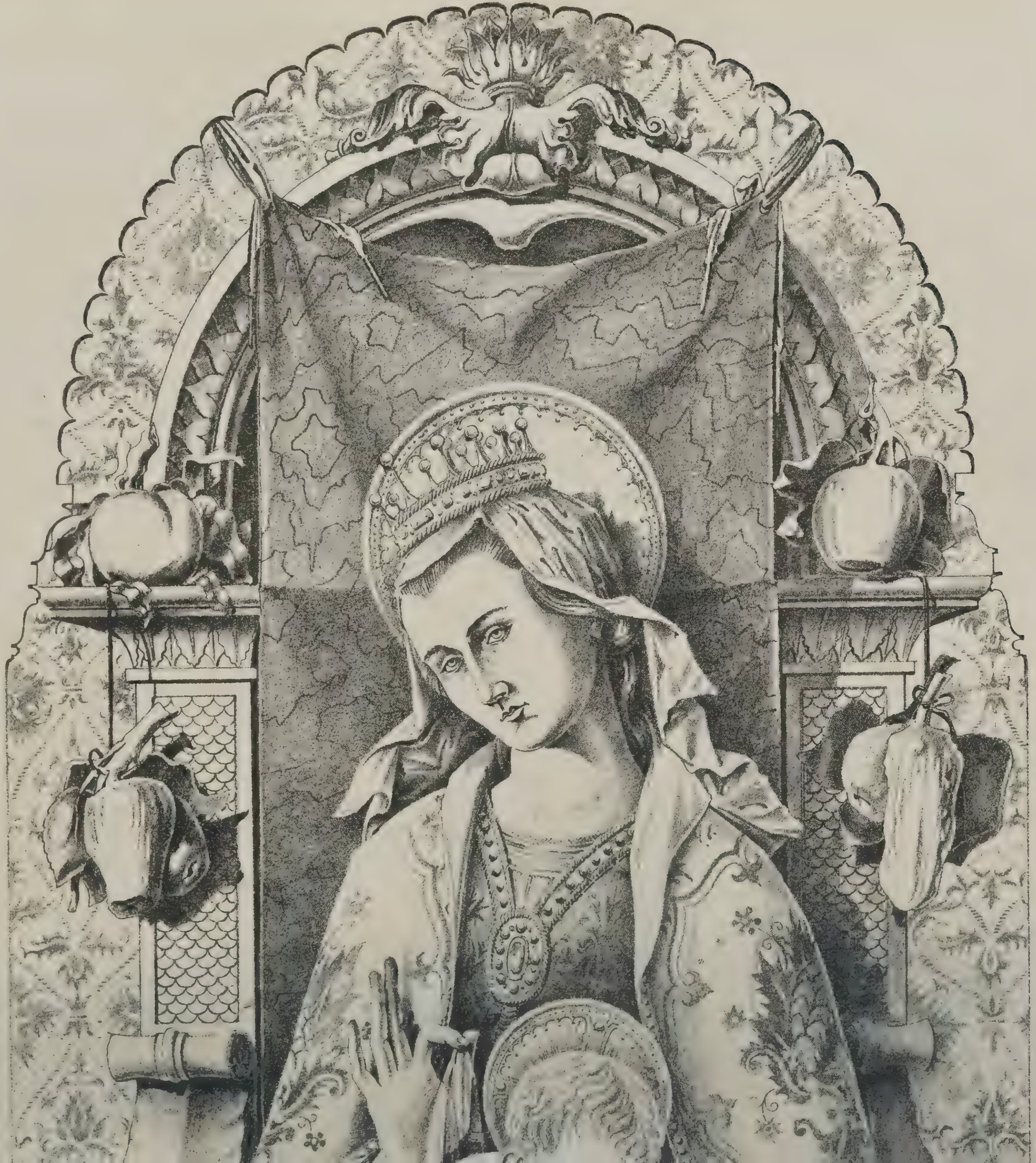

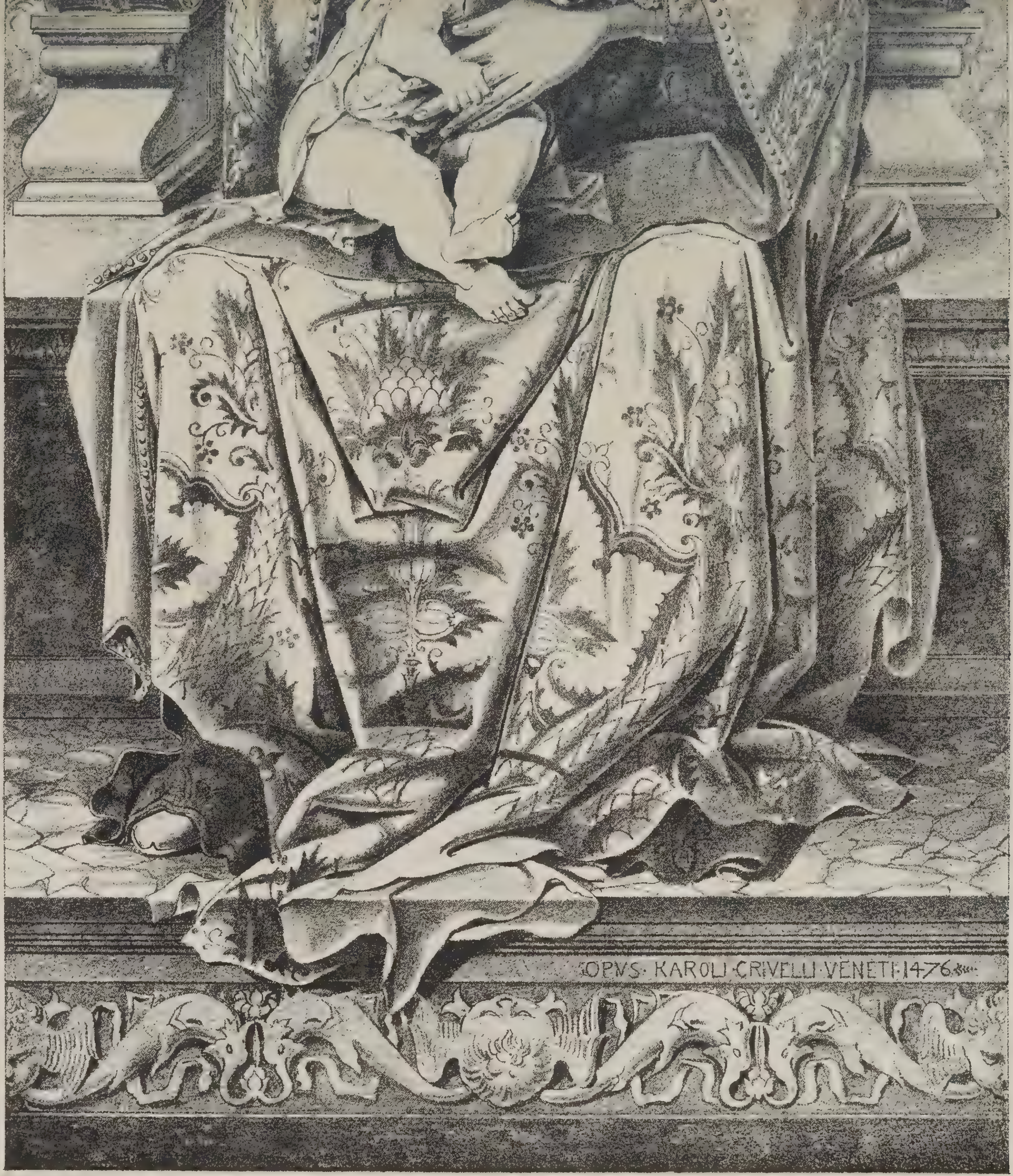

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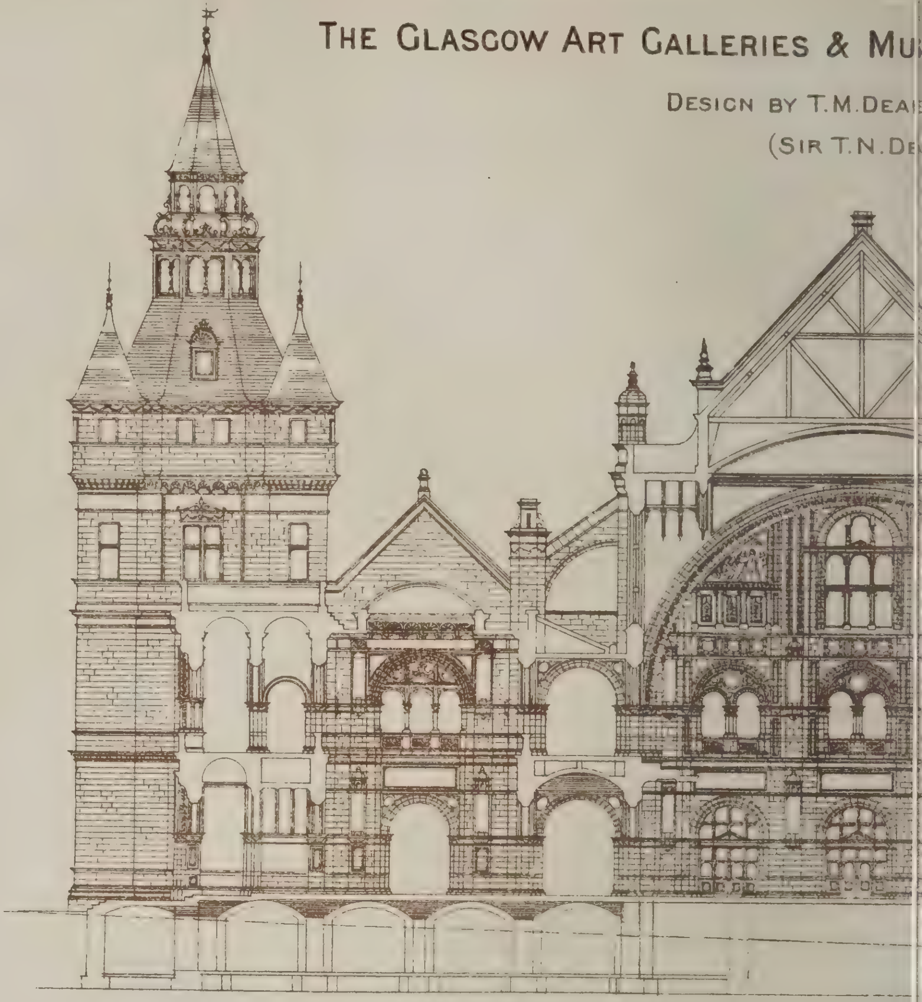

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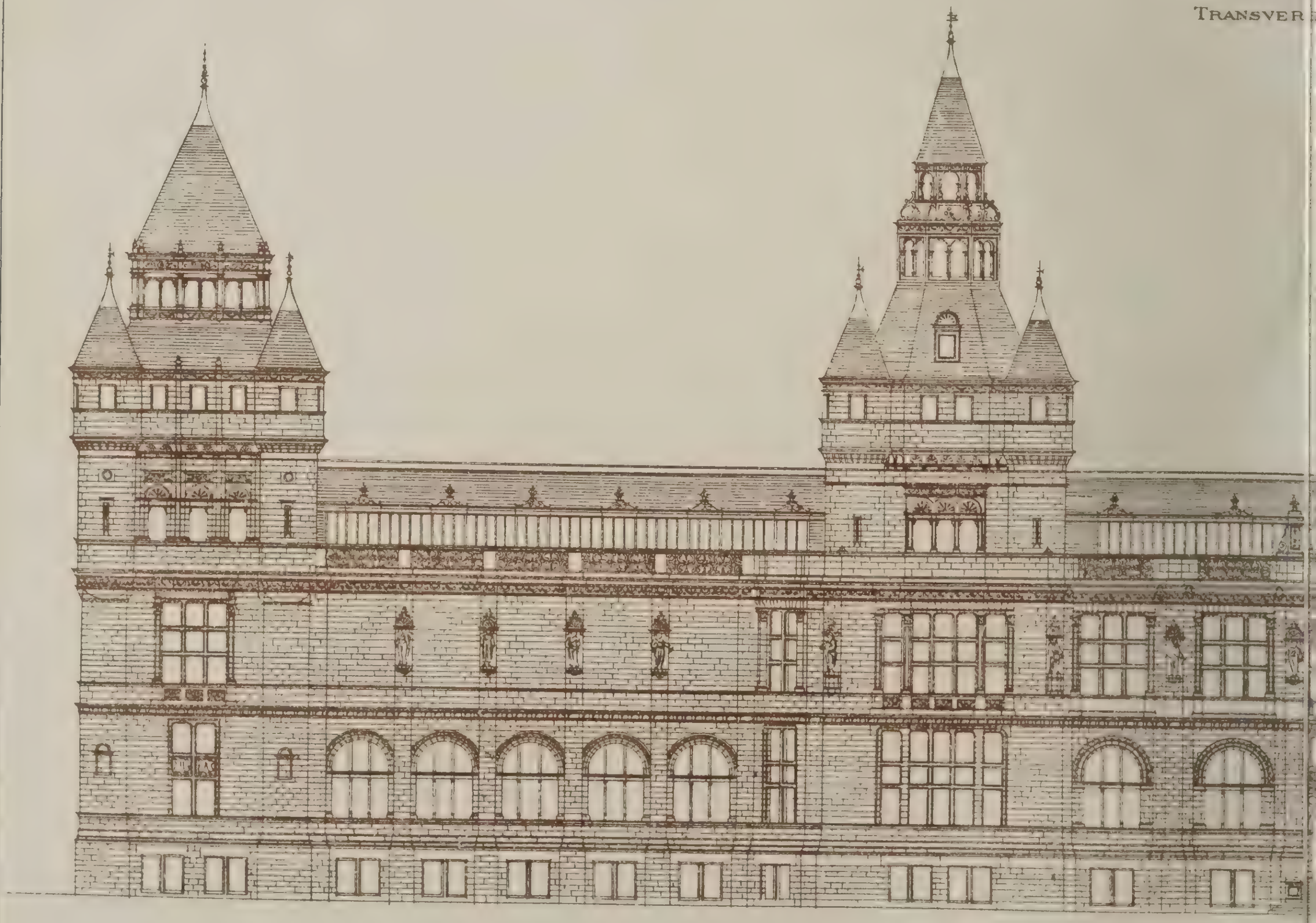

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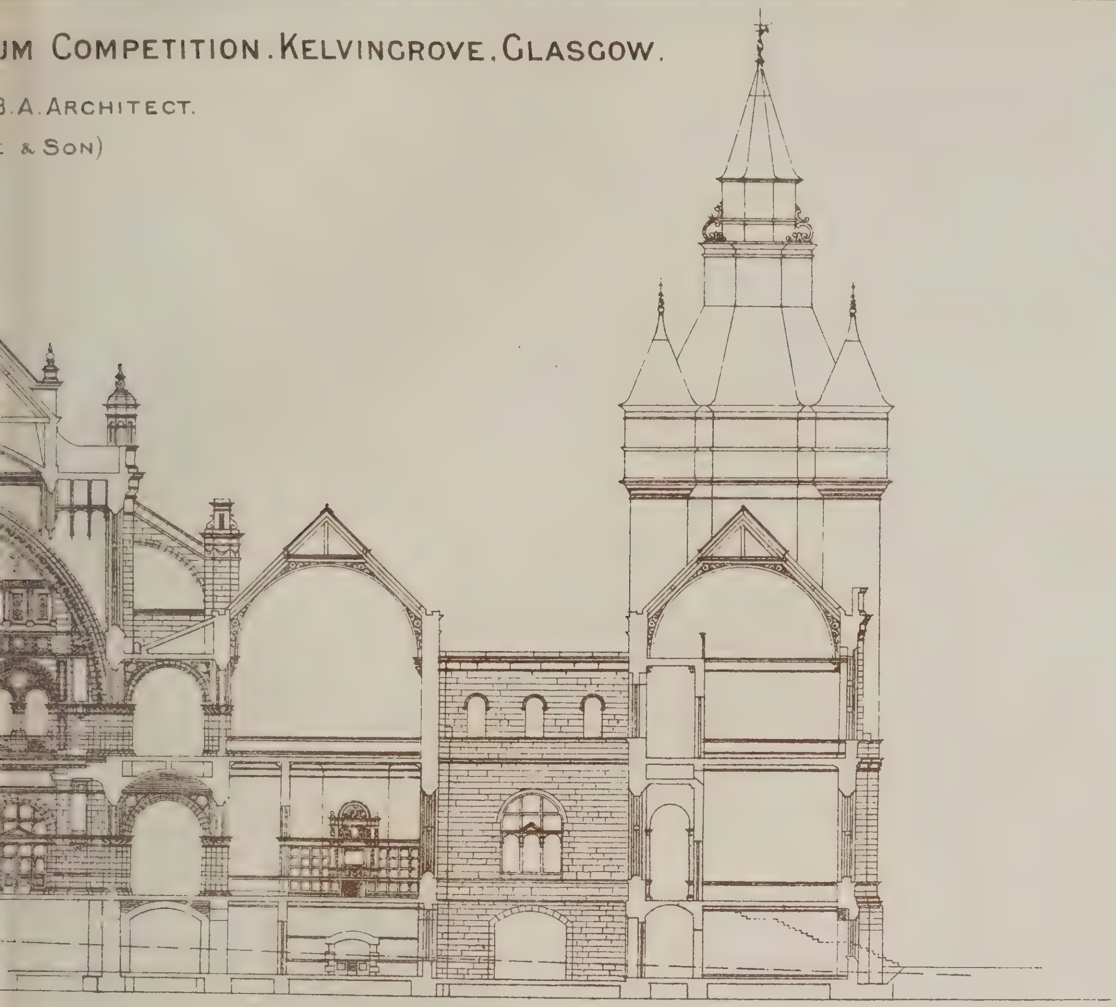

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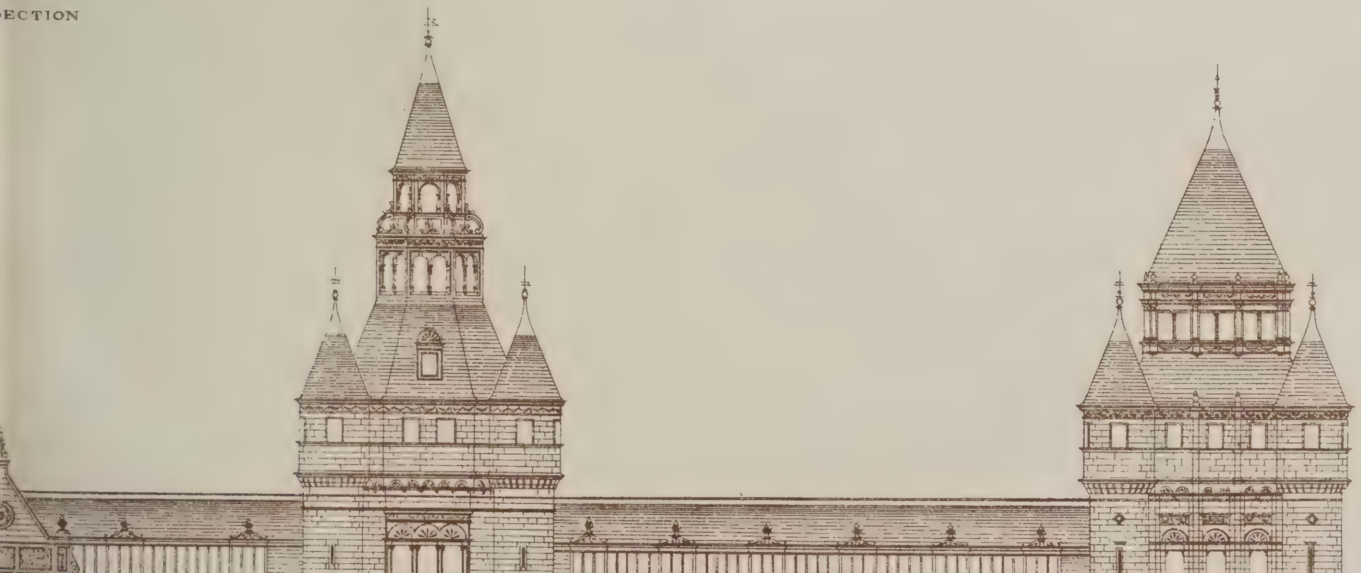

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THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXII.—No. 1949.
FRIDAY, MAY 13, 1892.

ARCHITECTURAL FACTIONS.

JUST now the architectural world is rather divided as to the claims of two factions, each of which is trying to be heard as the true exponent of the architect's creed. Of course, we are not surprised at a squabble of this kind taking place amongst a body of professional men, when greater organisations cannot come to amicable terms about religious differences and Canon Law. The mistake is that each faction wants to pose as the mouthpiece of the profession, who really have too much to think about to trouble themselves whether one system of education is better than another, so long as practical means are found to acquire those qualifications which all architects acknowledge to be necessary. And we have lived long enough to see that, after all, complete unanimity is quite impossible so long as men differ constitutionally in mind and taste, just as it is impossible to expect uniformity in creed or politics. There will always be those who take a "high" or a "low" view of architecture as a profession, just as they feel disposed to keep an artistic ideal or a mere business conception before them. An architect with surveying proclivities, who is seeking to get up a connection among solicitors and agents representing capitalists and landed proprietors, would naturally turn his attention to matters far removed from art: he would seek election as F.S.I., as well probably as becoming a F.R.I.B.A. To him the object of making a business is, of course, the important consideration; he entertains the hope, at any rate, of patronising art and artists if he does not work with them. Then we have another type of individual whose inclinations and tastes are decidedly scientific or mathematical, who devotes his studies to materials and stresses, who makes construction the alpha and omega of architecture; his ideal is certainly not commercial, but still far from artistic. Then, lastly, we have the art-enthusiast, who devotes his heart and soul to the study of architecture as an art. Those who take what we may call a "broad" view are probably found between these extreme representatives or partisans. They attend meetings at which "quantities" are discussed, read papers on art and art workmanship, and occasionally affect an extreme interest in artistic matters when they do not run counter to their practical interests.

In short, in all practical questions where opinions and predilections enter, as in politics, in theology, and in art, there are three distinct positions—two extremes and a mean, and the old aphorism that "extremes meet" is clearly illustrated in all three instances. In the two first we do not require any further exemplification than what we hear: how the middle position, often the strongest, is assailed by the two extreme parties which are as far asunder as opposite poles of a magnet. In architecture we find the same three positions—those who are the most practical in their tastes affirm that scholastic training and educational means of acquiring knowledge suitable for an architect are useless, or thrown away. We find men who have learned their profession in builders' workshops as clerks of works, or as clerks in surveyors' offices, ridicule the notion of learning anything of a practical nature in a classroom or studio, and sneeringly pooh-pooh all idea of an examination conducted by a society or a school. At the opposite extreme are men who study the poetry of their art, who are artists first, and move on very similar lines; they now reject all educational schemes, whether proposed by the Institute or A.A; they argue that architecture is an art, and as such is not learnable by the means or agencies necessary to teach men how to become lawyers, or medical men, or engineers, and, curiously enough, each extreme party ignores the body of opinion which is nearest to it, and which occupies the middle position. We need hardly say this position is that taken up by the Association, who have formulated an educational scheme. The extreme position, taken up by Mr. T. G. Jackson and those who think with him is one, nevertheless, that will have a large following. Architectural pupils are not fond of restraint: many would welcome a proposal that would restrict the entrance into the architectural profession exclusively to those who have artistic abilities which cannot be gauged by any examining process.

To this pass has architectural reform arrived. The anti-examinationists have made a popular bid that will do much to unsettle the minds of young men about to enter the profession. There are questions that may be raised on both sides. Those who are seeking to advance the educational status of architects may well appeal to the general ignorance of the profession in several branches, and show how specialists are beginning to trespass on the domains of the architect. Others, with a practical disregard of anything that is not absolutely useful, may ask of what use is it to talk about art when a man has to earn a livelihood among clients, not one in a hundred of whom knows anything of art. Again, it may be asked, of what use is art study and artistic taste to an architect engaged in designing a workhouse or a warehouse where all that is necessary is a practical knowledge of requirements and the building trades. It is somewhat hard to satisfy these questioners that even in such practical and utilitarian work, the man with some artistic power can accomplish more, and in a better manner, than one who proceeds on practical and often rule-of-thumb lines; and that a man who knows what has been done before and what is the extent of existing knowledge on any subject, is more likely to steer clear of quicksands and to produce the best result, than he who is ignorant of those principles and scientific applications upon which so much depends. We cannot explain to the hard matter-of-fact individual why a knowledge of forms and types is useful, or the facility with which an artistic mind can accomplish a good deal by a sort of intuitive sense of fitness, which another man cannot understand.

On the other side, the men who work by artistic impulses can point to the many unsatisfactory buildings designed by men whose knowledge of science and business cannot be questioned. The vicious practice of imitating styles and features which originally had been produced under special circumstances is one of the weaknesses found among those who are not, so to speak, "born to be architects." We find in modern buildings copies of features that arose under some exceptional conditions—an architect copies them in places "where there was nothing to call for other than ordinary methods or forms," and then pleads the authority of ancient examples for what he has done, as one writer puts it. All this is done mistaking the *use* to which the feature is put. The artist who has learned his art from books and examples is prone to fall into this error of asserting his authority for doing this or that, when he ought rather to prove that the form he has designed is adapted for the particular purpose intended. Books and examples give us authority for almost everything, but they do not teach us how to design a form for a special use; they cannot make men think. Forms thus intended by their inventors for a special use have been borrowed without discrimination, and devoid of all taste. Highly appropriate for one purpose, they are ridiculous for general use. Hence we see much done by Renaissance and Gothic architects which is simply absurd, because art—the fitness of a thing for its use—has not been really perceived. The "purist" may do these things, but the artist cannot. How art is to be taught in the school is the main question. The national art schools have cultivated thousands in the means of training the hand and the eye; but they have failed to teach men how to design except on academical rules, or to become original artists. The architectural studio may do more if it can only teach the student how to make a detail. Art must be taught before, not after, construction, according to one theory; but the academical method is to teach it after, and with results not the happiest.

EXHIBITION OF WORKS IN WOOD.

AN exhibition of works of carpentry, joinery, and wood-carving is now open at Carpenters' Hall, which is of a thoroughly representative character. These include models, specimens of joinery, drawings, and a few loan exhibits of interest. Prizes have been awarded for works in several classes. Prof. Banister Fletcher of King's College, and Prof. Roger Smith of University College, are the judges. The first division comprises models in constructive carpentry, in which the object has been to obtain the greatest amount of strength at the smallest expenditure of materials and labour. There are six classes, including cleverly-executed models of roof-trusses of different kinds, specimens of scarfed timbers for bridges and floor-beams, centring, scaffolding, shoring, &c. A large model of a roof-truss, by "Dum Spiro Spero," may be noticed suitable for a building with side aisles; under motto "Je Suis Pret" a small model and drawing is shown of a hipped roof of unequal angles in plan showing different lengths of hips with bevels. A very excellent model of the roof over the great hall of Hampton Court is exhibited by "Tangent," who is awarded the second prize and medal. The truss is, as all know, of the hammer-beam type, with ribs, and the span is 40ft., date *circa* 1520. Another model in mahogany shows the application of outside blinds. "Plez" is the motto of models of a groin and centres (Class 5), which take a second prize. The first prize and silver medal in this division is given to C. J. Aston, Kentish Town, for examples of scarfed joints for cross strains. The models are in mahogany, and show some very good scarfings, so finely executed as to be hardly discernible—most of these are keyed. The subject comes in Class 4. In Class 5 models of centring, framed scaffolding, shoring, and needling are sent. Of these we notice a model of a cradle or supporting frame for a pillar supporting arches, motto "Victoria," which receives a second prize and medal. A model for a stage to carry a derrick or steam crane is shown, also a model of shoring with flying and raking shores, by "X. Y. Z.," which takes a first prize and silver medal. A trussed beam in Class 4 also gets a second prize, the author, "Dum Spiro Spero," sending a model broken by a weight.

Division II. (for models of architectural carpentry, ornamental roofs, gates, domes, &c.), is scantily represented. The Keighley Technical Institute sends a few models—some very clever—by joiners' apprentices. One of these is a pair of gates. In the next division G. Welsh has a first prize for model of staircase, circular in plan, with winders and turned balusters very skilfully and neatly executed. "Stairs" is the motto of a geometrical staircase, with well-hole, which wins a second prize. A few cleverly worked out wreathed handrails, with drawings, are exhibited; one a model of large staircase of Carpenters' Hall, drawn and worked on the arris-cut system by "Arris Cut." "Intersecting Circles" is the motto of a mahogany handrail, showing face-moulds, bevels, and scroll, for which a special prize is given. "Postal," Keighley Institute apprentice, sends some well-worked wreathed handrails and drawings. In Class 2, window-frames, sashes, and casements are exhibited. We notice by "Vincet Veritas" a model of double-hung sash window in mahogany, also a casement with espagnolette bolt; and by "Plez," sections of bottom rails of French casements showing weather grooves in sills, and channels for condensed moisture; also some good models of portions of sashes showing meeting rails, pulley stiles, sill, &c. In other classes we observed detail drawing of reading-desk in pencil, models of lantern light, a combination desk for drawing, &c,

Turning to division IV., which is for carving and hand work (Harben's gift) we notice one or two font covers of fairly good design. A hall chair back by "Forward" takes a first prize and silver medal; the back is carved in oak of appropriate and tasteful design, with carved top and sides, and coat of arms in centre. The carving is in low relief on the back, and the sides of back are elegantly carved. It is the work of an apprentice, and very meritorious. "Nemo" also wins a first prize and silver medal for a well designed and clever carved bracket of good profile. "Tavy" sends a cleverly carved and suitable design for a mantel frieze, with carving in low relief. A 1st prize and silver medal is awarded to "Arrow" for a cleverly-carved capital in deal. We also notice a font-cover by "Star," and a carved console table-leg for gilding, of good design skilfully treated. A few meritorious friezes and brackets are exhibited. Amongst the more artistic works we notice several carved panels and grotesques in a frame, which obtain a first prize; also an old woman and cat, "Cronies," in pear-wood, under "Lion's Head"; a clever carved panel or arabesque, a rather heavily-designed clock-case in satin-wood, and several creditable carvings and modellings by boys, executed at the classes in Chapel-street, Bedford-row, established by the Company of Carpenters and the Institute of British Wood-Carvers. The boys of Stratford Institute send various specimens of wood and leadwork, which show the practical training in practical handicrafts they receive. An escritoire which folds up as a screen, by "Esperance," a clever model in clay of a woman's head, also a fine old Italian chest lent by Mr. Seymour Lucas, may be noticed. The King's College Evening Classes, instructed by Professor Banister Fletcher, contribute several excellent drawings of building construction.

PICTURES AT THE ROYAL ACADEMY.

[THIRD NOTICE.]

IN Gallery VI. an exceptionally large canvas occupies a place above Mr. Herkomer's pretentious picture, "A Board of Directors." It is by R. W. Arthur Rouse; the subject is "The Meadow's Stream" (457). Thoroughly imbued with English landscape feeling, Mr. Rouse has here betrayed a strong Constable-like manner both in handling and colour. There is freshness and glistening light, which is the more refreshing after the warm tints on the canvas of Mr. Herkomer. Flora M. Reid's "Market Place, Bruges" (439) is an important work of this rising lady artist. Excellently grouped are the women and their baskets of vegetables and produce; the light on distant houses and faces and between the trees is strong, and the colour of the whole quiet and harmonious in a low key. Admirers of animal painting may see much to praise in W. Frank Calderon's "Orphans" (459), a canine study; in John M. Swan's "Thirst," two panthers lapping water at a brook. Sir F. Leighton's hard, hilly landscape called "Clytie" (489) is a misnomer. Clytie is, indeed, represented by a very small figure with arms outstretched on what looks like a marble platform, and is invoking Apollo; but the landscape, the effulgent sunset, dark clouds, and hills occupy the principal portion of the picture. Clytie is supposed to have been turned into a sunflower, but whether the painter has suggested this myth is doubtful. "Sealing the Locker" (500), by Ralph Hedley, is cleverly painted; near it, Anna Bilinska has a clever portrait in a low key of colour, "Portrait de l'Auteur," and Yeend King a landscape of characteristic beauty (505). In opposite moods is Arthur K. Tebby's highly pathetic interior, an orphan girl musing sadly before a small fire, with her scanty meal on a table (511), and John R. Reid's very striking and telling picture, "The Mate of the Mermaid's Wedding," a bridal party procession wending its way along the quay of a fishing village, full of light and colour. Kate E. Bunce, in her "Day Dream" (515), evinces a poetic pathos and a subtlety of treatment and colour that are promising. The face and handling of drapery and background are refined and full of harmonious tones.

Gallery VII. contains several commonplace works. Eyre Crowe's "Lady Coventry's Escort," an episode in George II.'s reign, is interesting for the costumes of the ladies and the guard rather than for any artistic merit apart from the subject. A good portrait of Sir Robert Rawlinson, K.C.B., who wears his decorations, is by Phil. R. Morris; in the centre of wall hangs "Lynn Ferry," by Robert W. Macbeth, a luminous subject in a brilliant key of colour, in which the figures of fishermen, the sunlight effect, and atmosphere are cleverly painted. Fresh in colour, and lighted up by a glow of light, is Edwin Hayes' "French Fishing Vessels leaving Port" (558), the stormy sky and sea being rendered with all the power of handling and atmospheric tone of this master, as in the fleeting shadow over the sea waves and little craft. Henrietta Rae's "Mariana," a Tennysonian study, is most charming in the expectancy of the countenance of the fair maiden who sadly gazes out of the casement window, and the delicate pearly tone of the white dress with the chaplet of flowers round the waist. Another cleverly and feelingly-painted figure subject is W. A. Breakspeare's "The Vicar finds Olivia," an incident handled with extreme tenderness and charm of colour. The grey tone of the interior is repeated in the note of Olivia's dress; the bedroom is delightfully real and appropriate in its modest accessories. Hubert Herkomer's presentation portrait of the Archbishop of York (580) is a truthful presentment of the new prelate, whose intellectual type of face is set off by the scarlet archiepiscopal robes. A large picture by John Brett, "The Isles of Skomer and Skokham" (596), with its blue-green sea, purple clouds, and iridescent hued cliffs, is a splendid study of colour and glistening light. We must also notice Alfred East's misty "Autumn Afternoon"; C. E. Perugini's "La Superba" (592), a study of a lady in rich costume; John W. North's delicate woodland scene "Druidscombe" (602); and a figure subject by George H. Boughton of a Brabant skater (615), as works of decided merit. In the next gallery (VIII.) J. MacWhirter has two delightful upland views, one of ,the "Mainland from Arran," a sunlit hillside, backed by a distant peep of blue sea, and another, "Over the Sunlit Sea" (651)—a steep green hill clothed by birch, through the branches of which is the sea gleaming in the afternoon sun. Fredk. Goodall's full-length portraits of two ladies occupy prominent positions. "Beatrice" (633) is a graceful portrait of a young lady standing in a landscape in light blue drapery, holding in one hand a thistledown—quite an idealised portrait. Another is a portrait of the Hon. Mrs. Devereux (650) in a rich dress of white silk, with train, at the foot of a staircase. She wears a star coronet on her head. A centre subject, "My Crown and Sceptre"—a little girl seated, in a frock of primrose with green sash, and wearing a wreath of red berries on her hair, and holding a green stalk or reed in her right hand in queenly style—is pretty and decorative in motive, the bright, trying colours being pleasingly harmonised by a background hanging, dotted over by fleurs-de-lys. Another decorative subject is by Albert Moore, entitled "Lightning and Light," an ideal scene—three beautiful girls reclining on a balcony seat facing the sea, clad in orange, green, and white diaphanous drapery, the leaden-coloured sky completing the harmony of colours. H. W. B. Davis's "Shadow of Evening" (671), with gleaming sunlight over the hillside, and his delightful picture of "Summer Time" (665), with the blossom of hedgerow trees, wild rose, and elderberry, are worth attention; while in the centre, facing the vista of galleries, is hung Solomon J. Solomon's great work, "Orpheus" (666). The tradition is that Orpheus, son of the muse Calliope, received a lyre from Apollo, on which he played so wonderfully that wild beasts forgot their ferocity. He married Eurydice, who died from the bite of a serpent, and to recover her he visited the infernal regions. Hades was so enraptured by the music of the lyre that the wheel of Ixion stopped, the stone of Sisyphus stood still, the Furies relented, and so moved was Pluto, that he consented to restore Eurydice to Orpheus on the promise that he did not look behind him till he had reached the verge of his domain. The picture shows the moment of his temptation to look back. There is considerable skill in the conception, and much beauty in the figures—the prostrate woman with serpent coiled round, the tempted and half-frightened look of Orpheus with his lyre, the strains of which have enchanted the wild animals on the rocks, and the vision of Eurydice in the background; but after the greater compositions of Mr. Solomon which we have been accustomed to see here, this picture is disappointing. John Brett's sea mists and rocks are full of light and colour; Chas. T. Garland's "A Bit of a Yarn" is a clever interior, with old sailor relating a tale to some children, whose expressions of delight and surprise are cleverly depicted. The light is well managed. John Pettie has a very good likeness of the talented Crystal Palace conductor, Auguste Manns (686), and R. Lehmann's "Cromwell at Ripley Castle" (708) and Henry Moore's seascape of rocks and blue sea are other pictures of interest in this gallery.

A large number of small pictures of cabinet size are to be found as usual in Gallery IX. We can merely glance rapidly at a few. W. P. Frith's clever picture of the painter's studio, entitled "A New Model," depicts a girl introduced by letter to the artist, who sits in his chair, and is attentively looking at the young maiden as he holds the letter of his friend before him. Haynes King's "Fisher Girl" (742) is a clever figure-study; "Art Wins the Heart," by Paul Thumann, is refined and delicate in colour; J. S. Noble's dog puzzled by lobsters (733) is humorous; Val Davis has a pearly-toned landscape (761). Laura T. Alma-Tadema's "Hush-a-Bye" (762), a baby being hushed to sleep in a cradle, is admirable in the management of the darkened interior, and the finish and accessories. Abraham Hulk (749), John Brett

(763), G. O. Reid's "The New Laird" (776), S. Pike's "April Shower" (783), "Palmistry" (796); the minute and dainty interior, "The Finishing Touch," by Jessica Hayllar (819); Ettore Tito's delicately-toned figure study subject, "A Morning Toilet"; and seascapes by Colin Hunter (835), full of fresh, strong colour, and John Fraser, J. MacWhirter's "Temple of Girgenti, Sicily" (863) are others repaying examination.

The principal subject in Gallery X. is Arthur Hacker's picture of "The Annunciation," a composition conceived in a reverential spirit, and worthy of the painter's power in depicting subtilised form. In his beautiful "Syrinx" the painter has given us a poetic ideal; the undraped figure standing amid waving reeds, whose tone is repeated in the flesh tints, is extremely graceful. In the "Annunciation" the painter has spiritualised the beatific figure of the Virgin Mary, who, clothed in a white, diaphanous veil which falls in straight folds round her, stands near a well; Gabriel, in the form of a hovering angel, is behind her, holding in one hand a lily. The Virgin's face has a seraphic sweetness of expression, her large blue eyes being full of tenderness and beauty. Her hands are crossed over her bosom as if in adoration. The subtle handling of face and drapery lighted up by a gleam of light, and the whole delicate tones of the colouring in white, blue, and grey, are in harmony with the subject, which is at once etherealised and radiant. Near it G. E. Hicks, in "Given Back," paints a bedside; on it lies a pale young lady, and at the foot of the bed sits her lover. Gwilt Jolley's "Consolatrix Afflictorum" (923) is a large mournful and touching subject, and below J. W. Waterhouse gives the story of "Danaë" (924), where the daughter of the King of Argos and her child (Perseus) are stranded on an island in the chest which was cast into the sea by her father, and are rescued by Dictys—a subject also depicted by Mr. Batten in the New Gallery. The myth is powerfully painted by Mr. Waterhouse; the chest, in which are the mother and child, is painted with archæological knowledge, while the strong colouring is appropriate to the legendary scene. Walter Langley's "Sunlight and Shadow" (939), David Murray's large luminous picture "The White Heat" (919), R. W. A. Rouse's "Pasture Land," and a large lugubrious canvas by F. Morley Fletcher, "The Shadow of Death" (960), the real meaning of which is not very clear, are important pictures. W. Dendy Sadler's "Scandal and Tea" (946)—three elderly ladies enjoying a gossip at a tea table—is inimitable in its quiet humour. The costumes and details are of the Georgian epoch.

Gallery XI. contains several pictures of interest, but we can look only at a few. A very pleasing *genre* subject is by Mildred Hancock. "Tell Me what it's all about" represents a pretty little child seated on a yellow silk cushion in the corner of an old-fashioned dark oak chair with picture-book in hand, evidently delighted with its coloured pages, but anxious to learn something about the story. This simple study of child life Miss Mildred Hancock paints with dainty grace. The grey frock and pinafore of the little girl against the dark carved back of chair, the light terracotta screen, and the blue vase by the side, make a delightful harmony of colour. The picture is hung too high to be properly appreciated. H. H. La Thangue's "After the Gale," is a large, brilliant picture of a boat's crew bringing home a sailor who has met with an accident, his head bandaged. Norman Garstin has two very cleverly-painted subjects, "Her Signal," an old lady fallen asleep in her chair while her maid makes a signal at the window to her young man, the lamplight effect being well painted, and "The Cotillon" (971), a children's dance, also a very pleasing interior. Two good portraits, one by Arthur S. Cope of the painter John Pettie, R.A., in his studio, and another of Mrs. St. Clair Grimwood, by J. Hanson Walker (976), are hung; a third, a portrait of R. Norman Shaw, R.A., is placed rather high. Herbert Schmalz's large subject, "The Daughters of Judah in their Captivity in Babylon" (983), is a work of powerful and touching interest worthy of the master; and we must not forget to notice S. Melton Fisher's large canvas, "A Summer Night" (1,023), a Venetian *al fresco* entertainment, in which the moonlight and Chinese lantern reflection on the young ladies and their companions are very dexterously painted; and the wonderfully clever and humorous piece of realistic *genre*, "The Result of High Living" (1,041), by F. Hall, a country veterinary making up medicine for a pampered spaniel. The light and reflection, and the bottles and accessories of the old doctor's shop, are marvellously true to nature.

THE SOCIETY OF ARCHITECTS.

THE eleventh ordinary meeting for the present session was held at St. James's Hall, Piccadilly, on Tuesday evening, the President, Mr. W. H. Seth-Smith, F.R.I.B.A., in the chair. The nominations of officers and council for next year were read, the name of Mr. Robert Walker, of Cork, past president, being proposed for the presidential chair, and Messrs. Ernest Day, of Worcester, and Edwin James Hamilton, of Brighton, for the vice-chairs.

MONUMENTAL BRASSES.

The Rev. J. E. Field, vicar of Benson, near Wallingford, read a paper on this subject, illustrated by a splendid collection of rubbings, covering the whole of the walls of the room. The special interest of monumental brasses consists, he remarked, partly in the monuments themselves, and partly in the ease with which accurate copies of them can be made. For about two centuries or more the great majority of our sepulchral monuments were brasses. We have sculptured effigies, and incised stones, and memorials in coloured glass, and sometimes painted panels of wood; but from the middle of the 14th century to the latter part of the 16th, the incised brasses far outnumber all of these together. As a general rule, too, the brasses are dated, or their date can be ascertained from contemporary records; while at the same time we see that the art of engraving them moves on in a continuous progress, so that we can hardly ascertain by comparison the dates of those which do not speak for themselves, or even of those which bear a date entirely different from the period to which they belong. As an instance of this I may notice, the author continued, the only example of a brass commemorating an English king. It is a demifigure of St. Ethelred the Martyr in Wimborne Minster. It bears the date of 873, but the inscription in which this date is recorded is a rude piece of work belonging obviously to the 17th or 18th century. The costume is an ermine tippet over a flowing mantle, together with a crown and sceptre; but all this is unique among brasses, and therefore will not help us to fix the date. There remains only the style of engraving to guide us, and by this an experienced eye can see at once that the effigy, and the shield bearing the cross below it, belong to the second quarter of the 17th century. We may compare, for example, a building which we know to have been founded in the Saxon period, but which contains windows or other features evidently of Tudor date, and in which these features prove on examination to be made up from Decorated work. When, therefore, we bear in mind how much light the brasses throw upon the various branches of our history, and upon every kind of archæological study during the period which they cover, their large numbers and the accuracy with which they can be dated, combine to give them a special value of their own. The value is immensely increased by the ease with which copies can be made, copies which often exhibit the lines of engraving more clearly than the actual monument does; and further, by means of such copies the various brasses of a given district can be collected together, or those from different localities can be set side by side for comparison or illustration. Something should be said, in passing, about the most useful mode of copying. Presuming that the copies are wanted for historical and antiquarian purposes, and not as ornamental pictures —a point of view from which they will never be satisfactory—nothing serves so well as a rubbing made with black heelball on fairly stout white paper. The rubbing should be black to be effective; but not too black, lest the finer lines be obliterated; and for worn brasses a good grey rubbing is preferable. In a few rare instances the original enamel fills up some of the lines of the engraving, and in many the enamel has been renewed; in which cases a faint rubbing on thin paper is all that can be obtained. The use of bronzed heelball on black paper can scarcely be considered successful. It is not desirable to mount the rubbings unless they are small enough to be kept flat in portfolios. We possess in England about 8,500 brasses, counting those that have an effigy or some other device, and not counting those (perhaps about the same number) which consist only of inscriptions and heraldic shields. Three and a fragment, to be noticed presently, belong to the last quarter of the 13th century, and there is an uninterrupted series until about the middle of the 17th century, after which a rare example occurs here and there down to the latter part of the 18th. Thus they illustrate, more or less perfectly, a complete period of five centuries of our history. A tolerably complete list was compiled by Mr. Haines for his standard work upon the subject, published in 1861, but many more have come to light in the subsequent 30 years. Something less than 200 brasses are known to exist on the Continent of Europe, and these are chiefly in Belgium and the adjacent countries. Mr. Corring's valuable work upon them gives reduced *facsimiles* of eighty. The majority appear to be brasses of large size and good character. One only is of earlier date than the earliest English brass—viz., that of Yeo Wilpe, Bishop of Verden, in St. Andrew's Church, at Verden, in Hanover. He died in 1231. The great number of small brasses which we find scattered up and down England is a peculiarity of this country, to which no Continental country affords a parallel. The manner in which our English brasses are distributed should be observed. They are found in the largest numbers in the south-east, and gradually become less numerous to the west and the north. Kent has far more than any other county—about 340. Norfolk stands second with 280; Essex third with 260. The adjoining counties have each from about 100 to 200. In the south-west, Devon and Cornwall have each about 50. In the north, Cumberland has five, Westmoreland two, Northumberland one and two fragments (not counting mere inscriptions). Only three brasses appear to be known in Scotland, and the same number in Ireland, all being mural brasses of late date; and there are about 17 in Wales. This distribution is to be explained in two ways. First, the brasses are most numerous in the districts where the chief wealth of the country lay. Secondly, the plates of metal during all the earlier period were probably made in Flanders, and therefore were more freely used in the districts to which they were directly imported. There are peculiarities in different counties which show that a prevailing fashion was commonly followed. Thus, for example, in Norfolk we have an immense number of small inscriptions of the 15th and 16th centuries, without effigies, far in excess of the numbers that we find in any other county. A very complete list of all has lately been edited by the Rev. Edmund Farrer. Again, in some counties we have a very large proportion of the finer class of brasses, with figures of good size, or with canopies, as in Lincolnshire, Cambridgeshire, and Sussex; but in Buckinghamshire, on the other hand, where there are about 200 brasses, those of the finest class may be counted upon the fingers. Some few of our finest brasses are quite unlike contemporary English work, and exactly resemble the foreign brasses; whence we infer that they were not only manufactured but also engraved abroad. The largest are two at King's Lynn, one at St. Alban's Abbey, and one at Newark, all of the 14th century. Other fine examples are at All Saints', Newcastle-on-Tyne; at Wensley and Topcliffe, in Yorkshire; at Aveley, in Essex; all late in the 14th, or early in the 15th, centuries. Good Flemish examples of the 16th century are at St. Mary Quay, Ipswich, at All Hallows, Barking, London, and at Fulham. On the other hand, there is one instance of an English brass on the Continent. It is to Robert Hallum, Bishop of Salisbury, who died while attending the Council of Constance in 1416, and was buried in the cathedral there. There is a characteristic boldness in the earlier brasses for which the careful and artistic engraving of later times is hardly a sufficient compensation ; but, on the whole, the art seems to attain its greatest perfection after the beginning of the 15th century. At this period the lines are delicately drawn, and a little cross shading begins to be introduced; but, on the other hand, there is perhaps less originality, the brasses conform more generally to a common pattern, and the dignity of the 14th-century figures is disappearing. After the middle of the 15th century there is a distinct falling off, the cross shading is greatly overdone, much coarse work is perpetrated, and the general effect is vulgarised. The ordinary little brass of Henry the Eighth's reign, a civilian and wife, about 15in. high, with an inscription beneath them, and a group of boys below the man, and a group of girls below the woman, is a very tasteless thing, and exists by scores, if not by hundreds. Sometimes the groups of children had evidently been prepared beforehand, in long rows, from which the required number was cut off, and you may see now and then a part of the next effigy which should have been cut away. But common as such brasses are, they are not too common to be worth preserving, and the artist often rises to better things even through the worst period. Afterwards, in Elizabeth's reign, there is distinct improvement. If the design is not more tasteful, the work generally is more careful and more original. After the reign of James I. brasses become rare, and considerable care is often shown in their execution. In the 18th century we seldom find anything more than a small skeleton, or a death's head and cross bones, added to the inscription. Such brasses are very common in Cheshire and Shropshire. But the brasses of Benjamin and Philadelphia Greenwood, at St. Mary Cray in Kent, dated respectively 1773 and 1747, are notable exceptions, showing a praiseworthy attempt to follow upon the old lines. There is a conventional style of engraving which generally prevails through the chief part of the period to which the brasses belong, but work of an exceptional character is met with always; and East Anglia in particular has a peculiar type of brass through the latter part of the 15th century, and most of the 16th, existing side by side with the conventional type, and evidently the work of local artists. The older brasses are engraved upon plates of substantial thickness. The material is technically known as latten, and appears to be composed of about two-thirds copper and one-third zinc. Rivets, ¾in. in length, with knobs at the lower end, were fixed into the plates and carefully levelled down upon the surface so as to be scarcely visible. The outline of the plates would then be traced upon the slab, and shallow depressions were cut out so that the surface of the plates might lie flush with the surface of the stone. In these depressions deeper cavities were cut, corresponding with the rivets, and little channels were drawn from the edges to these cavities, all running in the same direction, so that when the brass with its rivets was in place, and the slab tilted on one side, molten lead could be poured from the edge of the plates down the channels to fix the knobs of the rivets securely in the cavities of the stone. The plates were also laid in a bed of pitch, which would expand and contract with them, and so tend to prevent them from becoming loosened by changes of the atmosphere. But the late brasses are commonly engraved on thin plates, and these are often fastened to the stone with nails or rivets having enlarged heads, sometimes of an ornamental character. The commonest type of brass is, of course, the simple figure or figures with an inscription below. Half effigies also occur at all periods. In the earliest examples the inscription incloses the figure, running round the margin of the slab. The introduction of a canopy over the figure also appears from the first ; and many fine brasses have small effigies introduced in the sides of the canopy, and rich symbolical designs in the head of it. The little figure of a saint, the sole relic of the brass of Bishop Cantilupe in Hereford Cathedral, 1282, is the earliest piece of work of this kind. Occasionally the effigy is raised upon a bracket, either with or without a canopy above, and, again, it is sometimes inclosed within a floriated cross, which thus serves both for bracket and canopy in one. The four symbols of the evangelists often appear at the corners of the slab, either with or without a marginal inscription. Towards the close of the 14th century kneeling figures begin to appear, having generally in the earlier brasses a bracket between them carrying a representation of the Holy Trinity, or of the Blessed Virgin with the Divine Infant. Early in the 15th century figures of the children are introduced, either beside or below the principal figures. Most of the Flemish brasses, both in England and on the Continent, are composed of a series of quadrangular plates covering the whole stone, all the background between the figures and the canopy being filled in with ornament. The use of a single quadrangular plate in English brasses begins with the year 1475, and after the commencement of the 17th century it becomes the more usual form. It would be impossible now to enter very fully into the details of costume. The military effigies claim our attention first, because the majority of the earliest brasses is of this character, and there is an unbroken series down to the middle of the 17th century. The first is Sir John d'Aubronoun, at Stoke d'Abernon in Surrey, 1277 ; the second Sir Roger de Trumpington, at Trumpington, near Cambridge, 1289. These earliest knights wear complete chain mail, with the exception of knee-pieces, of ornamental leather, which had been newly introduced at this time. They wear a sleeveless surcoat over the armour, and they carry a shield over the left arm. The second of them is cross-legged, as are also five others of the next period. It seems uncertain whether this necessarily indicates that they took part in the crusades. Very similar to these are the figures of Sir Robert de Bures at Acton in Suffolk, 1302, and Sir Robert de Setvans at Chartham, Kent, 1306, and also two very interesting demi-figures in Lincolnshire, at Croft and at Burlingthorp. A series of eight more knights, making fourteen in all, will bring us down to the middle of the 14th century. They show the gradual introduction of plate armour in preference to the chain mail. First there are a knight of the Bacon family at Gorleston, Suffolk, and one of the Fitzralph family at Pebmarsh, Essex, both probably of about the year 1320. Then there is the second Sir John d'Aubronoun at Stoke d'Abernon, 1327, and the precisely similar effigy of Sir John de Crehe at Westerley Waterless in Cambridgeshire. The figure of Sir John de Northwode at Minster in Sheppey comes next, but part of it is a restoration. The headless figure at Bowers Gifford, Essex, is said to be Sir John Giffard, who died in 1348, but it has characteristics of an earlier date. The little figure in a mutilated cross at Wimbish, Essex, is Sir John de Wantone, 1347; and of the same year, 1347, is the beautiful brass of Sir Hugh Hastings at Elsing, Norfolk, with St. George and the Dragon in the central circle of the canopy, and King Edward III. and several leading nobles of the day as weepers in the niches at each side, thus affording a group of several illustrations of the armour of this date. Fortunately the British Museum possesses an impression of this brass taken at a time when the effigy was still perfect and the canopy much less mutilated than now. The plate armour gradually supersedes the chain mail until at the close of the 14th century the latter is only worn round the neck, and after 1410 it disappears altogether. A very noticeable feature in the middle of the 15th century is the enlarged elbow-pieces, of which the most exaggerated instance is that of Thomas Quatremain's at Thane in Oxfordshire, about 1460. At the close of the century we find the chain mail reappearing, and a skirt of mail becomes a constant feature of the armour. At almost every period an heraldic surcoat or tabard is occasionally worn over the armour. In the reign of Elizabeth the chain mail is again discarded, and in that of Charles I. the heavy jack-boots are a distinguishing feature. The only brass of a man in civilian's dress belonging certainly to the earlier part of the 14th century is the little demi-figure in a cross for John de Bladigdone at East Wickham, Kent. The earliest of larger size are in the Flemish brasses of the middle of the 15th century at King's Lynn and Newark. A series of twenty-four brasses of judges in their judicial costume, from the year 1400 to 1498, is enumerated by Mr. Haines. That of Sir John Cottusmore at Brightwell Baldwin, Oxon, in judge's coif and mantle is one of the best examples. Its date is 1439. It is a good instance of the same persons being commemorated upon two brasses in the same church, and the kneeling mural effigies are an early example of that form of brass, and are beautifully engraved with minute care. The recumbent brass also affords an early instance of the addition of the children's effigies. The mantle of a peer may be seen in the brass of Ralph, Lord Cromwell, 1455, at Tattersall, Lincolnshire; and the mantle of a Knight of the Garter in that of Sir Thomas Bullen, the father of Queen Anne Boleyn, 1538, at Hever, Kent. Ecclesiastics are most commonly represented in their eucharistic vestments. The earliest is of the commencement of the 14th century, in Merton College Chapel. It is merely a head upon a floriated cross. Perhaps the earliest full effigy now existing is that contained within a cross at Woodchurch, Kent. Of the processional vestments, or cope, commonly worn by dignitaries of the Church, we have many fine examples, from the close of the 14th century down to Thomas Magnus, archdeacon of the East Riding, 1550, at Sessay in Yorkshire. The fur amyss, commonly worn under the cope, often appears without it. A good late one is seen at Christ Church, Oxford, 1557. Ecclesiastics in academic gowns are not infrequently met with. A fine example with bracket and canopy, perhaps about 1420, is at Merton College, Oxford. Sometimes a canonical habit is worn, as in a few brasses of canons of Windsor, which wear the mantle of the Garter with the badge of the Order on the breast, the earliest instance being a very interesting headless figure of the 14th century at Northstoke, Oxon. The mantle of an Augustinian canon is worn by Abbot Bewfforeste at Dorchester, Oxon, about 1510. About twenty brasses of bishops and mitred abbots exist, beginning with William de Grenefeld, Archbishop of York, 1315, in York Minster, and ending with Samuel Harsnelt, Archbishop of York, 1631, at Chigwell, Essex. Most of these are in eucharistic vestments, but the last is in a cope. Like those of earlier date he has the mitre and crozier. No brass of an Archbishop of Canterbury exists, but it is interesting to find Archbishop Warham appearing in a priest's habit in the group of sons of Robert and Elizabeth Warham, 1487, at Church Oakley in Hampshire. The examples of female costume commence with that of Dame Jone de Kobeham, 1298, at Cobham, Kent. Sometimes separately and sometimes with the husband or the father, the brasses of ladies are to be found in large numbers until the middle of the 17th century. Shrouded figures and skeletons, sometimes of a very ghastly character, are to be met with occasionally from the middle of the 15th century. Crosses, which are commonly combined with effigies or heads, are sometimes found alone. There are good examples of different periods at Cassington, Oxon, 1414, and Eversley, Hants, 1502. A chalice with an inscription forms a frequent memorial of a priest in Norfolk, and is sometimes found in other counties. Another common emblem is a heart with scrolls bearing the text, "I know that my Redeemer liveth," &c. Designs which commonly form parts of the canopy work of large brasses are sometimes found by themselves. Thus, at Fovant, Wilts, there is a beautiful plate of the Annunciation, and at Week, Hants, is St. Christopher bearing the Infant Saviour. At Chelsfield, Kent, a crucifix with the figures of the Blessed Virgin and St. John was the memorial of the rector, Robert de Brun, 1417. And at Checkendon in Oxfordshire, of about the same period or later, we have a representation of the soul borne by angels, for Walter Beauchamp. At Bexley in Kent, also of this date, there is a hunting-horn with a shield, probably commemorating a person who held his lands under cornage tenure. An incident in the person's life is sometimes recorded as a subsidiary part of the design. Thus in the great Flemish brass of Robert Braunche at Lynn, 1364, we have the Peacock Feast in which he, as Mayor of Lynn, entertained the King and the Black Prince, and these, with four other crowned heads, are represented at the table with him. At Salisbury the splendid brass of Bishop Wyvil, 1375, represents him looking from his castle while his champion is going out of the gate, and rabbits are disporting themselves upon the ground in front, in allusion to a contest in which the bishop recovered for his see the chase of De la Bere, of which the Earl of Salisbury had taken possession. A late example of a pictorial brass is at Winkfield, Berks, 1630, where Thomas Mountague, Yeoman of the Guard, is distributing bread to the poor. The custom of representing the founder of a church with a model of it in his hands should be noted here, the best example being that of Sir John de Cobham, at Cobham in Kent, engraved about 1367. The form of the inscriptions may be noted briefly. At first they are in Lombardic capitals, separately inlaid. Though the only examples in which the brass letters remain are two—in Westminster Abbey and at Hornchurch, Essex—yet such inscriptions are often clearly legible in the outlines. Early in the 14th century border fillets were introduced, as at Stoke d'Abernon, 1327, and then the capitals soon gave place to small letters, and the inscription began to be placed at the foot of the figure. In the 16th century Roman capitals appear; an early instance being seen in Sir Thomas Bullen's brass at Hever, 1538. Latin inscriptions are common at all times. Norman-French is the alternative until the beginning of the 15th century. English first appears just before the French disappears. Palimpsests, or brasses engraved a second time, are of two classes. A fine instance in which the plate is reversed is on the brass of an unknown lady of the middle of the 14th century at Clifton Campville in Staffordshire; on the back of which appears the central portion of an effigy precisely like the earliest knights, about 1300. Presumably the figure had been discarded before it was completed. Such examples are more common after the dissolution of the religious houses. At St. Lawrence's, Reading, we have the brass of Walter Barton, 1538. It was observed by Mr. Keny, the author of the history of that parish, that the letters were partly cut through the brass, and he inferred that there was engraving on the reverse. This proved to be the inscription, and parts of the effigy in heraldic tabard, of Sir John Popham, who was buried in the Charterhouse, 1463, and that house had been dissolved the year before Walter Barton died. It appeared that the slab also was Sir John Popham's, for though the stone had been worked down, the bottoms of several rivet-holes are still to be seen, and these exactly correspond with a canopied brass of the character indicated by the remains of the Popham effigy. The plates are now carefully fixed in brass frames upon hinges, so that both sides can be examined. A palimpsest of different character exists at Waterpery, Oxon, in the brass of Walter Curzon, Esquire, and Isabell, his wife, 1527. The upper half of the lady and the head and shoulders of the man are of this date; but the remaining parts of the effigies are of the middle of the preceding century. The folds of the lady's dress and the dog at her feet are of the earlier date; but all the cross-shading, and the pomander suspended upon a chain, are of the later date. In the male effigy the skirt of plate has been altered to chain mail, the pointed toes have been rounded, and other changes have been made to transform the character of the armour. The inscription has been found to be reversed; but I do not find that the under side has ever been examined. In some cases effigies have remained unaltered, while a new inscription has appropriated them to persons of later date. The destruction of brasses through religious bigotry at the Rebellion was, of course, enormous, and the carelessness of later times, and occasionally wilful robbery, have destroyed many more. I must mention a valuable instance of recovery in the early knight at Bowers Gifford, which was given away when the church was rebuilt; and another at Methwold, Norfolk, where the effigy and canopy of Sir Adam de Clifton, 1367, were stolen and broken into small pieces in 1680, then recovered and put in the church chest, where they lay for about 170 years, until lately they have been carefully pinned to an elm slab, the original stone having been lost. A considerable number of very interesting brasses have been recovered for Hereford Cathedral, where much mischief was done in past times. The records relate that two tons of brasses from that church were sold to a brazier in 1786. Much culpable carelessness has been shown in modern restorations of churches, for which probably the incumbents were chiefly to blame. On one occasion when inquiring about a brass which had disappeared, I was told by the clerk that the man that did the organ had one bit, and the man that did the mats had another. At Washworth, in Northamptonshire, a zealous builder, in 1841, buried some valuable brasses, which neither architect nor incumbent troubled about, and these have lately been reinstated. Of the brasses which are known to have existed in England, but are lost, some are of much earlier date than any which remain. The first is that of Simon de Beauchamp, 1208, at St. Paul's, Bedford. Matrices and demi-figures of Bishops Bingham and York, 1246 and 1256, still exist at Salisbury. There was also a cross-legged effigy of Sir Gascelin de Marham at Peterborough, torn up little more than a century ago. The earliest full-sized effigy of a priest, of the beginning of the 14th century, with the head precisely like that at Merton College, was stolen in recent times. Rubbings fortunately exist and a reduced *facsimile* has been published. It is obvious that unless there are strong reasons for its removal the original place of an old monument is the proper place. Happily the bad taste which would tear them up and set them upon the walls, where they are ugly disfigurements, in order that the floor may be resplendent with encaustic tiles, has now passed away. So has the evil habit of collecting them in a corner where very often an organ has been erected over them. At the same time it is sometimes advisable to remove them from a position in which they are much trodden and cannot be well protected, and in very small churches their removal to the walls is sometimes almost a necessity. If the stone is much decayed, it is best that the brass should be relaid in the old way. A moderate amount of cleaning will make it at least as ornamental as new tiles, and the antiquarian who objects to the reproduction of lost portions is unreasonable. We have begun to understand that the antiquity of our churches has a value of its own, closely connected with the special purpose for which they exist; and we have found out that true restoration is something better than the wholesale renovation which was lately fashionable. As we deal with the fabrics of our churches so we should deal with their sepulchral memorials; let there be careful preservation always, judicious restoration where possible, barbarous destruction never.

Mr. William Stephenson, secretary of the Surrey Archæological Society, proposed a vote of thanks to Mr. Field for his interesting and splendidly-illustrated paper. Mr. E. J. Hamilton, V.P., in seconding the motion, suggested that the Society of Architects should help to preserve memorial brasses wherever destruction appeared to be imminent. The motion was supported by Messrs. C. T. Davis and Edgar Farman, hon. secretary, and was carried unanimously.

THE ARMOURERS' AND BRASIERS' EXHIBITION.

THE third exhibition of works in metal has this week been on view in the Hall of the Company of Armourers and Brasiers, in Coleman-street, City, and Messrs. Alfred Gilbert, A.R A., and Herbert Singer, of Frome, have again acted as judges in awarding the numerous money prizes offered by the Master and his *confrères*. The two previous collections of craftsmanship thus brought together have each in turn been excellent, and although the present gathering is not so numerous, nor are the loan exhibits so many, we can, on the whole, agree with the promoters in their opinion that for quality of execution and technical ability the work shown is of a higher standard, and marks an appreciable development on past endeavours. This, no doubt, is satisfactory to the Company, who seem to have spared no care to render the undertaking a practical success, and, what is more, the result so far has justified the means.

In transcribing our notes descriptive of the exhibition, we will, for convenience sake, follow the catalogue, mentioning the prize winners as we pass on should their productions appear to call for particular notice. In hammered hollow-ware, the Lyzwick Hall Art School, Keswick, are well represented, as in Class C, by Mr. J. W. Oddie's beaker with cover, done in copper. Messrs. Mackmurdo and Rathbone show a capital copper and brass hall lantern, made by Mr. Alfred Hughes in the shops of Messrs. Cox, Sons, Buckley, and Co., with a circular massively-treated frame, having copper coves and perforated panels somewhat novel in general treatment. The same designers are less happy in the big copper pedestal lamp, with its baluster-like standard, looking more like wood in treatment (some of the parts are in ebonised wood), and rising from a flange wrought base, reminding one of a gland on the top of a steam-engine cylinder, which for drawing-room use would be entirely out of place. The first prize of £10 in this same class was awarded to Messrs. Strode and Co. for an electric pear-shaped lamp, designed by Mr. C. H. Mason, and wrought in dull-finished brass by Mr. W. T. Dimmock. This very elegant exhibit is exceedingly well detailed with delicate, saw-pierced perforations well adapted to brass, and the panels are fitted with horn-matted glass, bent to the circular form of the lantern. The terminal pendant below, though pretty in itself, suggests more the shape of a stop-cock handle, which, in an electric lamp, is hardly wanted. The alternative of gas, however, is provided for. In Class D, devoted to repoussé or embossing works, the exhibition is, if anything, richer than before. Mr. Alfred E. Lewis takes an extra prize of £3 for a copper finger-plate, which has a well-designed figure of a mermaid intertwining its tail with seaweed cleverly arranged to fill the angular spaces. Another extra prize is awarded to Messrs. Cox, Sons, Buckley, and Co. for a copper altar-cross of somewhat unusual character, designed by Mr. R. L. B. Rathbone, after the Spanish type. The cross has deep flanges on the rim projecting from the face, inclosing panels of vine in repoussé work, and in the centre of the cross is an octagonal panel with the sacred monogram introduced. The base is moulded somewhat massively. A pair of large, beaten-work candlesticks, also in copper, are shown with the cross, but clearly are not intended to go with it. The same firm take a similar special prize for a boldly-treated table lamp, having an inclosing frame elaborated with pierced panels of massive foliations, the whole standing on shaped legs terminating in square-formed volutes, more severe in feeling than the rococo upper part. Mr. Arthur J. Harper is to be congratulated on his treatment of a finger-plate wrought with tulips arranged in a naturalesque manner, but with crisp forms and modelling essentially characteristic of beaten metal. The circular repoussé plaque from the Birmingham Jewellers' Technical School, by Mr. William Curtin, is worth naming, not so much for the boys in the centre of the dish as for the butterflies and flowers in the extremely well-done borders. The sisters of All Saints', Margaret-street, send a stiffly-designed vesica-shaped symbolic design in copper, made by Mr. F. T. A. Ulett, and we note also for its excellent execution a rose-water dish hard by, from the hand of Mr. W. Clough Davis, though the fluted edge hardly accords with the Italian-like foliations round the shield in the centre. Miss Edith E. Biddle sends a salver of admirable and quiet design having a running border of tulip-typed flowers and foliage, fashioned somewhat after a Moorish mode, at once conventional and yet sufficiently free. Another lady, Miss Maggie E. Harrison, of the Birmingham Municipal School of Art, takes a £5 prize for a circular dish beautifully beaten with bunches of filberts on a ground of exquisitely suggested continuations of the same group of foliage, skilfully blending the main ornament with the actual form of the dish itself. Mr. W. A. White obtains an equal prize for a copper pot, having a string of running ornament round the swell of the vessel similarly conceived, but hardly so effective as the other specimen. The Guild and School of Handicraft are proud, with good reason, of their pupil Mr. John Pearson, who wins a £10 prize for a pair of copper plates of big size. The first has boldly grouped fish, interspersed with foliage round the border, and two big ones stiffly grouped in the middle of the plaque, and decidedly striking in effect. An etched and repoussé mirror frame, by Mr. John A. Tidmus, of Birmingham, wins the first prize in Class F. The beaten-up flowers are delicate and pretty, though the figure drawing is hardly up to the mark. In a ribbon below runs the words "Heigh-ho—the Wind and the Rain," but the connection is not quite evident. Miss Violet M. Parker takes a third prize for her finger-plates of lacquered apple-blossom, and a £10 prize is given to Mr. Henry Ross for a table standard designed by Mr. Amor Fenn. There are shown a few examples of damascening and niello work, some of the cloisonné colouring being fairly good. The cored castings by Messrs. Verity and Sons are shown in Class K. The Lioness, sent by Messrs. Broad and Son, from the hand of Mr. H. Crow, is admirable for life-like character, and the cire perdue casting of a bust of Paderewski by Mr. G. F. Broad wins deservedly a £10 prize, for the head is powerful, artistic, and dashingly modelled. Several drawings of designs were shown, and some clay models for brass. Mr. Charles J. Allen in this class secured a prize of £10 for a door-knocker, to be made in brass. The three figures composed in the handle are particularly clever, and "Fortuna" is emblazoned on the ribbon. Mr. Amos Fenn takes the prize for the certificate design against fourteen other competitors. The prize designs from previous exhibitions are shown by the Company, and the Chiswick School of Arts and Crafts, Bedford Park, send some coffers and other works, in which beaten metal-work forms a conspicuous feature. The exhibition is now open to the public.

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WORKS IN PROGRESS AT ST. PAUL'S.

JUST now the side screens to the sanctuary at St. Paul's Cathedral are being finished in gilded brass and wrought iron, from the designs of Messrs. G. F. Bodley, A.R.A., and T. Garner, the architects of the new reredos and high altar. This work has been contrived so as to incorporate the original wrought-iron gates, by the Frenchman, Tijou, which for very many years have been stored away in the crypt, and some of the new panels have been made to match the old, which is of the most beautiful description. The wide and handsome brass pilasters, enriched with niches containing figures of the Apostles and Tribes of Israel, support a deep, massive brass frieze and cornice, thus forming a thoroughly architectural setting for the gates and panels of the screen inclosing the sacrarium. Over the cornice is a bold cresting of wrought iron, with standard candlesticks ranging between, carrying candles. The same idea was introduced by Sir Christopher Wren in the original gates, still *in situ*, to the Lady-chapel, where all the old cresting terminal flowers are fitted to hold tapers. We notice that in the Lady-chapel the stonework of the pilasters round the apse has been cut away, and a veneer of marble some 3in. or 4in. thick has been put up, giving exactly the same detail as in the original work. The limit of the scheme now in hand in the choir is confined to plain painting of the walls and architectural features in a cream stone colour, with the carvings and mouldings picked out in gold, though in the roof Mr. W. B. Richmond, R.A., is doing a series of mosaics. Unless these are very low in key, the cold colouring below will be decidedly out of scale and harmony with them. The whole cathedral unquestionably wants colour. Mr. W. E. F. Britten is busy on the spandrels of the dome, where Dr. Salviati is fixing the mosaics from this artist's cartoons, which follow the lines left by Stevens, the great sculptor.

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OBITUARY.

MR. BENJAMIN BRADSHAW, SEN., builder and contractor, of 2, St. Mary's-road, Leamington, was killed by being thrown out of his carriage, owing to the pony running away, on Wednesday week. Mr. Bradshaw was for a considerable period a member of the local board, was elected an Alderman on the borough being incorporated, was for seventeen years surveyor to the Leamington, Warwick, and South Warwickshire Permanent Benefit Building Society, for many years served as an Overseer of the Poor, and was a representative of Leamington on the Board of Guardians. From the humble position of a journeyman bricklayer, he became one of the best known builders in the town, his chief undertaking being the erection of the present Leamington College.

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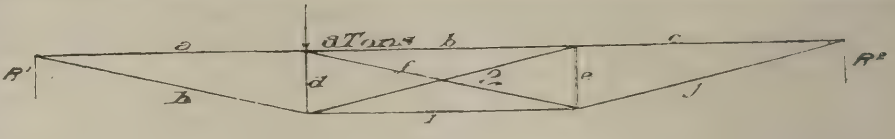
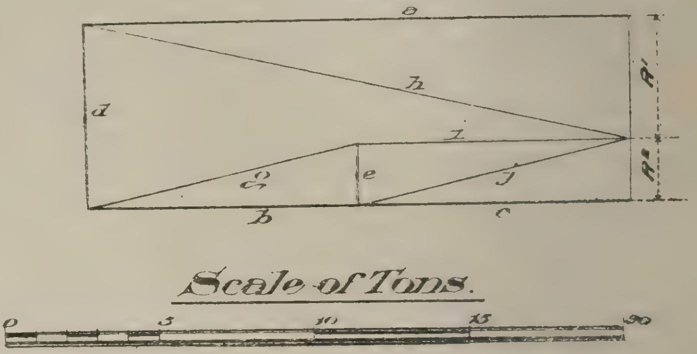
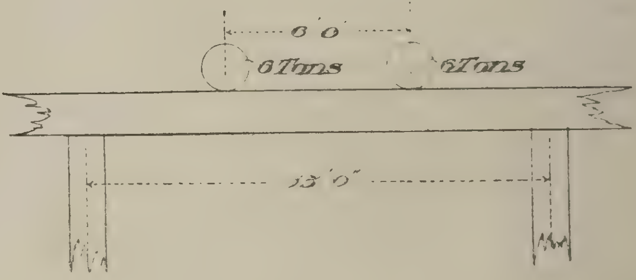
CONSTRUCTIONAL DRAWINGS.—III.

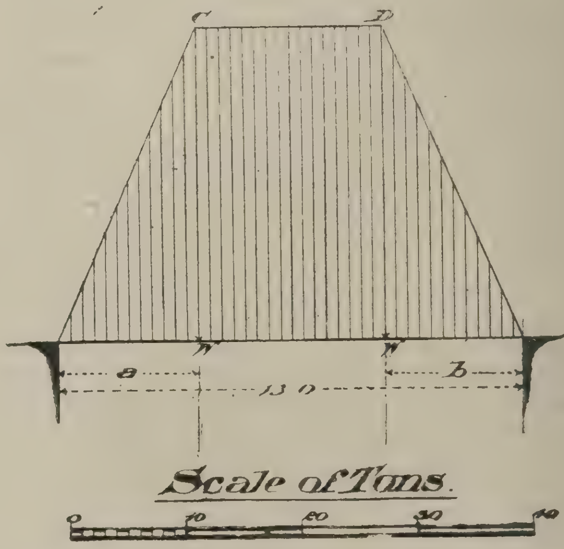
A TIMBER GANTRY.

(EXTRACT FROM SPECIFICATION.)









CEMENT CONCRETE.—The cement concrete shall be in the proportion of one to six, and composed of four parts of hard broken stone (to pass through a 2in. ring), one part of fine clean gravel free from sand, one part of clean sharp sand, and one part of Portland cement measured dry, the whole to be mixed with sufficient water from a fine rose, and turned over not less than five times, and when deposited in position to be beaten until compact and to the proper shape..

Cement.—The cement used shall be Portland of the best quality, weighing not less than 115lb. per imperial striked bushel, and ground so fine that the whole will pass through a sieve of 2,500 meshes per square inch without residue. The cement must also stand without breaking a tensile strain of 400lb. per square inch of sectional area of a test briquette after seven days immersion in water.

Timber.—The timber shall be of red Baltic pine, sound and free from sap, shakes, large, loose, or dead knots, or other defects. The whole of the timber shall be creosoted, and all timber below ground shall be charred.

Bolts, Straps, &c.—The bolts, straps, &c., to be made of the best scrap-iron; the bolts to be of the diameters figured on the drawing, and to have strong and clean threads cut upon them of uniform pitch; the heads, where necessary, to be countersunk.

Cast-iron Brackets.—The metal for the castings shall be of such a mixture of irons as is best adapted for the purpose, and shall be such that a bar 1in. square and 4ft. 6in. between the supports shall bear without fracture 550lb. in the centre. The castings, when cold, to be of the dimensions shown upon the drawing.

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New provision warehouses and offices have just been commenced to be built in Agle-road, Southampton. Mr. A. W. Galbraith is the architect, and Messrs. J. W. Roe and Co. are the contractors. The cost will be about £5,500.

The new Wesleyan chapel and school at Crediton were opened last week. The basement contains a schoolroom, three class-rooms, with entrance hall and offices. The chapel, on the principal floor above, will contain about 200 persons. The architect was Mr. James Crocker, F.R.I.B.A., Exeter, and the contract has been carried out by Messrs. Stephens and Son, Exeter. The cost of erection was £1,300.

CONTENTS.

Architectural Factions ... 657
Exhibition of Works in Wood ... 657
Pictures at the Royal Academy ... 658
The Society of Architects ... 659
The Armourers' and Brasiers' Exhibition ... 661
Works in Progress at St. Paul's ... 662
Obituary ... 662
Constructional Drawings.—III. ... 662
Our Illustrations ... 663
The BUILDING NEWS Directory ... xv.
Wayside Notes ... 682
Royal Academy: Architectural School ... 682
The Scientific Study of Timber ... 683
The Colonial Furniture of New England ... 684
The Architectural Association Soirée ... 684
Building Intelligence ... 685
Competitions ... 685
Correspondence ... 686
Intercommunication ... 686
Water Supply and Sanitary Matters ... 686
Stained Glass ... 686
Legal ... 687
Legal Intelligence ... 687
Our Office Table ... 687
Meetings for the Ensuing Week ... 687
Trade News ... 688
Tenders ... 688

ILLUSTRATIONS.

NEW MUNICIPAL BUILDINGS, BURY.—SEVENTEENTH-CENTURY NEW ENGLAND FURNITURE.—ARCHITECTURAL RENDERING IN PEN AND INK.—CLOTHING FACTORY AT LEEDS.—CHURCH OF ST. MICHAEL AND ALL ANGELS, NEWCASTLE-ON-TYNE.—A TIMBER GANTRY.

Our Illustrations.

NEW MUNICIPAL BUILDINGS, BURY.

WE give this week a perspective drawing of the selected design of these buildings now being exhibited at the Royal Academy. The view is taken from the north, showing both the Market-street and Haymarket-street frontages. A full description of the competition drawings will be found in the BUILDING NEWS, Sept. 18, 1891. The architect is Mr. A. N. Bromley, F.R.I.B.A., of Weekday Cross, Nottingham. In our review of architectural drawings at the Academy last week we stated that these buildings are now in course of erection. This is not the case, as nothing has yet been done. The site is at present occupied by the old and condemned markets, which cannot be pulled down until the new markets are built.

THE COLONIAL FURNITURE OF NEW ENGLAND.

(FOR description see page 684.)

"ARCHITECTURAL RENDERING IN PEN AND INK."

MR. D. A. GREGG, of Boston, U.S.A., who is an Englishman working in America, has just published the first two parts of a work on this subject, intended for the guidance of architectural draughtsmen.* The author's ability has gone far to establish an acknowledged reputation which alone can justify an attempt to teach others, and Mr. Gregg's thoroughness in the way in which he generally represents buildings, whether old or new, contrasts most favourably with the staccato style of drawing so dear to American draughtsmen, whose mannerism is copied more or less successfully for magazine illustrations in England. For architects, Mr. Gregg's type of work is much more useful and reliable, and the suggestions in his folios of copies now before us will be helpful to many a student looking out for reliable hints for pen-and-ink work. We have reproduced some of the examples, and subjoin the author's instructions. The second part of the work includes photographs, and each subject has outline guiding-sheets to practise on. The buildings represented are not always worth drawing at all, but failing better examples to delineate, they serve the instructor's object in enforcing his lessons just as well. The best specimens are obtained from Europe. These are Mr. Gregg's hints concerning the view of Farm Buildings, Normandy:—"For the near buildings and trees, use an Eastabrook Bank pen, No. 14; for the remainder of the drawing, a 303 Gillott pen. The difference in width of line gives the effect always existing — namely, sharpest contrasts of light and dark in the foreground. Fill in roof, *a*; also the outline of foliage at *b*, in the same manner as the tree at the left. Continue the shadow on near round tower, lightening it a little as it goes round. Do not add other rendering than that shown or suggested. The trees are introduced chiefly to fill up the large sky space; the birds also occupy an otherwise empty spot. The examples of roof rendering show various methods. If *d* be properly done, it is sometimes a good one, but is liable to become too spotty by the white spaces left between the ends of the lines. It is therefore not a safe method; *a* and *b* are better. If *c* is drawn slowly it is also good; if drawn swiftly the result is rather hard and unfeeling. Give emphasis at each end of all lines, as at d^{i}, and not as at e^{i}. In all shadows especially, the lower edge of the shadow should be thus defined by a pressure of the pen at the finish of the line. Occasionally, lines should have little or no such emphasis. Make every line in drawing a good one. Draw each line. Depth of colour may be obtained by drawing the lines close together, and if still deeper colour is desired by pressing the pen and so widening each line at the same time." For the sketch at Josselyn, France, he says:—"Complete the rendering on all surfaces except at *c*. Let the shadows be one even colour throughout. The roofs a little darker and on shaded side considerable darker. The scheme is one of gradation from the dark tree on the left, to the large light *b b*. Use long, unbroken lines for the roof, and in order to get the coarse texture that a tile roof requires, a 404 Gillott pen. The shadow should be softer, and so for that a 303 pen would be best. Let the outline of the building be as delicate as possible. Wherever you can, make the edge of the mass of rendering serve as outline. The pale shadow on the near part of the building and a dark effect in the distance, may seem to be contrary to previous advice. The explanation lies in the fact that the tree may be very dark in colour, and the building being a white one, the shadow, therefore, very light. The most important thought in light and shade composition can be given in two words—colour, massed; and the object of it all, in one word, repose." Concerning the building from Vitré, observe the following:—"The plan is to make the chimney *e* with the roof the dark part of the drawing. A pleasant effect will be produced also if shadow *f* is gradually lightened as it nears the ground. Let the shadow at end of building be graded from colour at *c* to that at *d*. Fill in the roofs, shadows, and side of house as begun. Draw a few exactly vertical pencil lines in principal shadow before inking in. A shadow might be made with diagonal lines, but if you assume to make them vertical they should be unquestionably so." The last subject is from "St. Marie aux Anglais." The instructions are:—"Complete the roofs, including the tower-roof, and shadows as begun: leave the walls and ground light. The tree is introduced to round up in the awkward open space above the low roof. Foliage drawing, so much feared, is not so difficult as imagined—that is, of a sort that does good service in an architectural drawing. The general form, and then the form in detail, are the important parts of the work. First of all, outline with a pencil the form including the light-holes that always appear near the edges of a mass of foliage. Ink in with a free swinging line, keeping outside edges well defined. In this drawing we have chosen to make the lower part of the tree at *a* the dark spot in the drawing." At *k* are some suggestions for foliage for tapering off a subject.

NEW CLOTH FACTORY, LEEDS.

THE dimensions of Hepworth's new factory, which consists of a basement and three floors, are 249ft. long by 114ft. wide, with a total floor area of considerably over 10,000yds. The façade of the structure fronts to Claypit-lane. The vestibule, paved in mosaic, leads on to the left to the general office, where the windows have insertions of cathedral glass, and the woodwork is of mahogany and pitch-pine. The main entrance on the ground floor is decorated with mosaic tiles. On the right side is a large buying-room, where all the representatives of the great manufacturers of English, Irish, and Scotch tweeds are generally interviewed; and on the left side is a waiting-room for these gentlemen, who naturally cannot be seen all at one time. Connected with it is a private staircase leading to each of the factory floors, a strong room, and a stationery room, besides private offices for the two members of the firm. At the Grove House-lane corner is the workpeople's entrance, with timekeeper's office. On the left side of the square comes the packing-room, to which the hoist descends. The stock-room adjoining has a length of 80yds. The architect was Mr. H. A. Cheers, of Twickenham.

ST. MICHAEL'S CHURCH, NEWCASTLE-ON-TYNE.

THE style of this church is Gothic of the Late Decorated period. The noticeable features of the exterior are the large windows filled with tracery, peculiar to that style. Every window is varied in design, and the octagonal lantern, with its eight windows, is surmounted with battlements and carved enrichments. The height of this is 80ft., and it is placed at the intersection of the nave and transept roofs. Few examples of these lanterns exist in England, but the same architects have adopted the feature in the church erected by them at Cambridge. In a niche rising from the top of the east window, and high up in the apex of the gable, is placed the sculptured representation of St. Michael in the act of expelling the evil spirit. The interior of the church is where the interest will be mostly centred for the elaborate fittings and decorations. Angels fill the windows and support and ornament the roofs. In the chancel they are represented holding the emblems of the Passion, or playing on musical instruments and singing as the heavenly choir. The screens and gallery front of the organ loft are very ornate works in oak tracery and carving. Angels fill the panels of the sanctuary roof, which is otherwise decorated with gold and colour, as are the walls of the chancel and chapels. Both north and south transepts, which terminate the aisles, are utilised as chapels, the organ being placed over an elaborate screen in the upper part of the south transept. The roofs of the church throughout are moulded and panelled at the height of 50ft., with cornices enriched with tracery and carving; these are pitch-pine. The lantern is open to the church, 73ft. above the level of the nave floor, and 80ft. externally, the windows being filled with grisaille glass, and the ceiling decorated with gold and colour. Placed high up under the pendentives of the octagon are sculptured figures of Pope Gregory, Saints Jerome, Augustine, and Ambrose, and, on account of their great height from the ground, they are considerably larger than life-size. The feature of the interior is the reredos at the east end. It occupies the whole width of the chancel and a great height of the wall. It is divided into 24 niches in two tiers of rich and intricate canopies; each niche containing a statue of a saint selected from the British Calendar, the great saints of the North Country being prominent amongst them. The frontal of the altar is a "Pieta," executed in mosaic on a gold ground, representing the burial of our Lord. The tabernacle is of hammered brass-work, the doors being enriched with enamels and jewels arranged in the device of the Cross of St. Michael. At the west end of the church an ante-chapel is formed by means of a wrought-iron grill or screen stretching across the whole width of nave and aisles. This rests on a surbase of carved and panelled oak work, with three gates admitting to the body of the church. The grill itself is of hammered ironwork. There are no lights in the nave of the church, the lighting being almost entirely from the aisles, where there are a series of pendent coronas. There are two sacristies, one above the other, with staircase leading also into the organ-chamber. The door of communication from the presbytery adjoining opens on to the staircase. The two principal windows of the church, the east and west, have been filled with stained glass. The Vanderstichele window is filled in its upper lights with representations of angels, figures of Our Blessed Lady and Child, the Sacred Heart, and St. Joseph; the lower lights consisting of angels and figures of St. John the Evangelist, St. Mary Magdalene, and St. Francis; this window is the work of Mr. Westlake, of London. The contractor is Mr. L. Gaby, of Gosforth. Mr. Richard Robinson has acted as clerk of the works. The total interior length of the church is 134ft. and the width 48ft., the seating accommodation being for about 700. The wood flooring, consisting of parquet oak wood blocks, is by the Acme Wood-paving Company, London. The church cost nearly £20,000. Messrs. Dunn, Hansom, and Dunn are the architects, and the drawing of the interior now reproduced is on view at the Royal Academy Exhibition.

CONSTRUCTIONAL DRAWINGS: A TIMBER GANTRY.

(SEE specification and further sketch on page 662.)

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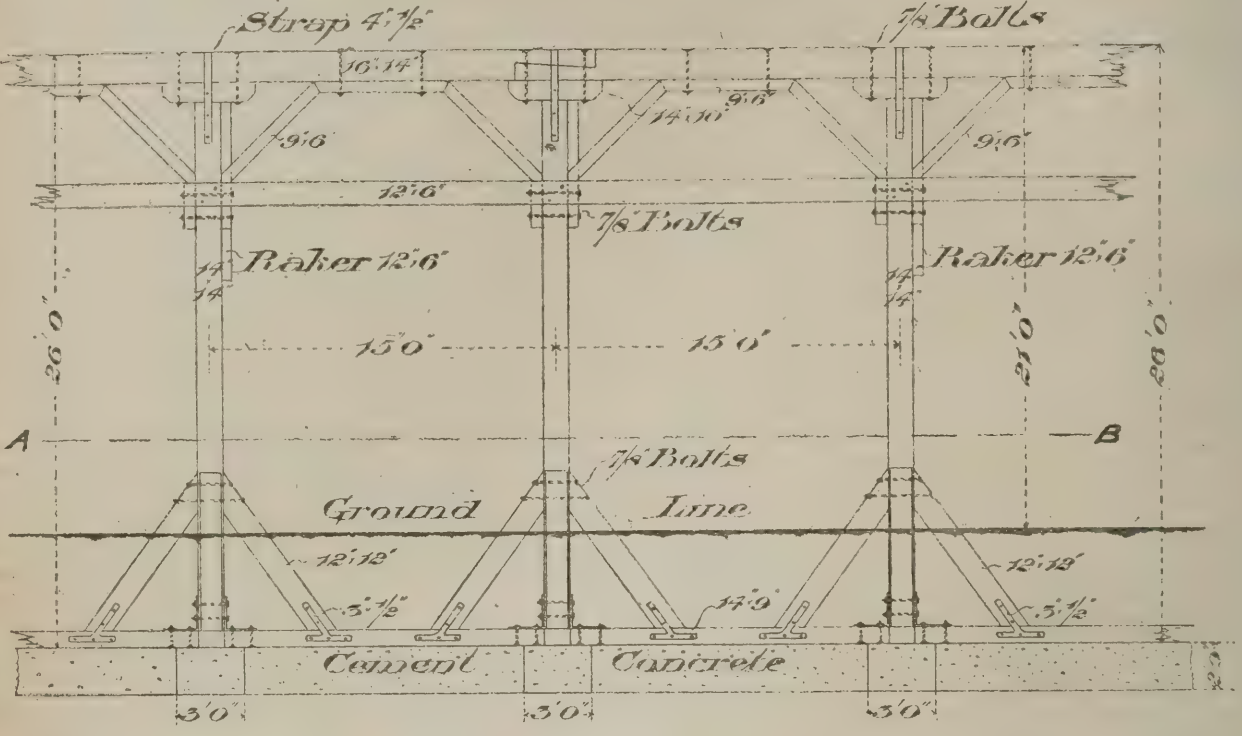
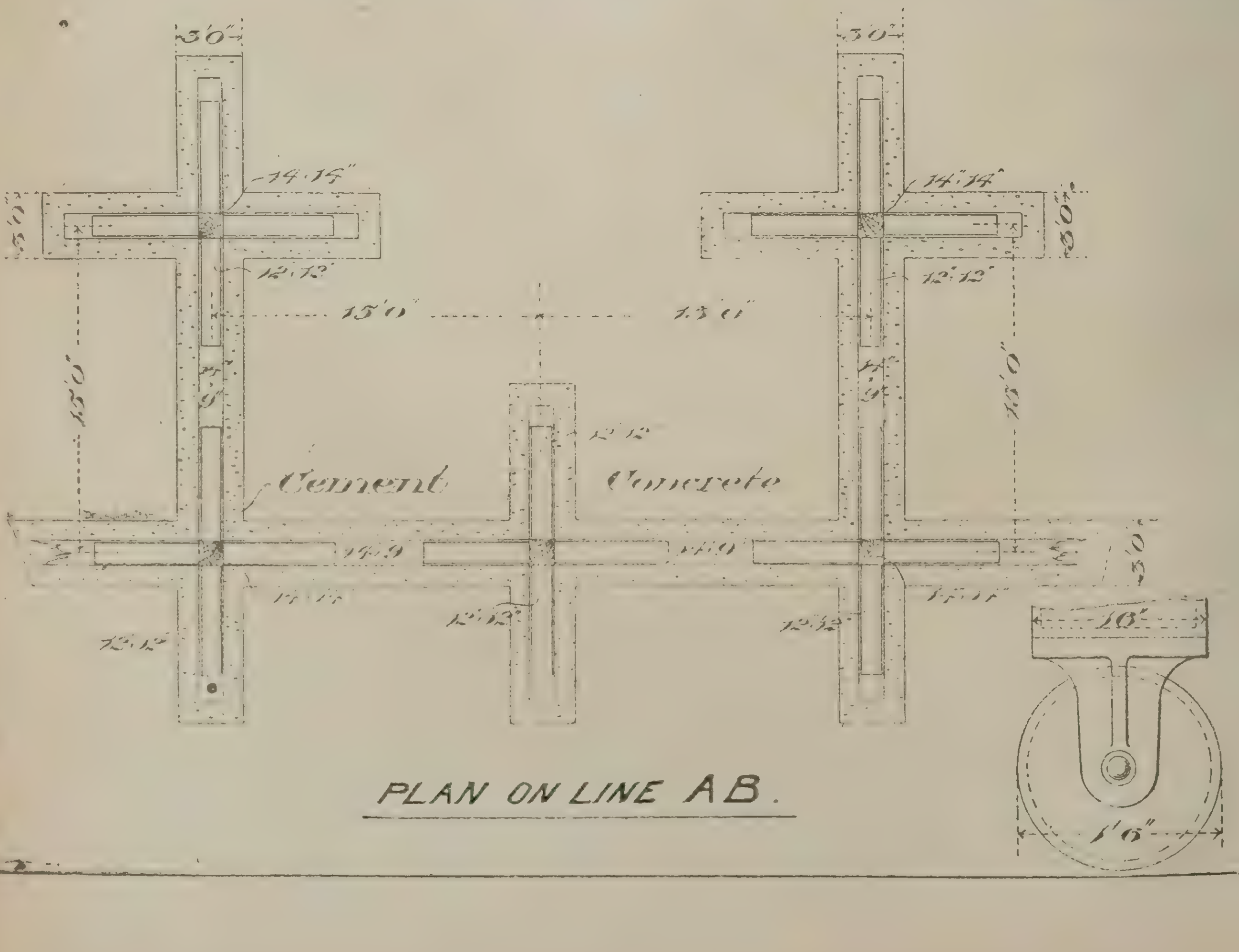
* Architectural Rendering in Pen and Ink. By D. A. GREGG, Boston, U.S.A. Ticknor and Co., 211, Tremont-street.

CONSTRUCTIONAL DRAWINGS - Nº 3 - DETAILS OF A TIMBER

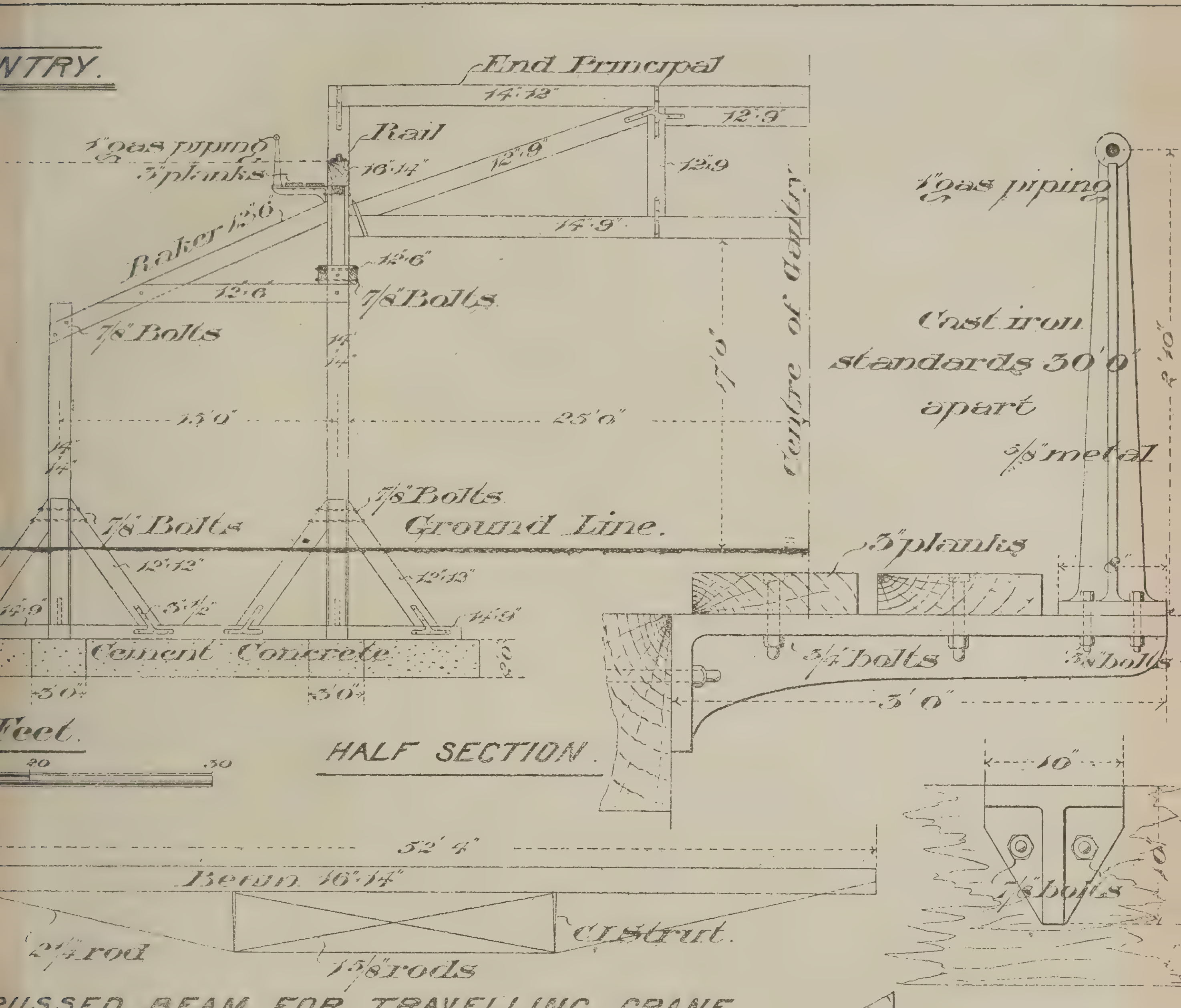


PART ELEVATION

Scale



PLAN ON LINE AB.



NTRY.

HALF SECTION.

C I BRACKET.

RUSSED BEAM FOR TRAVELLING CRANE

TAILS OF TRUSSED BEAM

Stuart H Davies del.

WAYSIDE NOTES.

THE free libraries movement, though it has flourished exceedingly in London parishes generally, has not yet found a footing at Marylebone. That district possesses two excellent libraries, one in Lisson-grove, and the other in Mortimer-street; but now the inhabitants have a mind to adopt the Free Libraries Act, and put the maintenance of these institutions upon the ratepayers. To which end a meeting was convened on Tuesday, and well-known men spoke in advocacy of the Act. It is, therefore, highly probable that Marylebone will shortly adopt the Act, and if not build new premises, at least improve the existing premises as far as possible. Those of a hopeful nature may think there will be a desire for a new building, and commence to sharpen their pencils in anticipation of a competition.

Rather a curious "recommendation" of the County Council's Parliamentary Committee suggests that not more than one electric or cable railway should be encouraged between the north and south of London. This is a narrow view of affairs, indeed. No wonder that Mr. Saunders's amendment—"that the suggestion that only one such line should be constructed north and south of London be omitted"—was adopted. The Council, as a body, does not love amendments; but this recommendation was too much for most of the members. It would be not a little interesting to know the reasons prompting the Parliamentary Committee in the preparation of their report. The mover of the amendment gave his reasons—and very sensible ones, too—"in order to relieve the congestion of population and to encourage building in the suburbs." It would be just as reasonable to recommend that there should be only one line of omnibuses or one tramway, as to limit the number of railways running in certain directions through London.

I see that the Tower Bridge is now joined about the middle, or appears so to be from London Bridge. The engineers should feel a little bit relieved. Though there was always doubtless a great margin of strength, the appearance was anything but substantial, and the actual leverage of the projecting masses of iron or steel work must have been enormous. In this case it is to be presumed reliance was placed on the "anchorage" of the iron towers, and the feat of construction was more hazardous than in the case of the joining of the central girder of the Forth Bridge, where there must have been ample abutment or tie. Now comes the sham work in connection with the Tower Bridge. It would seem more in harmony with modern ideas to leave the iron and steel work, as in all other engineering works, and not put on the mock-mediæval shells.

It is announced that the Lord Mayor will open the new baths and washhouses of St. Mary, Islington, in the Caledonian-road, on Saturday, the 21st inst. The other building, provided by the same parish, at the junction of Hornsey-road and Seven Sisters'-road, will be opened some time next month. These two fine works of Mr. Hessel Tiltman will therefore be ready for the ensuing busy season. At the Hornsey-road baths is provided one of the finest swimming-ponds in London.

The Horticultural Exhibition cannot fail to prove attractive to the architectural profession. Buffalo Bill and the switchback railway may not be very novel, but the exhibits in connection with gardens and horticultural work must prove interesting. Not the least worth noticing will be the "Designs for laying-out a typical estate of one hundred acres, bounded by roads, five miles from a town in the Midlands, with grounds sloping gradually towards the water, and designs for improvement of grounds to private residences, photographs of trees and shrubs." Apropos of "garden-craft," this competition will be interesting. We shall be able to follow the much-anathematised handwork of the genus "landscape-gardener," and perchance the schemes of some newly-made disciple of formal gardening and of students of "Garden Craft" and "The Formal Garden in England." Perhaps the yew peacock will be well represented, concerning which, by the bye, I have just unearthed an opinion of the late Charles Dickens. Chancing upon an old number of the original *Household Words*, and scanning a pleasant article on "Hops," the writer alludes to the Kentish hop-oasts as reminding him of certain yew peacocks in a friend's garden up the Thames, and expresses wonder as to what—if his friend so treats yew-trees—he will clip his peacocks to resemble!

Things in the building trade do not mend at Cardiff. The protracted strike has provoked aggressive action on the part of the master builders. They have influenced the merchants, and induced them to stop supplying materials to builders and others with whom the men who have struck against the members of the Builders' Association have found employment. It is said that some merchants who hesitated to subscribe to so drastic an undertaking were told that if they did not subscribe they would be boycotted. Thus "things" have come to a pretty pass at Cardiff. One loses any sympathy with the builders when they resort to threats of boycotting men who will not conform to their plans for forcibly breaking down the strike.

The newly-contituted Corporation of Bournemouth have commenced to push ahead. They have decided upon the erection of a capacious building to be employed as a rendezvous for visitors, on a plateau in the gardens, near to the Invalids' walk and the sea, and opposite Westover villas. The estimated cost of the structure is £30,000.

Bexhill-on-Sea has progressed. I visited the place on Sunday, and found it very different from its former self. The Sackville Hotel and adjoining buildings give an air of importance to the sea front, the hotel itself being a creditable piece of seaside architecture. The day being beautifully fine the place looked well, and justified all one's opinions as to its future. A better class of "property" is being erected, an improvement being observable upon the design of the wigwams of the first squatters. It only wants some big doctor to run down for a few days, and then say that the position and atmosphere of the place is just the thing for gout in the forearm, and Bexhill-on-Sea is made for all time.

A very neat church of stone and uncut flints has been erected. I was much shocked to see the sleek appearance of the old church. It has been restored; what more need be said? To be thankful for small mercies, I note that the old north wall is as of yore, with its beautiful dark-toned masonry, of many delightful tertiary hues, still intact.

The new St. Leonard's pier is a handsome structure, and sensibly planned. The pavilion is near the shore end, and carriages can drive up to the doors. At the sea end is the circular promenade, a fine open space, looking a trifle bare and wind-swept at present, but just the thing for summer, and doubtless to look much more attractive when quite out of the workmen's hands. One will certainly be able to walk, and that is more than one can do on the Hastings pier-head, in the crowded season. The concert pavilion is admirable for sound and seeing, and comfortable reading-rooms are provided for subscribers. I do not see a great deal of building evidenced at Hastings; but perhaps I chanced to pass along where nothing was in hand, and there is probably work, as usual, in the higher parts of St. Leonard's. In the flat land of St. Mary's, Bulverhythe, by Bo-Peep, some houses have been erected since I was last at Hastings—not many, but so unattractive a spot cannot be expected to "take" as well as more favoured localites. It is all very well for waterworks, steam laundries, and artificial stone manufactories, such as have been placed hereabouts.

What a grand building is the old church at Hastings! Though once resident thereat for some eight months or so, I have never fully appreciated the extreme picturesqueness of Hastings old church. It looked beautiful on Sunday evening. I marvelled that no one had ever done justice to such a fine composition in any architectural sketch. Here are all the elements of the picturesque. The grand old tower, square-built and sturdy, grey and weather-beaten, varied both in design and method of its masonry, its little pyramid of red tiles, its band of stone and flint chequer-work, with an irregular flight of broad stone steps below and old houses and cottages crowding around, constitute an admirable picture. One, it may be, savouring somewhat of Norwich. After all, perhaps it is no surprise, for Hastings—old Hastings—is a picturesque town altogether, whether we view its red roof-tops from the hills, wander about its ancient thoroughfares, or stand before the fishermen's huts, with the castle hill for background—picture much-beloved of many painters. In its way the town stands unrivalled on the whole south coast of England. Goth.

ROYAL ACADEMY: ARCHITECTURE SCHOOL.

Session 1891-2.

THE class for architectural modelling has terminated for the session, and a course of demonstrations on "The Ornaments and Enrichment of Classic Architecture" will be given on the following Monday and Thursday evenings, at 6 p.m.:—

Monday, May 16, "Akanthos" Leafage; Thursday May 19, Sheath leaves; Monday, May 23, the Korinthian Capital; Thursday, May 26, Akroters, &c.; Monday, June 13, Panel Ornamentation; Thursday, June 16, Frieze Ornamentation; Monday, June 20, Band Ornamentation; Thursday, June 23, Moulding Ornamentation.

CHIPS.

The promoters of the scheme for erecting dwellings for dockyardmen on a site near Rocky-hill, Ford, Devonport, anticipate the building operations will be in full swing within the next few weeks. Plans for the erection of 57 houses have been prepared by Mr. Richards, the architect. The site is nearly two acres in extent.

The foundation-stone of the new Masonic Hall for the Isaac Newton Lodge at Cambridge was laid with full Masonic ceremony by Earl Lathom last week. The hall is to be erected from plans by Mr. W. M. Fawcett, M.A., of Cambridge. On the ground floor will be the lodge room, which is laid out as a regular parallelopipedon, and two preparation rooms. On the first floor is the banqueting room.

The committee promoting the erection of a window in St. Margaret's, Westminster, to the memory of the late Mr. W. H. Smith, have accepted the design of Mr. J. P. Seddon, architect, of Westminster. It consists of three main divisions, in the first of which are figures representing Simplicity, Honesty, and Integrity; in the centre is an effective representation of Moses giving the Law; whilst in the third division are symbols of Liberality, Perseverance, and Charity.

The following dissolutions of partnership are announced in the *Gazette*:—Lee Brothers and Pain, of Lincoln's Inn-fields, W.C., architects and surveyors; also S. Goodman and J. E. Hughes, under the style of Goodman, Hughes, and Co., Bishopsgate-street Without, E.C., timber merchants; and also of R. L. Trollope, J. H. Trollope, G. H. Trollope, and F. Trollope, under the style of G. Trollope and Sons, Parliament-street, S.W., Grosvenor-road, Pimlico, Halkin-street West, Belgrave-square, Hobart-place, Eaton-square, S.W., and Albert Embankment, S.E., house decorators, upholsterers, cabinet-makers, auctioneers, surveyors, and estate agents; as far as regards R. L. Trollope and J. H. Trollope.

Arthur Hearn, a builder, was fined 1s. and costs at the police-court at Stonehouse, Plymouth, on Friday, for allowing a heap of rubbish to remain in Cremyll-street on the previous Saturday and Sunday.

An inquest was held at Cambridge on Thursday in last week on the body of Charles Jeffs Goodenough, a master painter and decorator, of that town, aged 49, who had been missing for a week, and whose body was found face downwards in a ditch on the Grantchester-road on the previous day. Deceased had been strange in manner since his recent failure in business, but no evidence was forthcoming as to how he came into the ditch, and an open verdict of "found drowned" was returned.

St. Giles's Church, Chetton, was reopened on the 3rd inst., after having been restored at a cost of £1,400. The restoration has been carried out by Mr. Bate, builder, Bridgnorth, to plans prepared by Mr. T. Gordon.

The foundation stones of a new Sunday-school in connection with the Handbridge Congregational Church, Chester, were laid on Wednesday week. The building is to be 58ft. by 28ft., and will contain six classrooms, in addition to an assembly room 44ft. long. The erection will be a brick building, faced with local pressed and Ruabon bricks. Mr. Wm. Vernon, of Chester, is the builder, and Mr. H. Beswick the architect.

HE SCIENTIFIC STUDY OF TIMBER.

'N an admirable and deeply-learned paper under the above title, Professor G. E. S. oulger, F.L.S., F.G.S., read at the Surveyors' istitution on Monday evening last, the author itroduced his subject by pointing out the very bviously empirical methods by which surveyors, ıgineers, and even timber merchants, distinguish etween the different varieties of woods, and ılculate their adaptability for different purposes. He maintained that the more scientific udy of their microscopic construction and ıaracteristics would well repay the trouble i ost, and that, especially when dealing with new reign and colonial timbers, accurate scientific ‹amination was absolutely necessary. The ıper was illustrated by many very beautiful ections of different timbers, projected by means f a lantern on a screen, which showed very istinctly the differences of structure, with regard rings, markings, and medullary rays of various mbers, and many delicately prepared and ıounted sections and cross-sections of British ıd foreign woods were also exhibited. Professor Boulger pointed out that in many cases onsiderable confusion was caused by the mbiguity of the names used in commerce, such s (to quote his own words) in the case of the illow-wood, for instance, used in England, aluable from its non-resinous, and consequently ninflammable, character, its lightness, freedom om splinters, and durability whether in air or 'ater; this is mainly the product of Salix alba, ıough partly S. Russelliana, whilst, according Mather, S. fragilis, the redwood willow, or ag's-head osier, produces the best timber, and used in Scotland in shipbuilding, and in France he wood of S. caprea, our goat-willow, is preerred. Poplar-wood, again, is but little used in his country, though in France and Germany oth Populus canescens and P. fastigiata are ısed for packing-cases, and P. tremula for ooring, as is P. monilifera, the most apid-growing species in Switzerland and Iorth Italy. We, however, import from Iew York increasing quantities of a wood ometimes known in Liverpool as American r yellow poplar, and at other times as American hitewood, or Canary whitewood. This is no oplar, but the tulip tree (Liriodendron tulipiera), a member of the Magnolia family. Grown nly for ornament in Europe, in America this ree is largely used for rafters, wainscots, roofhingles, boxes, furniture, and turnery. The ature of the soil is said to have so marked an nfluence on the wood, that in West Virginia hree varieties are distinguished as "white," 'blue," and "yellow poplar." The yellow lone is commonly shipped to this country, oming from moister, low-lying ground. It omes in waney logs or large planks, commanding a price equal to Quebec yellow pine (Pinus trobus), and is now valued, for staining and olishing, by cabinet-makers, shop-fitters, and oach-builders. Its name "whitewood" might ause confusion with the spruce (Picea excelsa), he "whitewood" or "white deal" of the Baltic trade; but the confusion among the conierous woods themselves is quite sufficient without any new element of discord. Dr. F. B. Hough* and Mr. W. Stevenson† both speak of he varieties of Liriodendron as unrecognisable y outer characters, and as purely due to soil; ut F. A. Michaux‡ terms the more valuable "yellow wood" L. tulipifera, var. Obtusiloba, ndicating that there is a difference at least in he foliage as well as in the wood. The name 'tulip-wood," used by Mr. Stevenson, is unortunate, being commonly applied to the handome Brazilian wood of the Lythraceous Physoalymma floribunda, though a Meliaceous vood of New South Wales, that of Owenia enosa, and Harpullia pendula, in the same olony, have received the same name. Carenters call white deal "spruce," red and ellow deals from the Baltic "fir," and similar voods from America "pine," though both the ast, at least, are products of species of Pinus. Take as a sample of confusion the trade name 'yellow pine." In New Zealand, Dacrydium Colensoii yields a useful timber, so-called. In British Columbia Pinus ponderosa yields "yellow ine"; in Quebec, P. mitis; in Nova Scotia, P. trobus or P. rubra; and in the middle and outhern United States, P. australis, to say nothing of "yellow deal" from P. sylvestris in Europe and some half-dozen different "yellow woods." Including the Coniferæ Podocarpus latifolius, and P. elongatus of South Africa, besides several dicotyledonous angiosperms, some of which are used as yellow dyes. If we, conversely, take a single species, the wood of which comes to market under a variety of names, we find an equally confusing ambiguity. Pinus sylvestris, familiar to us as the Scots (Anglicè "Scotch") Fir, it is proposed by Mr. Hurst, in his edition of Tredgold, to call "Northern Pine" in consideration of its wide distribution in Northern Europe. Most writers on timber treat the varieties of this timber as if they were due solely to soil and climate. Thus, Mr. Stevenson says of it: * "On poor soil, at great elevations, it becomes a diminutive shrub; and in low situations, where it is a lofty timber tree, the wood on poor sandy soil is light, almost without resin, and of little duration; while on soils of a colder and more substantial nature it is red, heavy, and of great durability. It appears, also, that the same soil will produce both white-wood and red-wooded trees; but, generally speaking, the former is found on the plains and the latter on the hills. . . . The quality of the timber . . . . is dependent on the soil and climate. That grown in the south is thick-barked, carrying a great amount of sapwood, whilst that grown in the north is the reverse. Again, that grown in the south is hard and resinous, with live or red knots when converted, whilst that grown in the north is soft and non-resinous, with a large number of black or dead knots. . . . Such was the ignorance, even in high quarters, on this subject one hundred years ago, that the French Minister of Marine, in 1785, seeing the fine fir masts imported from Riga, sent out a M. Barbé, a master mast-maker of Brest, to obtain seeds of the trees, which, upon being planted, produced, to the surprise of the French authorities, the common Scotch fir. In addition to this geographical difference in the quality of the wood there is a local one, arising out of the nature of the soil. . . . Wood grown upon dry, elevated land will be harder and more resinous than that grown on low, wet, or swampy soil." In trade it is recognised that red deal is superior to yellow, the best timber having its annual rings not more than $\frac{1}{10}$in. across, and the autumn wood of a bright red, whilst inferior varieties are honey-yellow and over-resinous. Though only known in commerce by the names of their ports of shipment, there are undoubtedly distinct and important botanical varieties of this species. In English oak and elm, and in the false acacia or locust (*Robinia*), the question of slight botanical variation is also one of importance. It is commonly said that, of our two commoner varieties of oak, *Quercus pedunculata* yields the better timber. This opinion is probably based upon the fact that this variety generally presents a longer unbranched bole, thus yielding more straight timber of fair dimensions. Laslett, for example, whilst stating that the timber of Q. sessiliflora, sometimes called the bay oak, is a little less dense and compact than that of Q. pedunculata, owns that, apart from dimensions, the two timbers so much resemble each other that "few surveyors are able to speak positively as to the identity of either." † Opinions would seem to differ very remarkably as to the relative value of the timber of the so-called English and Scotch elms (Ulmus campestris and U. montana). This apparent uncertainty is, it is believed, owing to a want of discrimination, on the part both of botanists and of timber growers and valuers, between the various forms lumped under the name U. campestris. Of these, the Dutch elm (U. major) and the Cork elm (the true U. suberosa) undoubtedly yield inferior timber; but the common elms of the South of England, with rough and often small leaves (U. campestris), which has, unfortunately, been lumped under the name U. suberosa by some botanists, yields a timber that, though darker in colour and more twisted in grain, is as strong, tough, and durable as that of the true wych-elm (U. montana). Here, again, some confusion that may be of economic importance arises from the inclusion of the smooth-leaved elm (U. glabra) with the true U. montana. The practical result of this uncertainty seems to be that, while the value of Scotch elm (or U. montana) is undisputed), when English elm is condemned as worthless, or, at least, as far inferior to Scotch, it is generally the Cork elm that is in contemplation, and not the true Ulmus campestris. Professor Boulger then proceeded to give an elaborate series of tables classifying the various woods under the heads into which Dr. Hartig divides them in his book, "Timbers, and How to Know Them," and also showed a very elaborate classification based on Nördlinger's "Les Bois Employés dans l'Industrie," which, even if we had space to give them, were rather for the scientific forester than the builder or architect. On this point the author of the paper remarked: The microscopic examination of transverse sections on which these tables are based, though the most important means of discriminating woods, is not, as has been already indicated, by any means the only method. The chief other means may be spoken of collectively as weight and resistance. As I have already said, the former character may be perhaps more instructively expressed by giving actual weights of a standard block than by specific gravities. Many measurements of both weight and resistance have been published, and, as might be expected from variations in the quality of timber and of its dryness, the results sometimes appear hopelessly discordant. This discordance is however, needlessly added to by the adoption of different methods of testing and different standards of comparison by almost every experimenter. It is when speaking of these experimental tests of resistance that Tredgold makes the remarks, which might well, I think, be considerably expanded in their application, to the effect that actual testing may take the place of a lifetime of practical experience in carpentry. The rule-of-thumb guess of the experienced carpenter as to the suitability of any particular piece of wood to resist strain (particularly if it be wood of a species previously unknown to him) will be, I believe, largely based on the general rule that in wood weight, hardness, and power of resistance to most strains, vary together. To this rule there are, however, many important exceptions, where testing would prove what no rule of thumb is likely to perceive. In the later editions of Tredgold, such as those of Hurst and Tarn, numerous valuable tables of results are given, which are perhaps almost bewildering in their fulness of detail. Such tables are, however, conveniently summarised for most practical purposes, in Messrs. Rivingtons' "Notes on Building Construction," into one table of about thirty woods described under ten columns, viz., weight of a cubic foot when dry, in pounds; tenacity per square inch, lengthways of the grain, in tons; modulus of rupture and modulus of elasticity in pounds; resistance to crushing, with the grain, in tons; resistance to shearing, with and across the grain, in pounds per square inch; force per square inch requisite to crush $\frac{1}{20}$in. deep across the grain, in tons; and stiffness and strength as compared to English oak taken as 100. For these woods this would be all that is requisite were the figures more reliable than they can be in the absence of more agreement as to standards of comparison. In testing a large series of the timbers at the Indian and Colonial Exhibition, Mr. Allen Ransome made use of planks planed to 18in. long, $4\frac{5}{8}$in. broad, and $1\frac{1}{2}$in. thick, weighed and then dried by the cool air process for 144 hours, re-weighed and re-measured in width and thickness.* This method seems satisfactory; but we require a table of European woods under the same test, and it is only fair to colonial woods to bear in mind that specimens for exhibitions are very often felled at the wrong time of year, and hastily and imperfectly seasoned. After referring to some of the more prominent markings—such as "pith flecks," medullary rays and spots, annual rings, &c., by which timber can be distinguished and its growth and value estimated, the author proceeded to say:—As to the annual rings with which we are familiar in almost all European timbers, it must be remembered that their distinctness is mainly the result of the winter pause in vegetation in the trees, especially the deciduous trees of Temperate latitudes, so that in many evergreens, especially in those of the Tropics, they are not distinguishable. Though produced by the same cause—viz., the increasing mechanical resistance of the bark to growth towards the end of summer, annual rings present two distinct types of structure. In oak, ash, plum, or teak, for instance, the spring wood contains numerous large vessels, whilst the autumn wood has but few; whilst in birch, maple, or horse-chestnut, the vessels are small and evenly dispersed throughout the rings; but the wood fibres have thicker walls and smaller lumina (or central spaces, as seen in cross-section) in the autumn than in the spring wood. Vessels are absent from coniferous woods, but occur in all broad-leaved woods, and, apart from their size and distribution through the ring, afford an interesting series of characters in their grouping. They are usually apart from one another in boxwood and in quince, in small groups in holly and hazel, in long sinuous radial rows in hornbeam, in concentric bands in elm, and in wavy flamboyant groups in oak, chestnut, and others. The wide range of hardness in timbers is a matter of common knowledge, though but little has been done to tabulate it. It is, however, tolerably closely connected with the density of the wood, a character to which more attention has been paid. Though many tables have been published giving the specific gravity of various woods to three and even four places of decimals, perhaps a more useful form of statement is the weight of a standard cube, either that of a cubic foot in pounds or that of a cubic decimètre in grams. Thus, while water weighs 62·321lb. per cubic foot, timbers range from 13lb. to 85lb. We may, perhaps, arrange them into five grades, viz.:—(1) Very light, not exceeding 30lb. per cubic foot, or with a specific gravity below ·5, as in poplar, willow, and spruce; (2) light, not exceeding 40lb.—*i.e.*, s.g. less than ·66, as in larch, elm, plane, and most chestnut and sycamore; (3) of medium weight, between 40lb. and 50lb., or s.g. not exceeding ·83, as in birch, hornbeam, acacia, alder, and some teak, pitch-pine, ash, beech, and oak; (4) heavy, between 50lb. and 60lb., or s.g. below 1·0, as in Spanish mahogany, and some mora and greenheart; and (5) very heavy, above 60lb., or with specific gravity about 1·0 or upwards, as in American oak and jarrah.

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* Elements of Forestry, p. 251.

† The Trees of Commerce (1889), p. 101.

‡ The North American Sylva. (Philadelphia, 1865.)

* *Op. cit.* pp. 155 and 159-163.

† Timber and Timber-trees, p. 44.

* Colonial and Indian Exhibition Reports, edited by Sir H. T. Wood. London, 1887, 8vo.

On such a paper it is obvious there could be but little discussion, the only points raised during the debate which followed it being one by Mr. D. Watney, who proposed a vote of thanks to the author, but who differed slightly from him in the respective values assigned for practical purposes to the timber of the wych-elm and the *Ulmus campestris* or common elm; and another by Professor Marshall Ward, who thought the difficulty of such a scientific study as the author proposed had been somewhat exaggerated. Three sections —longitudinal, transverse, and tangential—formed by cutting the finest possible shavings with an ordinary very sharp plane, and then immersing the shavings in a dye solution, would, he thought, enable anyone easily to study and recognise the characteristics of any timber, and even a small collection of such specimens carefully observed would make it a matter of small difficulty to determine the nature and value even of strange specimens. Such a careful study was, he thought, of great importance to surveyors and land agents.

After a few remarks from Mr. P. D. Tuckett and Mr. A. Payne, the proceedings terminated, the President explaining that this was the last meeting of the Institution at which he in his official capacity would be called upon to preside.

THE COLONIAL FURNITURE OF NEW ENGLAND.

[WITH LITHOGRAPHIC ILLUSTRATIONS.]

IN the sumptuously printed and profusely illustrated book recently issued by the Riverside Press,* Dr. Irving W. Lyon does a great deal more than cover the range of study comprised in his title, for when the elucidation of his subject needs it, he enlarges his margin and ransacks not only the domestic history of the Mother Country, whence that New England sprang, but follows his subject through other countries and over older times. Thus a very deep insight into the general history of the subject is embraced within his restrictive heading, and this, too, from original research, not derived from ordinary textbooks, but the outcome of personal examination of the records and objects described. Into this general excursus our time and space prevent our following him; but he will be found a learned and faithful guide to those who will do so. Our present review must confine itself to the consideration of New England furniture, and that solely with regard to that of our own country. Naturally the first products of the furniture maker in the young colonies were transcripts of those of that of their old home, now doubly endeared to them by severance from it. The literalism of their early attempts was tolerably close, and it is exceedingly difficult at first to discriminate between the articles actually made in New England and those imported from the mother country. Transplantation always arrests growth for a time, hence colonies are always more conservative in idea than the country they emigrated from. Severed from the original impetus which generated the ideas they carried away with them, they retain, unchanged by extraneous impressions, the original characteristics. This crystallisation of idea is exhibited in a very marked manner by the colonial furniture of New England during its early history, and this gives the subject a special interest to the old English archæologist and artist—it is indeed an object lesson in the often-pondered-over—what might have been! And to illustrate this we take some of Dr. Lyon's illustrations of indubitably Colonial furniture, not as exceptional articles, but as types of designs which are common, especially in his native state of Connecticut. It will be seen in the two figures shown, one over the other on the left-hand side of our plate, how closely the well-known form of the North-country sideboard, common in this country during the 16th and the early part of the 17th century, is, by the conservation of the new country, preserved long after it had disappeared in the old. Formatively, these belong to the time of Elizabeth and James I., but the detail is all changed into that precisely a century later. Here, in England, both the form and the detail of the sideboard of those earlier days had then quite disappeared under the influence of the Dutch and French taste of the times—influences which hardly impinged on the colonies; in fact, furniture design had become conventional in the New England colonies, just as in the colonies of Greece and Rome, archaisms survived, and were colloquialisms long after they had disappeared in the parent countries, where they would have become anachronisms. This apparent confusion of idea is very patent throughout the whole of the 17th-century work of New England, and is a warning to dogmatic experts who endeavour to fix dates to furniture without considering its parentage — a lesson much needing to be learned in these "collecting" days. Dr. Lyon styles these "court cupboards," and devotes much learned inquiry in the vexed question of the difference between the "court" and "livery" cupboards so frequently recurrent in the writings of the Elizabethan dramatists, and often referred to in the early inventories. The conservation of the colonies very fortunately retained the custom of appending to wills the absolute individual inventories of household goods long after the acceptance of a monetary sum as probate had been adopted in this country, and these inventories are still carefully preserved in the several State libraries, forming most valuable documents for the historian of domestic manners. In these, "court cupboards" and "livery cupboards" are of frequent mention down to a very late date—long after the names had been forgotten in England; but it does not appear to us that the cupboards so styled by Dr. Lyon are absolutely identified with such titles. It is true they might have borne the name without being the thing, the nomenclature of the appraise being then, as now, by no means scientific. Apparently the "court" cupboard was a light, short—*i.e.*, low piece of furniture, easily removable (see "Romeo and Juliet," scene 1, act 5), whilst the "livery," or delivery, cupboard was a slight what-not or dumb-waiter, and even frequently serving as bedside tables; but Dr. Lyon's arguments and quotations are well worthy of much consideration, and Shakesperian commentators will find a great deal of thoughtful consideration given to a subject which has hitherto evaded satisfactory elucidation. The Press Cupboard shown by the figure at the bottom on the right hand of our plate, and the Chest with Drawers immediately over it, are very typical examples of a class of furniture even yet abundant in Hartford County, Conn., which seems to have been one of the great centres of furniture making at the end of the 17th century, the trade mark of which was those egg-shaped appliances with which they are abundantly garnished. There is so wide a difference between the carved or sunk work and the turning, between the general form and the detail, that in any other country these would never be considered as genuine pieces of furniture, but the compilation of some unlearned Wardour-street hand, yet there is no doubt of these having been absolutely made during the last year of the 17th century, some of them being yet in the possession of the descendants of those for whom they were originally made. This example, and the piece illustrated over it, form a portion of a very learned and carefully considered chapter of the growth of the chest *of* drawers, and its development from the chest of the early settler, through the phase of the chest *with* drawer to its ulterior completion as a chest *of* drawers, an evolution which we have never before seen so well deduced, and which will well repay careful perusal. Indeed, Dr. Lyon's book is a very tempting one to discurse about, and is full of information on almost all matters connected with furniture and furniture-making. We learn from it that mahogany was used for furniture in the Colonies seven years before it made its appearance in England, being "invented" in wills as early as 1708. The illustrations of the later products of the cabinet-maker are pregnant with valuable lessons in design, and which, now that the once despised 18th century has been elevated to the throne of fashion, are of great use to the designer in this taste. On the subject of Chairs, there is an almost exhaustive monograph, even the Windsor chairs coming in for a large amount of consideration, the earliest mention of them being in an inventory dated 1736 at Philadelphia, after which date they are very recurrent. This, of course, abolishes the legend that their name was derived from the incident of old "Farmer George" discovering one which a shepherd had made in a cottage near Windsor, and finding it so comfortable, ordered it to be sent to the Castle. In fact, the earliest English mention of "Windsor" chairs, Dr. Lyon has discovered, is not until 1774, yet he inclines to the belief in their English origin; but, then, whence their name? On desks and their development into "scritoires" or writing tables, on tables, on clocks—as befits a New Englander, and on much other household gear, Dr. Lyon descants learnedly, wisely, and pleasantly, and there is not a dull page in the 270 which form the interesting volume, and which is, moreover, supplemented by a copious and correct index. We heartily wish it such success that it may induce the author to bring forth another volume embracing beds, nappery, and other articles of domestic furniture as yet untouched by him. His conscientious and painstaking work, his loyalty in acknowledging all information supplied by others, and his exact references to documentary sources of information are deserving of the highest praise, and the artist, the antiquary, and the furniture maker will find the present work a very useful addition to the studio, the library, or the workshop.

THE ARCHITECTURAL ASSOCIATION SOIREE.

THE PRINCESS' IDEA.

PERHAPS curiosity to see whether, and, if so, how, current controversies in the Architectural Association would be treated in the annual travesty of professional topics had a good deal to do with it, but certainly no A.A. soirée has been more numerously attended than that given on Friday night last at Westminster Town Hall, and never was there a more enthusiastic audience. The ground area and galleries of the great assembly room were densely packed by an eager and appreciative throng, who hailed with shouts of laughter every time-honoured joke and each pun on an architect's name, and followed with the closest attention the series of somewhat disjointed incidents which made up the customary farce. Mr. Frank T. Baggallay, the President of the A.A., occupied the chair, and smoking was emphatically the order of the day. "The Princess' Idea" was the title of the burlesque written by Mr. Theodore Moore, M.A., A.R.I.B.A., the plot of Tennyson's poem being employed as a scaffolding on which could be stretched a canvas depicting the incapacity of the lady architects, the tyranny of principals and the successful strike of their assistants forming an attractive background to a picture to be presented to a hall full of architectural students. In passing, the spirited sketch on the programme contributed by Mr. Harold Bailey deserves a note; it represented the A.A. as Phœbus, driving four restive steeds named "R.I.B.A.," "S.A.," "M." (the Memorialists, appropriately suggested as a dark horse), and "R.A." in the car of Education to the British College of Architecture. Reverting to the play, the leading characters were:—Four students: Prince Hilarion, a ladies' man (Mr. A. Brumwell Thomas); Florian, an art-enthusiast (Mr. Ernest Rüntz); Cyril, a commonplace young man (Mr. T. Honnor); and "Melissa," a mystery—not Ellen (Mr. P. J. Sutton). Equally to be expected in an architectural farce were Hildebrand, an architect (Mr. A. C. Bulmer Booth), and Gama, a surveyor (Mr. J. Douglas Scott). The coarse and beery Foreman was personified in all his grime and dust by Mr. C. H. Brodie; for the first lady, Princess Ida, a latter-day Jenny Wren, Mr. H. Seton Morris was made up; Mr. Theodore Moore himself sustained the stately rôle of Lady Blanche, Principal of Castle Adamant, and the lighter part of Lady Psyche, a nice girl, was taken by Mr. Percy D. Smith, who had painted all the scenery. Mr. F. T. W. Miller proved, as in former years, a very efficient stage manager, and the incidental music was given by the A.A. string band, under the leadership of Mr. Lambert, Mr. C. D. Imhof acting as accompanist. The singing and dancing were well executed. The play was of two acts, each of two scenes. The curtain rises on the interior of the Studio in Great Marlborough-street, portrayed by the scenic painter's license as more bare and ill-furnished than is the reality. Florian, who avows himself one of those brilliant demigods who dream of art, sneers at the inartistic surroundings, at the whitewash and matchboarding as good enough for the poor A.A., to which Cyril makes hasty retort that the A.A.'s right enough, when Prince Hilarion enters, bearing the news that students are about to strike for "better times all round—more cash and shorter hours—more things found," but that the delegates from the employers will first talk matters over. Florian is drawn out to declare himself a genius, and sings, to the air of "The Song that reached my Heart," a ditty telling how in a whitewashed room he had talked to students the tommiest rot, in which he pooh-poohed cram and the Institute examination, and although he admits he had to put up with some nasty remarks, he discoursed on high art, and worked hard to earn an "A.R.A."-ship. Cyril ridicules high-flown and impracticable notions, and a quarrel ensues. Just as swords are drawn, the arbitrators Hildebrand and Gama are introduced, and a conference commences. The surveyor proves garrulous, explains his manœuvres to take a commission from another man, and says that when he is a chairman of examiners he'll advise the use of sketch-books, as that's the way to make them think one clever. The architect sings to the Vicar's song in the "Sorcerer" the following ballad:—

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* The Colonial Furniture of New England: a Study of the Domestic Furniture in use in the 17th and 18th Centuries. By Irving Whitall Lyon, M.D. Boston and New York: Houghton, Mifflin, and Co.

Time was when Art and I were well acquainted,
When I the Royal Academy medal won,
I modelled, drew, designed, and even painted
All useless things there are beneath the sun.
I was a student of the poorest station,
Of three pair backs the humble denizen;
I deemed a pound a week my work's equation—
Ah me! I was a pale assistant then.

But when upon my own account I started
I soon forgot the pale assistant's pleas;
Oh! then my art and I for ever parted—
I entered on my lifelong race for fees.
And so, dear youths, I pray you be contented,
I'll use the honest sweat of bonded brow;
Assistants' brains and fingers I have rented,
And so I am a rich old Pecksniff now!

The arbitration is then commenced in earnest, and Hilarion presents the students' demands, declaring that if these are not granted a strike will be proclaimed. Hot words ensue, the names of MacVicar Anderson and John Burns are severally proposed as arbitrators by architects and students, and as decisively rejected by the opposing side. The students hastily break off the negotiations. Hildebrand is in despair; but Gama suggests that a bevy of girl graduates from the Ladies' College of Architecture will enable the employers to starve out the impecunious assistants. The scene shifts now to Castle Adamant, the façade whereof is bastard 18th-century Gothic, the machicolated and crenellated walls being ornamented with obtrusive drain-traps and soil-pipes, while the latest ventilators rear their cowls over the battlements. Melissa, an out-of-work assistant, who has, with Psyche's connivance, gained entrance into the castle in female disguise, comes on singing "Ta-ra-ra-Boom-de-ay." While she is tossing with Psyche as to who shall black-in certain tracings, Lady Blanche, the principal, enters, and condemns them to write a schedule of dilapidations on any ruins, a task which they discharge by penning a list of repairs required in the Principal's personal appearance. Princess Ida then appears on the scene, and explains, in a song set to the air "It Came with the Merry May, Love," that the lady architects will confine attention to art of the purest strain, and have nothing to do with drains nor anything practical. Hildebrand and Gama return to seek an interview with the lady principal, and are followed by Hilarion, Cryil, and Florian. A good deal of love-making follows; Ida, who evidently regards Hildebrand as a good match, being wooed by Hilarion, to whom she gives her hand. Florian falls in love with the impostor Melissa, and Cyril with Psyche. The students are going off to a lecture by Mrs. A——, who is to "talk on Mud Huts at the R.A., and how they bear on questions of the day," when during the excitement caused by the fainting of Lady Blanche, who has read specification of works necessary to renovate her appearance, they escape, and the curtain falls after a graceful minuet has been danced by Hilarion and Ida. The first scene of Act II. shows work on a hideous structure in progress under the superintendence of Ida. Hilarion and Cyril condemn it unsparingly until the foreman reveals the architect's name, when Hilarion's opinion of its merits rises. As they leave, the gifted architect and Psyche arrive to inspect the building, and experience grave troubles with the foreman, who swears, refusing to attend them over the works on the ground that it wants but a quarter to his dinner-hour. Ida proposes to postpone the inspection till another day, but Hilarion coming on the scene, the foreman gives grudging attendance. The supervision is perfunctory, the examination of the drains being relegated by Ida to the drain surveyor, and of the footings to the building engineer. A visit by the Association follows, in which Florian comes on tipsy, and Melissa, taking off the gown, appears dressed as a man. The building is subjected to further criticism, when the architect arrives, and in trying to mount the ladder, comes to grief as it is slowly let down, and is rescued by Hilarion. Hildebrand and Gama appear on the scene. In a song to the melody of "The Distant Shore" the former complains that the lady assistants have worked him much mischief, having taken his jobs and mashed his clients, while his wife is jealous, and his office infested with canvassers. He announces the capitulation of the masters to their former assistants, and suggests that they storm the Ladies' College—a proposal taken up with avidity. The closing scene showed the ladies, who were armed with fire-irons and umbrellas, easily routed by the assistants and their employer. All ended happily with the betrothal of Hilarion and Ida, Cyril and Psyche, Hildebrand and the Lady Principal, and the curtain fell on soli and a chorus adapted from one of Sullivan and Gilbert's works amidst enthusiastic plaudits and loud calls for the author.

The dissolution of partnersnip is announced as between Evans and Deveril Saul, of Studland Bay, architects, surveyors, and law and estate agents, as far as regards W. C. Evans.

The Government are willing to drop the sanitary clauses of the Burgh Police and Health (Scotland) Bill, and to change the title of the measure to the Burgh Police (Scotland) Bill. This concession will remove the objections of Dr. Cameron and his friends, and will, it is expected, enable the remaining stages of the Bill to be disposed of without much discussion.

St. Patrick's New Schools, Widnes, were formally opened on May 2nd. The style of the buildings is Late Decorated Gothic. The material used is St. Helen's pressed brick, with Rainhill stone dressings, and all landings, steps, &c., are of Yorkshire stone. The schools, with the playgrounds, stand on 875 square yards of ground. The architects are Messrs. Sinnott and Powell, of Liverpool, and the contractor Mr. Geo. E. Mulholland, of Gibraltar-street, Liverpool, and Great Crosby. The total cost of the buildings is about £4,500. The schools are for the accommodation of 750 scholars.

Building Intelligence.

Bedminster, Bristol.—Messrs. W. D. and H. O. Wills have been compelled to extend their premises at Bedminster. Plans have been prepared and estimates obtained for a new wing adjoining their present works on the northern side. The proposed building will be a three-storied one built of Malago Vale brickwork; it will be of fireproof construction, the floors being composed of steel girders and concrete arching with asphalte on top. The joint architects for the work are Mr. Frank W. Wills and Mr. H. O. Wills, jun., and Messrs. William Cowlin and Son are the contractors. The contract price is rather under £9,000.

Dublin.—The R.C. Archbishop of Dublin last Sunday attended the opening of a new organ at St. Joseph's, Berkeley-road. In addition to the new organ the appearance of the church has been much improved by raising the reredos at the high altar by means of an arcade of six Caen-stone arches, supported on polished marble columns with carved capitals, and placing two marble credence tables at each side of the altar. The proposed new belfry will be constructed of granite, designed to harmonise with the style of the church, and will be about 120ft. in height. The reredos and belfry have been designed by Mr. John L. Robinson, A.R.H.A., architect.

COMPETITIONS.

North Wales Training College, Bangor.—A meeting of the committee of the North Wales Training College was held on Friday at St. Asaph, for the consideration of plans for the college to be erected at Bangor in the place of that at Carnarvon recently destroyed by fire. Four sets of plans were sent in, and that by Mr. Robert Grierson, Bangor, was selected. Lord Penrhyn has given the site, and promises have been made of about £3,000 towards the cost of the building, which will be about £10,000. Mr. Grierson's plan is quadrangular in form, and provides accommodation in classrooms and dormitories for 60 students. On the east side there is a chapel to seat 100. The principal's residence is placed on the west side. At the north-east angle of the quadrangle there is a tower with angle turret. The style adopted is Late Gothic.

Outlane.—The designs of Mr. Frederick W. Dixon, architect, of Oldham, have been selected in open competition for the Methodist New Connexion Chapel and School at Outlane, near Huddersfield. Fourteen sets of designs were submitted.

CHIPS.

The local board for Shirley and Freemantle, near Southampton, have adopted plans for public offices prepared by their surveyor, Mr. H. J. Weston. The estimated cost is £1,200.

Memorial stones of a building intended to house the local Young Men's and Women's Christian Associations at Egham, were laid on Thursday in last week. Mr. Menzies is the architect, and Mr. Gray the builder.

St. Andrew's parish room at Watford was opened by the Bishop of St. Alban's last week. The room is seated for 250 persons, and cost £1,200. Mr. W. Willis Baldwin, of Lincoln's Inn-fields, was the architect, and Mr. C. Brightman, of St. Alban's, the contractor.

The new church schools, Wigan, are being warmed and ventilated by means of Shorland's patent Manchester grates, the same being supplied by Mr. E. H. Shorland, of Manchester.

The directors of the London and North-Western Railway Company have selected Messrs. Kirk and Randall to carry out the work of enlarging and altering Hampstead Heath Station, the scene of the late disaster, and the contractors have undertaken to complete the whole before the Whitsuntide holidays.

The Duchess of Albany, the Duke of Cambridge, and others have presented a petition to the Privy Council for the grant of a charter of incorporation for the Sanitary Institute.

The foundation stone of the new parish church of Tomgraney, County Clare, was laid on Sunday last. The estimated cost of the church is close on £2,000. The architect is Mr. Francis O'Connor, C.E., of Ennis, and the contractor Mr. John Hargreave, Sixmilebridge. The building, which will consist of apse and nave, will be of dressed stone supplied from Limerick.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. Passmore Edwards.

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The charge for advertisements for "Situations Vacant" or "Situations Wanted" is One Shilling for Twenty-four Words, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., L., LI., LIII., LIV., LVIII., LIX., and LX, may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

Received.—R. T. G. (Cambridge).—J. S. and C. Co.—M. R. C.—Semper Fidelis.—T. M. R. Co.

Correspondence.

R.I.B.A. COUNCIL.

To the Editor of the Building News.

Sir,—I see Mr. G. A. T. Middleton is asking for the support of those members of the Institute whose views on the Registration question coincide with his, as published in the *Proceedings* of last January. I do not know Mr. Middleton personally, but in voting for him I feel I am voting for principles which I believe to be of vital importance to the welfare of the profession. Would it be possible through your columns to give a list of those favourable to Registration, amongst the twenty-six Fellows nominated for the eighteen seats on the Council?—I am, &c.,

F.R.I.B.A.

TERRACOTTA SCUM.

Sir,—I have read Messrs. Edwards Brothers and Co.'s letter on the above subject in your issue of the 6th inst, and cannot let it pass without contradicting a statement which they make.

They state, "We noticed that none of the writers have attempted solving the problem of prevention; but only methods of removal are suggested."

Now a glance at my letter, which appeared in your paper of the 11th ult., will show that I did not mention one single word about removal. I distinctly stated that "I can defy the scum." Although I have not taken out a patent for it, yet my plan is similar to that now brought forward by Messrs. Edwards Brothers and Co., and I have been using it with the best results for years.

I coat the faces of my terracotta, &c., in its damp state with a mixture which prevents the scum from coming out on the face.

If Messrs. Edwards's patent consists in having been first in conceiving the idea of coating their goods with a mixture to prevent scum, I do not think it will benefit them much, as many years ago this plan was in full operation in more than one works in England, coal-tar being used for the purpose; but if their patent is for some special mixture of their own, of course I have nothing to say. My mixture I cannot divulge; but now that I find others bestirring themselves in patenting such things, I intend at once applying for a patent for mine, which is one that has stood every test that I could put it to for some years past.—I am, &c., R. A. R.

WIDE STAIRWAYS IN THEATRES.

Sir,—Reading in your paper of March 25th, 1892, about wide stairways in theatres, leads me to inform you what we do in this city to make them safe in case of panic.

At my suggestion the following has been added to the building laws:—"Wide stairways shall have one or more intermediate rails on strong, vertical supports, as approved by inspector." I know of one stairway (there may be others) having this intermediate rail. The value of it is at once acknowledged by every one seeing it.—I am, &c., F. Smith.

23, Court-street Boston, Mass, April 22.

CHIPS.

It is proposed to make, at the Chicago Exhibition of 1893, a special exhibit of roadways, pavements, and roadmaking methods and materials for the benefit of the myriads of Americans who will visit the exhibition, and who have never seen a decent road, and have no conception of the method of making one.

Mr. J. Blundell Maple, M.P., will preside at a dinner of the furniture trades section of the London Chamber of Commerce to-morrow (Saturday) evening, at the Hotel Metropole.

On the application for the discharge from bankruptcy of Samuel Lionel Parsons, of Stalbridge, builder, the registrar has suspended the discharge for two years.

The Brighton board of guardians at their meeting on Tuesday adopted plans for a new infirmary prepared by Mr. Arthur Loader, of that town.

A new quay, 2,103ft. in length, has just been constructed at Great Yarmouth, in accordance with Mr. Kinipple's grouted concrete block system for sub-aqueous works. Messrs. Kinipple and Jaffrey, of Westminster, were the chief engineers, and Mr. J. W. Cockrill, the borough engineer of Great Yarmouth, acted as the resident engineer.

At the Bournemouth police-court on Saturday a one-armed man named Frederick Andrews, a convict on license, was charged with setting fire to builders' sheds, in St. John's Wood-road, in that town, the property of Messrs. Lawson and Donkin, architects, who had sublet them to a builder. It was proved that damage was done amounting to £1,000, twice the amount covered by insurance, and prisoner was committed for trial.

A select committee of the House of Commons has passed the preamble of the Bill which proposes to transfer the Southampton Docks to the London and South-Western Railway Company, the price to be paid by the railway company being £1,360,000.

The design of Mr. John Wills, of Derby, for the new front and decorations to the Wesleyan Chapel at Farnham, Surrey, has been adopted. The whole of the present front is to be reconstructed, the existing porch being pulled down, and a tower of considerable height erected. The sitting accommodation will be increased by fifty places.

A memorial portrait of the late Sir James Porter Corry, M.P. for Mid-Armagh, was unveiled on Friday in the Art Gallery of the Belfast Free Library. The portrait, a subscription one, has been executed by Mr. W.E. Lockhart, of London.

The late Mr. William James Beadel, of 97, Gresham-street, auctioneer and surveyor, and of Hutton Hall, Brentwood, M.P. for the Chelmsford division of Essex, who died on April 5, aged 63 years, left personalty of the gross value of £21,680, the net value being under a nominal amount.

The committee of the House of Commons, which has been considering the Bill of the County Council for constructing a tramway across Westminster Bridge and along the Embankment, has passed the preamble of the measure, and fixed the point of terminus upon the Embankment at the outlet of the new Horse Guards avenue. Further opposition is threatened on the third reading.

On Sunday special services were held at St. Peter's Church, in connection with the opening of a new organ, which has been built by Messrs. Walker and Son, of London, at a cost of between £300 and £400.

Intercommunication.

QUESTIONS.

[10770.]—**Paint to Prevent Condensation.**—When looking over an ironclad some time ago, I observed that some of the ceilings, to prevent condensation, had been dressed with a granular-looking paint. I shall be glad to know of any such material.—H. B.

[10771.]—**Waterproofing Walls.**—Dwelling-house in exposed situation, built one year, faced with slightly laminated sandstone, backing of masonry lined with brick, the whole 21in. thick. Drifting rain has penetrated the walls. Can any coating solution for waterproofing the outer surface be recommended by any of your readers?—W. J. D.

[10772.]—**Efflorescence on Brickwork.**-I thought the idea that burning bricks with coal caused saltpetring had been already disposed of in your pages by an extract from an American journal, in which it was pointed out that bricks made in the interior of America—hundreds of miles away from coal, and always burnt with wood—saltpetred quite as bad as those burnt with coal in other parts of America. My own impression is that the difference must be in the clay. Near from where I write there are local bricks made and burnt with wood, which saltpetre so badly that they can only be used for interior partitions, while bricks made some 80 miles distant, and burnt with coal, don't saltpetre at all. Both yards are near the sea. In Brighton, I saw lately a large villa built with bricks manufactured near Burgess Hill, laid with local lime and sea-sand, and this has not a patch of saltpetre showing, while another building, built with bricks from Hampshire (with the same kind of lime and sand) has the appearance of having been badly whitewashed, and the efflorescence causes the face of the brick to scale away rapidly. Is there any remedy for this scaling? If not, I feel inclined to go back to stucco.—House Owner.

[10773.]—**Sundial.**—Can any of your correspondents set forth a reliable method of defining the lines and gnomon of a vertical sundial facing S.W., latitude 53·80°, or state where the information could be obtained?—Subscriber.

[10774.]—**Architects' Registration Bill.**—How will this Bill affect architect's assistants who have served their articles, and have been assistants in the profession for several years? Will they be expected to pass an examination if the Bill is successful?—Gothic.

WATER SUPPLY AND SANITARY MATTERS.

Hornsey.—Colonel Charles Henry Luard, R.E., one of the inspectors of the Local Government Board, held an inquiry at Hornsey on Tuesday with respect to sanction to borrow £9,191 for works of sewerage. Mr. T. de Courcy Meade, M.Inst.C.E., who had prepared the scheme, explained the plans and afterwards conducted the inspector over the line of proposed works. Colonel Luard expressed his approval of the scheme, and promised to report to the Local Government Board in due course.

Pocklington, Yorkshire.—The vestry of the township of Pocklington, near Hull, has consulted Mr. D. Balfour, M.Inst.C.E., F.G.S., Newcastle-on-Tyne, as to a scheme of main sewerage and sewage disposal for the town of Pocklington, who has accordingly submitted plans and report.

STAINED GLASS.

Crich.—A stained-glass window has been placed in the north aisle of Crich Church as a memorial to the late Mr. James Lee, for 30 years churchwarden of the above church. It is from the design and executed at the studio of Mr. T. W. Camm, Smethwick, near Birmingham. The window is in three lights, and represents Our Lord as the Great Physician healing the Sick, under canopies and upon a base.

The foundation-stone of the R.C. Church of the English Martyrs, Streatham, was laid by the Bishop of Southwark. The church will cost £8,000.

About 100 members of the Southampton branch of the Amalgamated Society of Carpenters and Joiners attended the annual dinner, which took place at St. Mary's Hotel, in that town, on Tuesday week. The chair was taken by Mr. T. P. Payne, J.P., and the vice-chair by Mr. W. Beare.

The building for the use of the Royal Commission for Great Britain and Ireland at the World's Fair, Chicago, will be a somewhat important structure designed in the style of the latter part of the 16th century, of terracotta, red brick, and half-timber work, and will be carried out from the drawings of Colonel John W. Edis, F.S.A., of Fitzroy-square, London, the honorary architect to the Royal Commissioners.

The late Lord Cheylesmore's pictures were sold on Saturday, and 78 pictures realised £31,015. The deceased peer was a personal friend of Sir E. Landseer, from whose hand there were many pictures and sketches in the collection. His "Monarch of the Glen," which was sold eight years ago for 6,200gs., was bought by Messrs. Agnew for 6,900gs. The remainder of the big Landseers were for the most part bought in.

Legal.

RELIEF FROM FORFEITURE.

THE Conveyancing Act, 1881, went a long way in favour of lessees, and practically put an end to all risk of forfeiture without very good cause. Section 14 of that statute provided, in the first place, for ample notice in writing being given to a lessee before any forfeiture or right of entry could be enforced, and in the second place it enabled a lessee to apply for, and obtain, relief from forfeiture, even after an action had been begun, upon the strength of the written notices given beforehand. But, although the Act itself does not stipulate for this relief being applied for within any specified time, it is only reasonable to suppose that some limit exists, and that, at all events, a lessee who has taken no heed of notices, and has even allowed judgment to go against him in an action, with the result of an actual re-entry, cannot then be allowed to come forward and claim what is really the equitable relief against forfeiture given by the statute. It appears that some years ago the Court of Appeal expressed an opinion, in a case before them, that section 14 (2) of the Conveyancing Act, 1881, giving such relief after action, could only apply where the landlord had not re-entered; but except for this *obiter dictum* there was hitherto no actual authority.

In the recent case of "Rogers *v.* Rice" (*Times*, April 28) this point was, however, clearly raised and decided. The lessor had proceeded by proper notice under the Act for breaches of covenant, and afterwards by action in the Queen's Bench Division for recovery of possession, claiming also arrears and damages. He had obtained judgment, and in July last he had re-entered the premises by a writ of possession, but was still unable to enforce the payment of his rent or damages. In the November following the present action had been brought in the Chancery Division, claiming relief against the forfeiture of the lease, and an order had been made staying further proceedings on the old judgment upon payment of money into Court, though the Judge afterwards dismissed the action with costs. The lessee now appealed, and the Court of Appeal very promptly dismissed his appeal, also with costs. They held that, even upon the words of the Act alone, it was too late to apply for relief against a forfeiture after actual re-entry; and they quoted the old dictum of the Court of Appeal. Indeed, the lessee had in this case no ground of complaint at all, because the action for recovery of possession had not been hurried, nor had the judgment been snapped. But the main point was that a lessee claiming relief in such a case must come in good time.

FRED WETHERFIELD, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

NOTE.—All questions for reply in this column must be headed "BUILDING NEWS," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

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On Thursday, the 5th inst., the Bishop of Lichfield consecrated the new chancel recently added to St. Andrew's Church, Whitmore Reans, Wolverhampton. In addition to the chancel, there has been provided a morning chapel, organ chamber, clergy and choir vestries. The work was executed by Mr. H. Lovat, from the plans of Mr. Beck, at a cost of £3,250.

Foundation stones of the Spurgeon Memorial Baptist Church were laid at Fenny Stratford on Thursday, the 5th inst. The building will be seated for 520 people, and will cost £3,060. At the rear will be a lecture and assembly hall seated for 300 persons, and five classrooms. Mr. J. Thame Sloan, of Leighton Buzzard, is the architect, and Mr. Fathers, of Bedford, the builder.

The Royal Commission for inquiring into the water supply of London will commence its sittings on Monday next by taking the evidence on behalf of the New River Company; and on the following day witnesses will be examined from the East London Company.

The council of the Royal Academy have purchased for the nation with the Chantrey Fund the following pictures and drawings from the current exhibition in Burlington House:—"The Annunciation," by Arthur Hacker; "June in the Austrian Tyrol," by J. M'Whirter, A.R.A.; "Between Two Fires," by F. D. Millet; "Solitude," a drawing by George Cockram; one drawing by W. Osborne, and two by Leopold Rivers, R.B.A.

LEGAL INTELLIGENCE.

ARBITRATION CASE AT CARLISLE.—Mr. Thomas Codringham, M.Inst.C.E., engineering inspector to to the Local Government Board, held an arbitration at Carlisle on the 4th and 5th inst. as to the amount to be paid by the Cumberland County Council to the Carlisle Urban Sanitary Authority for the repair and maintenance of their main roads during the years 1889-90 and 1890-91, for which the local authority claimed £1,188. Mr. Mattison appeared for the County Council and Mr. Alexander Macmorran for the Urban Authority. Evidence was given by Mr. Howard Smith, Assoc.M.Inst.C.E., the city surveyor; Mr. Thomas De Courcy Meade, M.Inst.C.E., of Hornsey; and Mr. G. B. Hooley, Assoc.M.Inst.C.E., the county surveyor of Nottingham, in support of the claim of the local authority. Mr. Bell, the surveyor of the county roads, gave evidence on behalf of the Cumberland County Council. The award of the Local Government Board will be made in due course.

ALLEGED LIBEL ON A SURVEYOR.—At the Central Criminal Court, on Monday, in the libel action brought by John Bartholomew, surveyor, against John Matthew Klench, his former employer (a report of which, when heard before the police magistrate, appeared in our issue of the 29th ult., p. 622), it was stated defendant was now willing to retract what he had written and pay the costs of the prosecution. Under the circumstances no evidence was offered, and a verdict of Not Guilty was returned.

CLAIM BY LIVERPOOL CONTRACTORS AT RAMSEY.—The suit of Holme and King, of Liverpool, against the Town Commissioners of Ramsey, Isle of Man, came before Deemster Gill on the 29th ult. The original claim was for £3,000. Judgment was given by consent for the plaintiffs for about £1,000, and the sum of £2,000 went against them. The plaintiffs had had the ground surveyed by experts, and applied for a rehearing, claiming £2,400. The Ramsey Town Commissioners contracted with the plaintiffs for the making of a sewer. The plaintiffs executed the work, but allege that the site was altered, and the original contract departed from, in consequence of which a quantity of water had to be pumped, involving extra trouble, labour, and expense to the amount of the claim. English experts and civil engineers gave evidence far the plaintiffs, and James Walker, engineer to the Isle of Man Harbour Board, and others gave evidence for the defendants, after which the case was adjourned to May 10 for the arguments of the counsel.

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CHIPS.

A Wesleyan chapel, to accommodate 670 persons, has been opened at Padiham. The cost was £3,000.

Mr. Charles Colton, the senior partner in the firm of Charles Colton and Sons, estate agents, of Sir Thomas's-buildings, Liverpool, died on Monday at his residence in Southport, aged 63 years.

The sum of £20,000 has been bequeathed by the late Mr. John Henry Fox, of Norton, near Stockton-on-Tees, for building and endowing almhouses in the village.

On May 2nd the Bishop of St. Alban's dedicated a reredos and altar which have been erected in the church at Belchamp St. Paul, Suffolk. The reredos and altar are of oak, and have been executed by Mr. Harcourt Runnacles, of Halstead, from the designs of Mr. Arthur Blomfield Jackson, architect, of London.

New premises have been erected at Fulham for the London Parcels delivery Company, and special attention has been paid to the ventilation, which is carried out on the Boyle system, the latest improved form of the self-acting air-pump ventilator being adopted for the extraction of the vitiated air.

An altar and reredos of carved English oak have just been completed for Timberland Church, Lincolnshire, from the designs of the architect for the general restoration of the edifice, Mr. C. Hodgson Fowler, F.S.A., of Durham. Mr. T. Dale, of Sleaford, executed the work.

A Select Committee of the House of Commons have passed the preamble of a Bill promoted by the London and North-Western Railway Company, authorising them to construct over 14 miles of railway from Heaton Lodge Junction to Wortley, Leeds, thus providing a new and independent route from Manchester to Leeds.

Mr. Pearson, jun., of the firm of Pearson and Son, contractors for the Blackwall Tunnel, will come forward for Colchester in the Gladstonian interest at the approaching general election.

At a meeting held at Stourbridge on Monday Mr. John Corbett offered to present the Hill estate, comprising 30 acres and a mansion-house, with money for alterations and endowment, amounting in all to £10,500, for a hospital for the district. The gift was accepted, and a committee was appointed in furtherance of the object.

Our Office Table.

THE city council of Manchester discussed at their last meeting Mr. Ford Madox Brown's latest fresco in the town hall with considerable frankness. The subject came before the members on the receipt of a communication from the Town Hall Committee stating that they were not satisfied with the painting, and that they had asked Mr. Madox Brown to submit for their approval the drawing before proceeding with the eighth and last of the series of frescoes. One of the members declared the picture last executed to be simply disgraceful, and urged that the ratepayers were entitled to something better for their money; another councillor asked if there were any hope for the removal of such a burlesque, such a caricature of art, from the town-hall walls. Alderman Thompson, who posed as the artist's candid friend, pointed out that many leading painters ranked Mr. Madox Brown's work very high, and had raised a fund for the purpose of asking him to paint a picture for the National Gallery, the subject of which was to be a copy of one of the town-hall pictures, "The Trial of Wiclif." As to the seventh fresco, he confessed that when he first saw it, it startled him, and later inspections told him that the babies were too large, and that there was a great deal of yellow about the picture. It was only fair, he thought, to remember that many years had elapsed since the work was begun, and it was but natural that an artist getting into years should not have the vigour of his heyday. It transpired that the cost of the frescoes have been £320 each.

UNDER the auspices of the Sanitary Institute and the Norfolk County Council a lecture was delivered on Saturday last on "Scavenging and the Disposal of Refuse and Sewage" at Blackfriars Hall, Norwich, by Mr. T. de Courcy Meade, M.Inst.C.E. The lecturer described the street orderly system which has been in use in the City of London many years, and then gave some interesting figures as to various methods and the cost of removal of street refuse, watering streets, and the use of rotary brushes and other machines for the cleansing of streets and the removal of snow. He described at length the various systems now in use for the collection and disposal of house refuse, dealing very fully with the subject of refuse, cremation, and other systems in use throughout the country.

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MEETINGS FOR THE ENSUING WEEK.

MONDAY.—Royal Institute of British Architects. "The Art of Internal Illumination of Buildings by Electricity," by W. H. Preece, F.R.S. 8 p.m.
TUESDAY.—Society of Arts. "Mud as a Material for Architecture in Persia and the East," by William Simpson, R.I. 8 p.m.
Institution of Civil Engineers. Discussion on "The Distribution and Measurement of Illumination." 8 p.m.
WEDNESDAY.—Society of Arts. "Colour-Blindness," by Capt. W. de W. Abney, C.B., F.R.S. 8 p.m.
THURSDAY.—Society of Arts. "The Indian Census of 1891," by J. Athelstane Baines, C.S.I. 4.30 p.m.
FRIDAY.—A.A. Lyric Club. Concert.

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A view of Hastings, by Mr. Albert Goodwin R.I., has been presented to the permanent collection in the Maidstone Museum and Art Gallery.

The Bournemouth Town Council have resolved to erect a building, to be used as a rendezvous for visitors, on a plateau in the gardens, near the Invalids' Walk and the sea. The cost of the building is not to exceed £30,000.

A stained-glass window has been placed in Pattingham church in memory of the late Captain Wight-Boycott. The window was the work of Messrs. Burlison and Grylls, of London.

A foreman carpenter, living in King's-road, Chelsea, complained to Mr. De Rutzen, at Westminster police-court on Saturday, that the vestry had opened the drains and a cesspool under the house he occupied, and left them open for several days. The consequence had been the serious illness of his wife, and he had been compelled to send his family into the country. The vestry officials explained that they had been waiting for a deposit from the landlord towards the cost of the work. Mr. De Rutzen said the work must be completed without more delay. The assistant surveyor promised that it should be done at once.

Trade News.

WAGES MOVEMENTS.

BIRMINGHAM.—Under the auspices of the Building Trades Committee of the Birmingham Trades Council, a demonstration of trade-unionists took place on Saturday in favour of the bricklayers and labourers at present on strike. A procession of the strikers and their sympathisers was formed at the headquarters, Navigation-street, and, headed by a brass band, paraded the town to Gosta Green, where a mass meeting was held, under the presidency of Mr. D. Dobson (Operative Stonemasons' Society). Resolutions were unanimously passed expressing sympathy with the men on strike, and pledging those present to give all moral and financial support till the demands were conceded.

CARPENTERS AND JOINERS.—In his monthly report for May, published on Monday last, Mr. F. Chandler, the general secretary of the Amalgamated Society of Carpenters and Joiners, announces that satisfactory settlements have been effected at Birkenhead, Carlisle, Congleton, Derby, Erith, Leigh and Bedford, Nelson, Paignton, St. Alban's, Scarborough, Shrewsbury, and Wilmslow. In each of these towns considerable advantages have, it is stated, been gained by members of the trade. Members are requested to keep away from the following places pending a settlement of trade movements in these towns: —Bedford, Belfast, Cardiff, Derby, Leigh, Leamington, Littleborough, Middleton, Walsall, and Worcester.

CARDIFF.—Aggressive action was resolved upon on Saturday evening at a meeting of the master builders of Cardiff and Pontypridd. During the week, of the 4,000 men who originally came out on strike, several hundred had employment on contracts which had been undertaken by private companies or by firms who were not members of the Builders' Association. The most notable instances were those of Messrs. James Tucker and Co., Limited, and the Royal Hotel Company, Limited, who were each making large extensions to their premises, necessitating the employment of at least 200 persons. The workmen's strike committee had consented to these arrangements being made on the understanding that the men were paid the advance of 1d. per hour asked for. Upon these large levies have been made in support of those on strike, the masons paying 6s. a week, the carpenters and joiners 4s. 6d., and the plasterers 7s. a week. No levy is being made on the bricklayers, as they have funds amounting to nearly £44,000. On Saturday evening nearly all the merchants who have been supplying materials to these builders bound themselves not to send anything further. This will at once stop all work in Cardiff and district. Saturday was pay-day for the men on strike. All the men except the bricklayers' labourers were paid 15s. each; the labourers received 12s. each, with an additional 6d. for each child under twelve years of age.

COVENTRY.—The bricklayers' strike for an increase of wages, which commenced on April 1st, terminated on Saturday, when the dispute in question was settled by arbitration, the arbitrator being Mr. A. H. Acland, M.P. for Rotherham. Mr. Acland met a deputation composed of master builders and bricklayers in St. Mary's Hall, and after hearing both sides, gave his decision in favour of the men having the advance asked for—viz., 7½d. to 8d. per hour. Several alterations in the rules were also agreed to.

GLASGOW.—The Glasgow Branch of the National Union of Labourers have resolved to continue the strike in which some sixty masons' labourers have been engaged for the past three months. The dispute has arisen on account of the men employed by two contractors having demanded an increase of wages from 6d. to 6½d. per hour.

LEEDS.—Five hundred paviors in the employ of the Leeds corporation struck work on Saturday for higher wages and shorter hours.

ROCHDALE.—The operative stonemasons have struck for an advance of 1d. per hour. The masters have offered them ½d. per hour. The reason assigned by the men for demanding this advance is that the bricksetters have had an advance to 9d. per hour.

SHEFFIELD.—The great majority of bricklayers are still out on strike. In nearly every case the employers have agreed to grant to the men the extra halfpenny per hour asked for; but the demand of the employés that the masters shall also sign the rules has not been conceded, except by a number of small employers of labour.

STAFFORD.—Last week, according to notice, the Stafford bricklayers came out on strike for a rise of wages from 7d. to 7½d. per hour; but with one exception the employers have since conceded the advance, and the men have, except at that shop, resumed work. A new code of working rules is to be submitted to the employers, about which there is not expected to be any dispute. It is stated that the bricklayers' labourers threaten to come out for an increase of wages from 4½d. to 5d. an hour.

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The unveiling took place on Tuesday of the memorial which has been erected in the Market Place at Willenhall to the memory of the late Dr. Joseph Tonks, who died in April of last year at the early age of 35. It is a combined drinking fountain and clock tower, built at a cost of about £250 of Hollington and Bath stone. The clock has four dials, and there are four corner bracket lamps. Besides an ordinary drinking fountain, there are horse and dog troughs. The memorial has been built by Messrs. Roddis, sculptors, of Birmingham, the clock being supplied by Messrs. Smith and Son, of Derby.

From the balance of the money voted by the guarantors of the Manchester Jubilee Exhibition the Whitworth trustees purchased three drawings by David Cox at the Murrieta sale in London last week—"Barden Tower," £1,155; "The Road Through the Wood," £294; and "Calais Pier," £178 10s.

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Holloway's Ointment and Pills.—With catarrh, coughs, and influenzas everywhere abounding, it should be universally known that Holloway's Ointment, diligently rubbed upon the chest, checks the worst assaults of these maladies, and securely wards off more grave and dangerous diseases of the throat and lungs. The truth of this assertion must remain unquestioned in the face of thousands of unimpeachable living witnesses.

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TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

ADELAIDE.—For new altar, St. Dominic's Convent, North Adelaide, South Australia. Mr. Joseph S. Hansom, F.R.I.B.A., 27, Alfred-place West, South Kensington, architect:—

Boulton, R. L. and Sons, Cheltenham	£230	0	0

Accepted.

BRANDON, SUFFOLK.—For the erection of a steward's house at Brandon Park, Brandon, for Baron de Barreto. Mr. Edward S. Mansergh, 28, Mount-street, Grosvenor-square, W., surveyor:—

Saint, W., Cambridge	£815	0	0
Sanitation Co., Ltd.	773	0	0
Benjamin and Robinson	724	0	0

BATTERSEA.—For alterations at the Haberdashers' Arms, Battersea, S.W., for Mr. A. A. Solomon. Messrs. Fletcher and Migotti, architects:—

Littlefield	£550	0	0
Walker Bros.	510	0	0
Jackson and Jennings	476	10	0
Salt	454	0	0
Courtney and Fairbain (accepted)	437	0	0
Pewtering and counter:—			
Edwards	£132	0	0
Warne	125	10	0
Williamson (accepted)	72	10	0

BOURNEMOUTH.—For making new road, &c., in Durley Chine, for the town council. Mr. F. W. Lacey, A.M.I.C.E., borough engineer and surveyor:—

Pike, C., Bournemouth	£1,092	7	0
Saunders, W. H., & Co., Bournemouth	927	11	0
Edwards, J., Boscombe	879	4	0
Troke, G., Winton	806	13	0
Budden, G. T. and W., Parkstone*	762	12	6

* Accepted.

BOURNEMOUTH.—For two water-vans and two material carts, for the town council. Mr. F. W. Lacey, A.M.I.C.E., borough engineer and surveyor:—

Glover and Sons, Warwick	£129	0	0
Mounsell Bros.	125	0	0
Clemens, Abell, and Co., Worcester	123	0	0
Wadsworth and Son, Halifax	117	0	0
Woods and Co., Stowmarket	116	10	0
Stanley, Lewis, and Co., Wolverhampton	113	0	0
Hull Cart and Waggon Co., Hull*	109	0	0
Baker, T., and Co., Crompton†	69	10	0

* Accepted. † Water-vans only.

BOURNEMOUTH.—For painting 1,081 street lamps, for the town council. Mr. F. W. Lacey, A.M.I.C.E., borough engineer and surveyor:—

Wood and Co., Bournemouth (accepted)	£79	19	0

BOURNEMOUTH.—For painting the Promenade Pier, for the town council. Mr. F. W. Lacey, A.M.I.C.E., borough engineer and surveyor:—

	A	B
Cutler, F. T., Bournemouth	£240 0 0	£240 0 0
Dacombe, J. J., Bournemouth	232 5 0*	236 0 0

A, White-lead paint. B, Torbay paint.
* Accepted.

BOXMOOR, HERTS.—For new stabling at The Bell, for Messrs. Salter and Co., Limited. Mr. C. P. Ayres, Watford, architect:—

Timberlake, King's Langley	£265	0	0
Turner, Limited, Watford	250	0	0
Waterman, Watford	247	0	0
Dove and Co., Watford (accepted)	246	0	0

BRIGHTON.—For the erection of public elementary schools, Elm-grove, Brighton, for the Brighton and Preston school board, U.D. Mr. Thomas Simpson, 16, Ship-street, Brighton, and Mr. John W. Simpson, 10, New Inn, Strand, W.C., joint architects:—

Killby and Gayford	£12,934	0	0
Dean	12,763	0	0
Stimpson and Co.	12,646	0	0
Longley and Co.	12,375	0	0
Chappell, J. T.	12,001	0	0
Reed, Blight, and Co.	11,961	0	0
Peters, R. (accepted)	11,598	15	0

BRISTOL.—For the installation of the electric light, for the corporation:—

For dynamos:—

Siemens Bros. and Co., London*	£14,011	0	0

(Lowest of a dozen tenders received, the highest being £20,000.)

For boilers:—

Tinker Brothers, of Hull*	7,450	0	0

(Lowest of nine tenders received, the highest being nearly £10,000.)
* Accepted.

BRISTOL.—For repaving Broadmead, Old King-street, and Barrs-street, for the city council:—

Walker, Geo., Leeds	£2,915	0	0
Cowlin, W., and Son	2,695	6	8
Krauss A.	2,568	10	0
Bradshaw and Son	2,534	12	6
Wilkins, G. H. (accepted)	2,500	15	0

(Rest of Bristol. City surveyor's estimate, £2,612).

BRISTOL.—For fencing in Victoria Park, Windmill-hill, for the city council:—

Harrison, S., Milk-street, Bristol (accepted)	£107	14	10

(Lowest of twenty-one tenders received, the highest being Marshall and Son, London, £630. City surveyor's estimate, £210.)

CANTERBURY.—For laying an iron drain at the sewage farm, for the city council:—

Adcock, of Dover	£2,854	0	0
Johnson and Co., London (accepted)	2,819	0	0

(Several higher tenders received.)

CHESFORD, WARWICKSHIRE.—For the rebuilding of Chesford Bridge, for the Warwickshire county council:—

Smith, G. F., and Son, Leamington*	£3,050	0	0

* Accepted. (Lowest of seven tenders received.)

CHESHUNT.—For erection of office adjoining the Cheshunt railway station, Herts, for Messrs. Thomas Moy (Limited). Mr. S. Jackson, Stratford, E., architect:—

White, C., Enfield Highway	£167	0	0
Almond, A. F., Enfield Highway	157	10	0
Horne, W. P., Clapham-road	155	0	0
Fuller, E., Walthamstow	145	0	0
Percy, E. H., Manor Park, E.*	110	0	0

* Accepted.

FAIBACH, POINT TALBOT.—For Wesleyan chapel:—

Cox, Aberavon	£1,670	0	0
Dowland, Abergavenny	1,650	0	0
Lloyd, Cymmer	1,465	0	0
Jones, D. C., and Co.,* Gloucester	1,459	0	0

* Accepted.

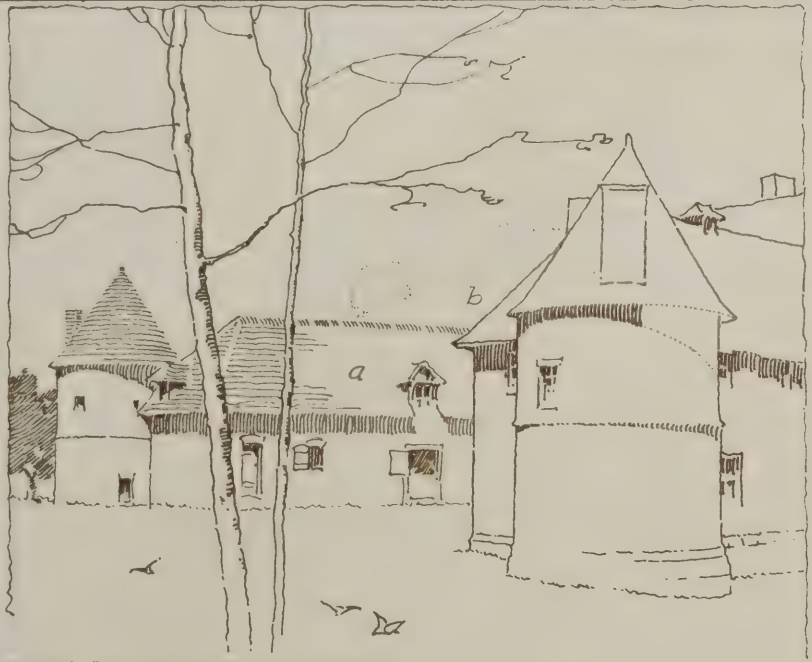
FIDLER'S FERRY.—For ventilating turrets and pressure relief valves to the Vyrnwy aqueduct tunnel beneath the Mersey for the Liverpool city council:—

Fawcett, Preston, and Co. (accepted)	£166	6	0

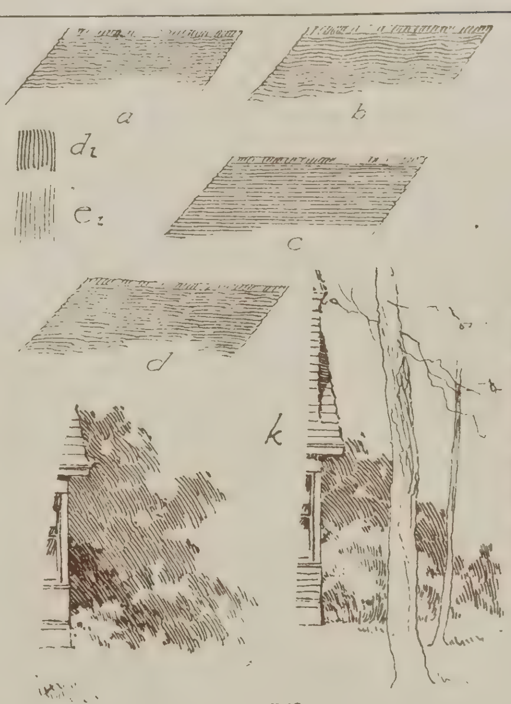
FOLKESTONE.—For the erection of an office for the inspector of weights and measures, for the town council:—

Petts, J. Q., and Son (accepted)	£98	0	0

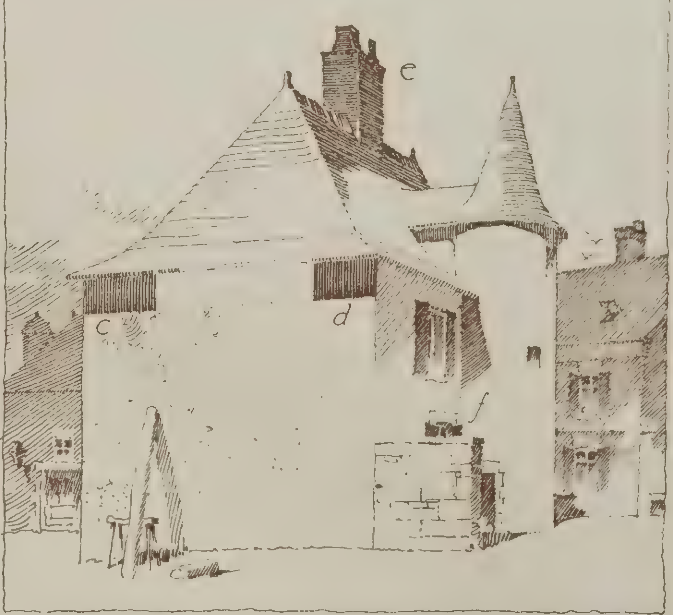
(Lowest of four tenders received; highest, £128.)



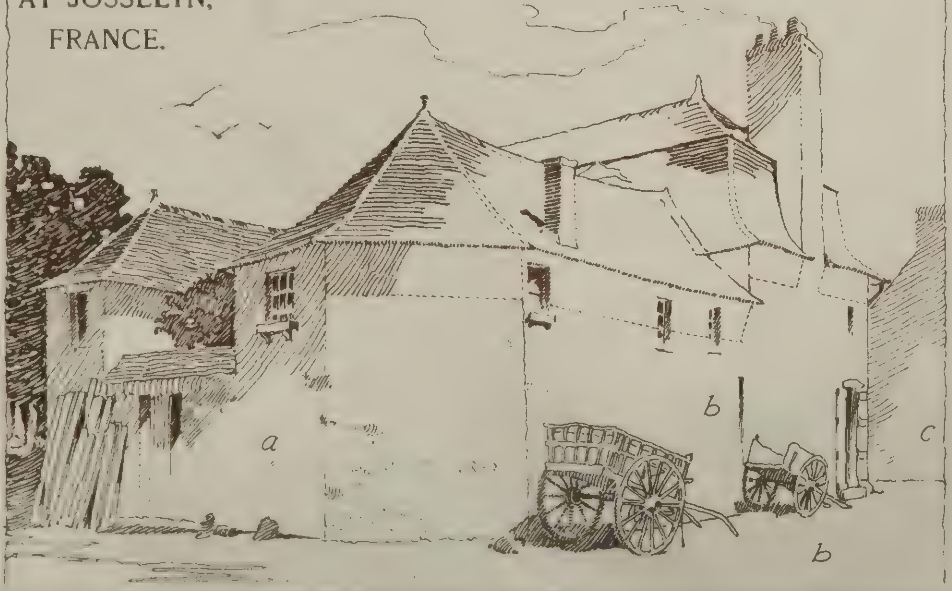
FARM BUILDINGS, NORMANDY.



AT VITRE, FRANCE.



AT JOSSELYN,
FRANCE.



ST. MARIE AUX ANGLAIS,
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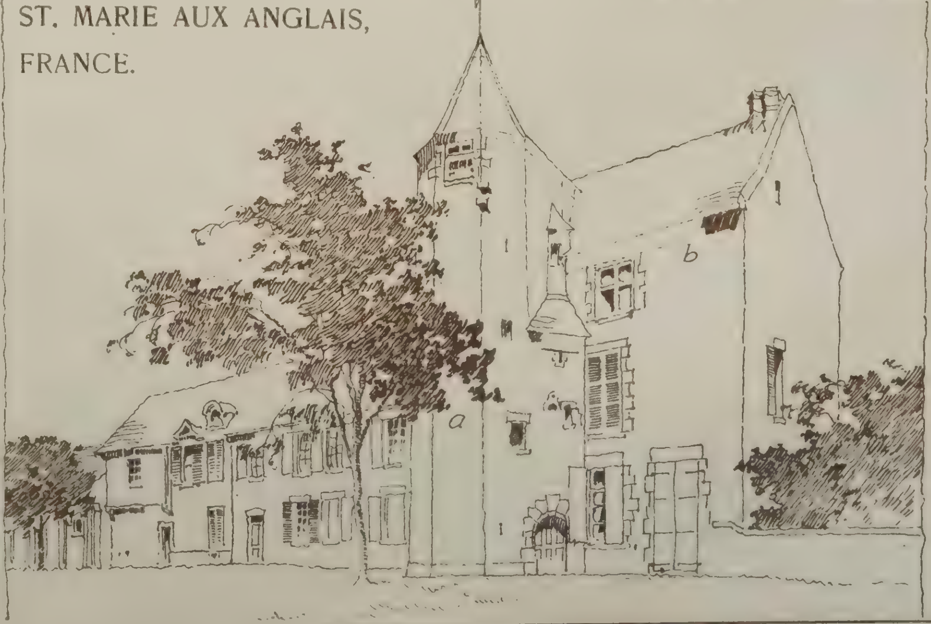
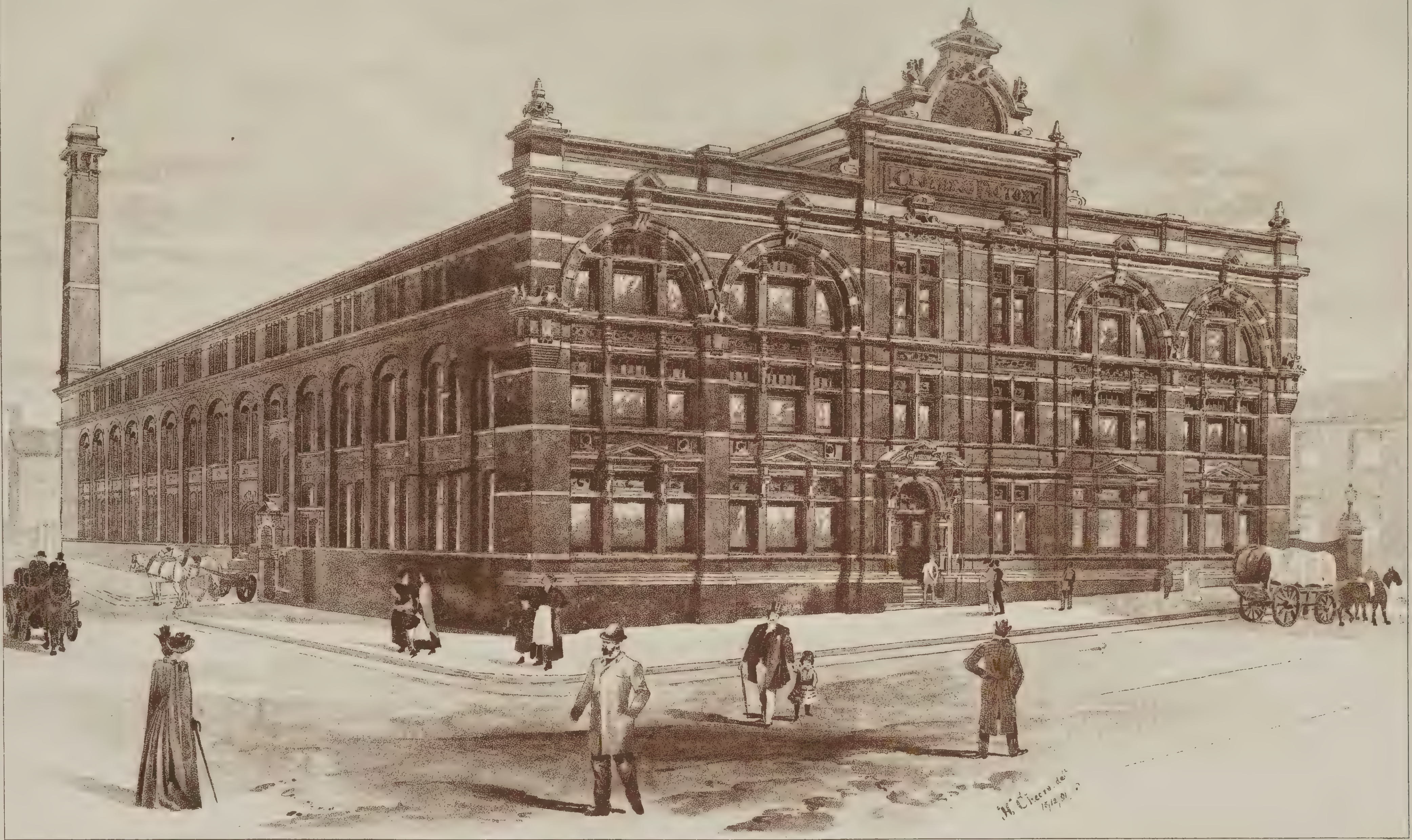


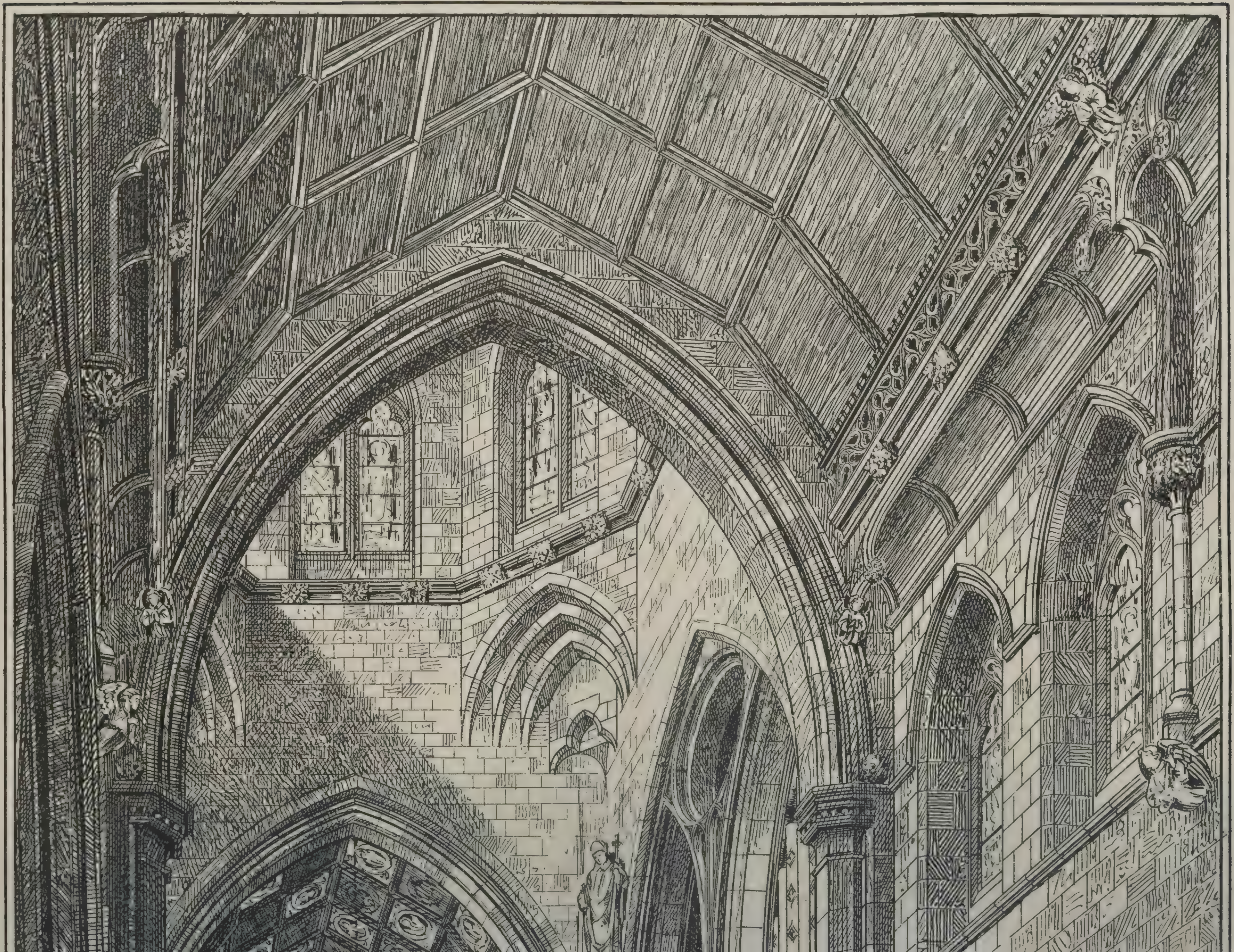
ARCHITECTURAL RENDERING IN PEN AND INK,

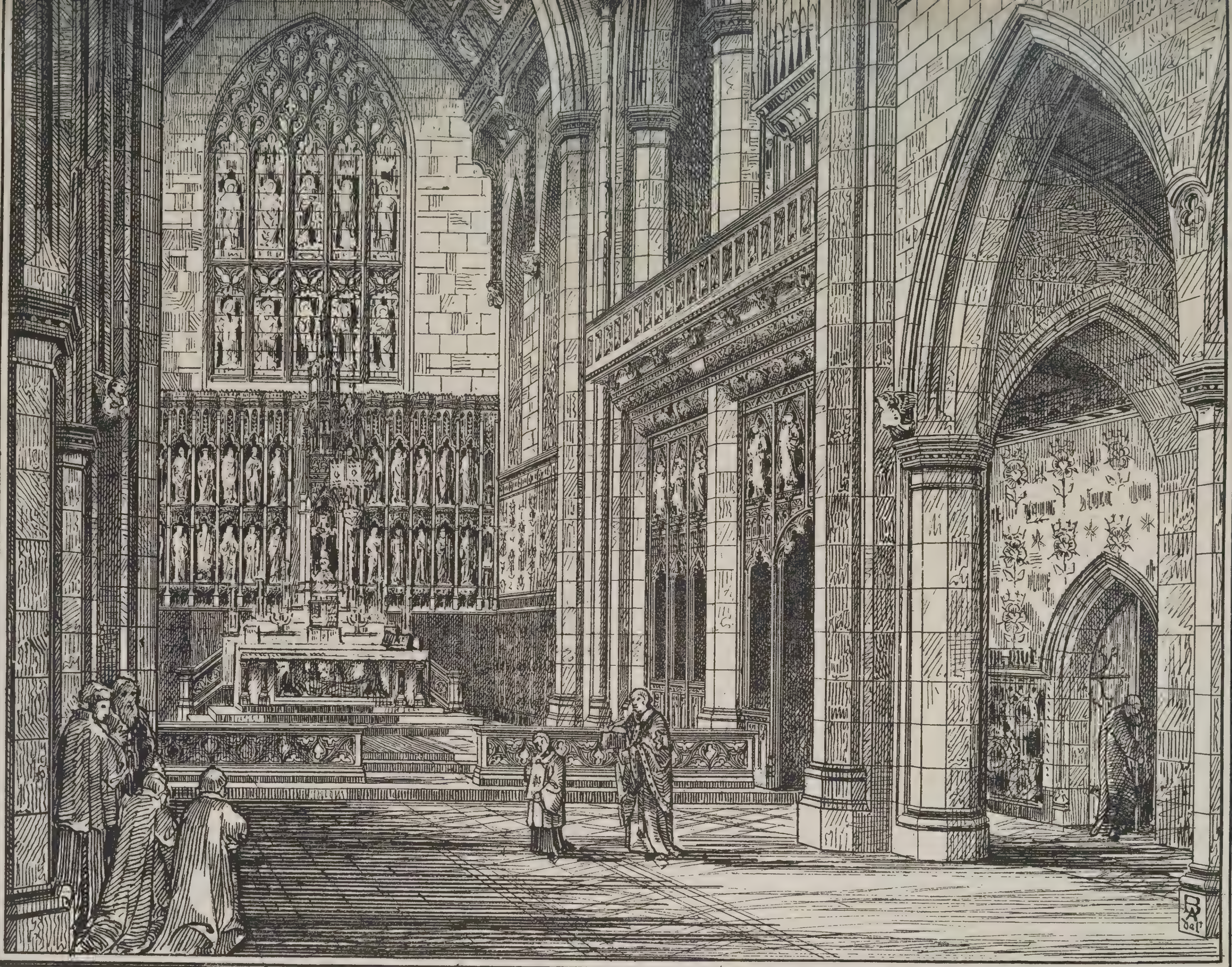
Photo Lithographed & Printed by James Akerman 6 Queen Square W C

CLOTHING · FACTORY · LEEDS · FOR MESSRS HEPWORTH AND SON · H · A · CHEERS · ARCHT



"PHOTO-TINT," by James Akerman, 6, Queen Square, London, W.C.



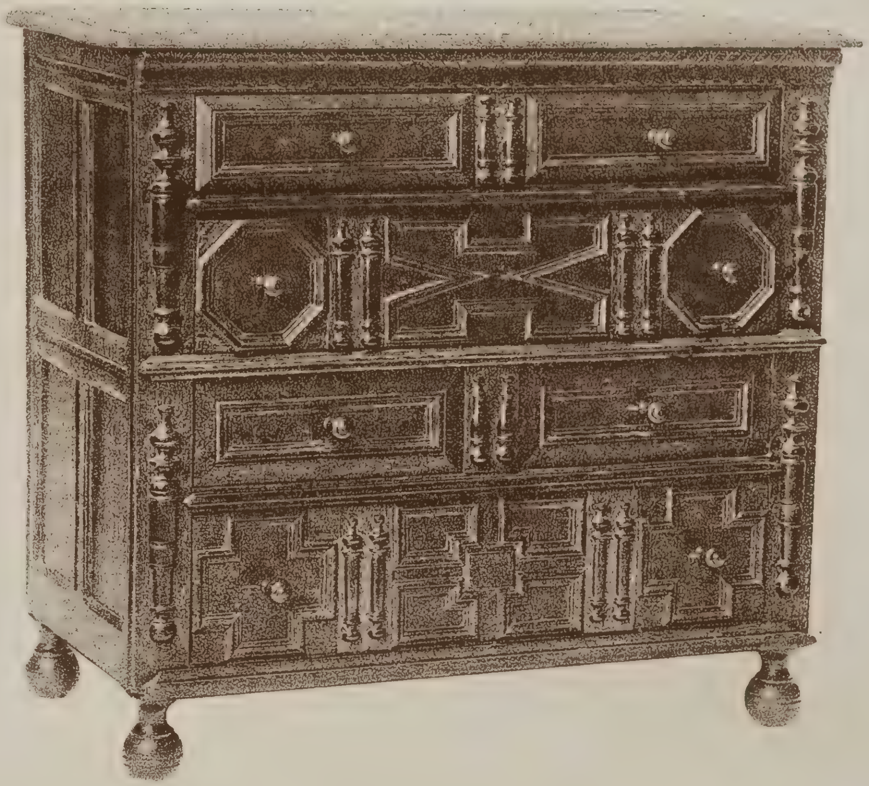


Church of St Michael and all Angels Newcastle on Tyne Dunn Hanson & Dunn architects 1891

Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.C.

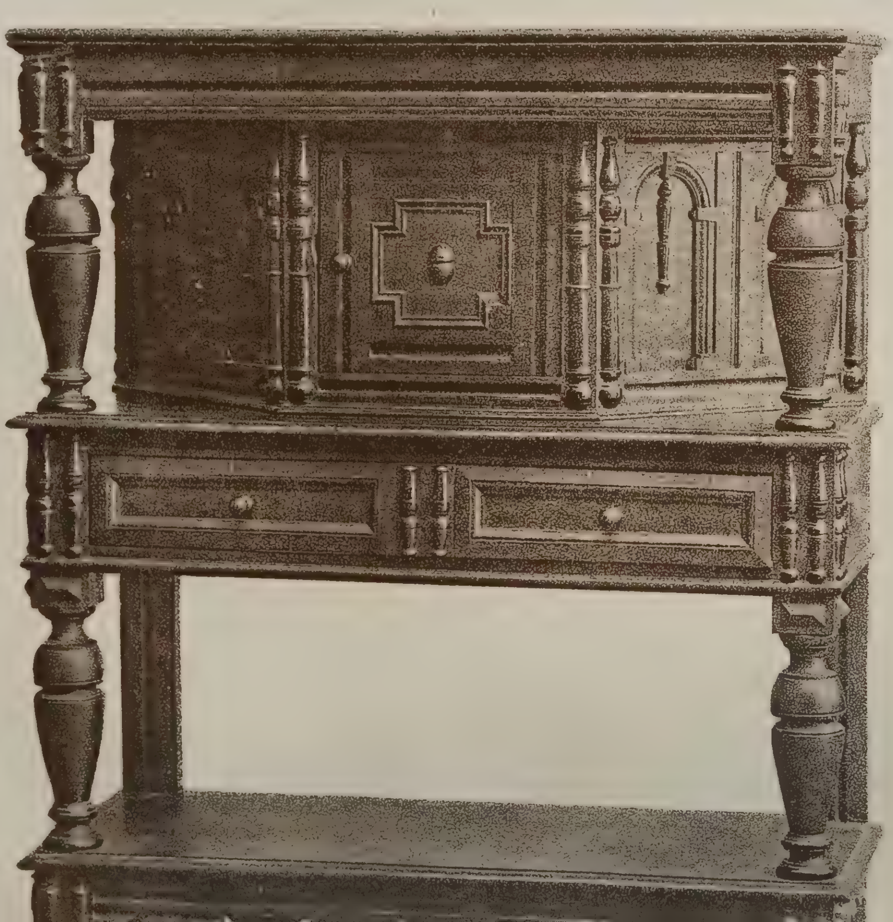
"COLONIAL · FURNITURE · OF · NEW · ENGLAND".

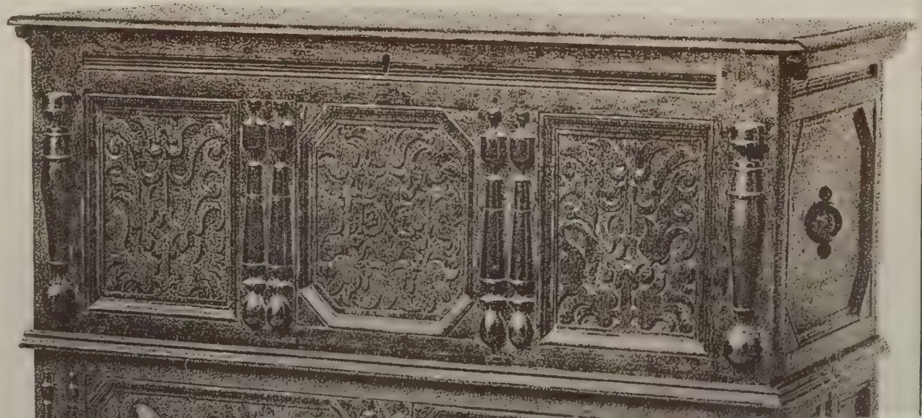
BY · DR IRVING · WHITALL · LYON



A CHEST OF DRAWERS

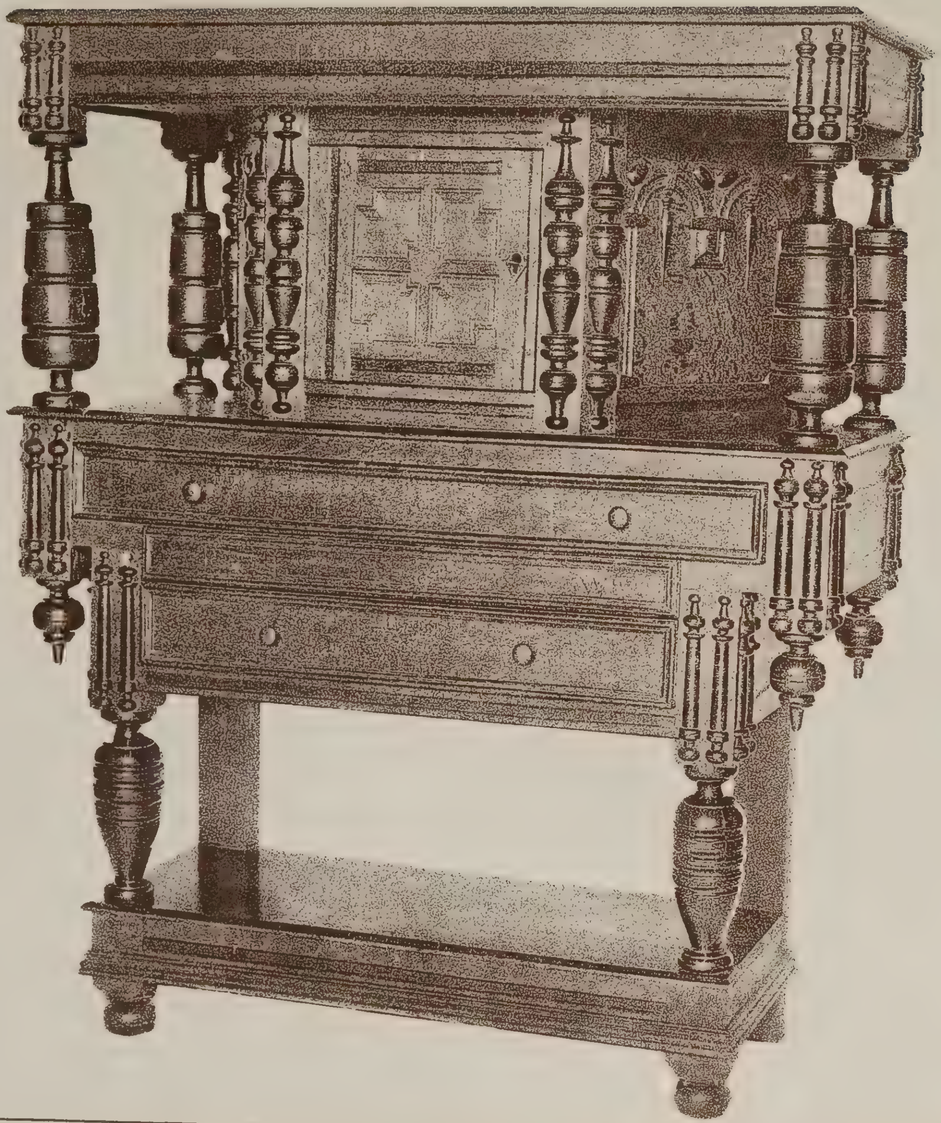
1680-1700





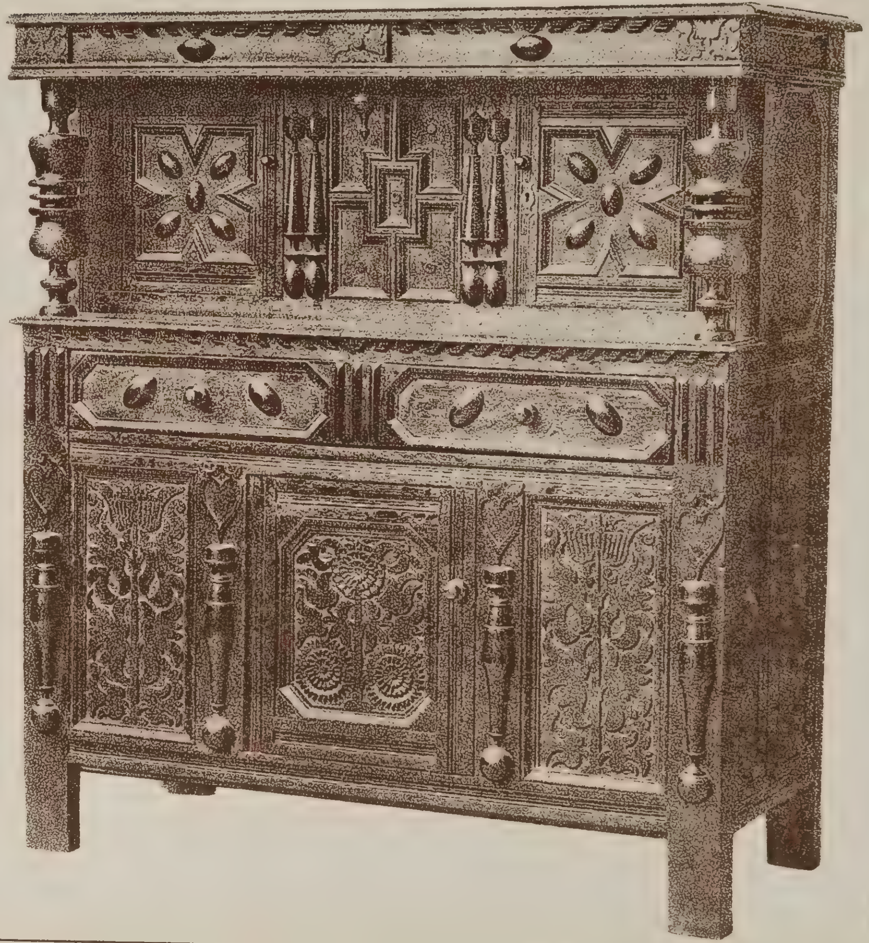
COURT-CUPBOARD

SECOND HALF SEVENTEENTH CENTURY



CARVED OAKEN CHEST WITH TWO DRAWERS

1680-1700



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LIBRARY
OF THE
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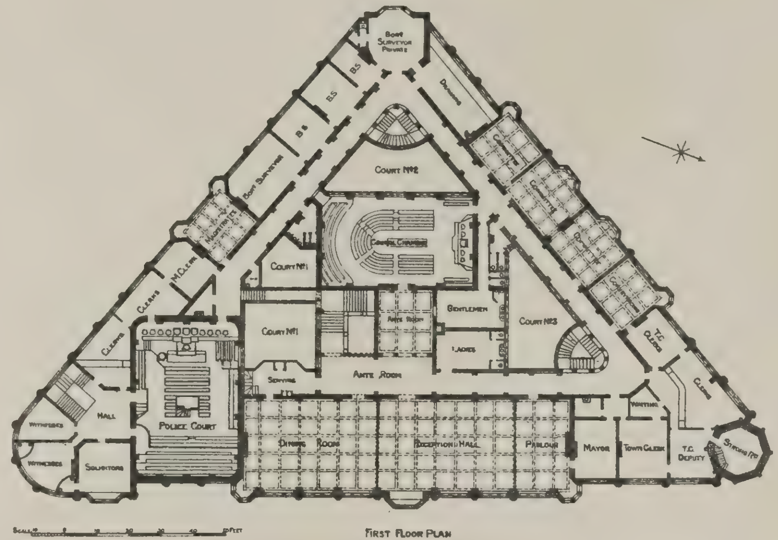
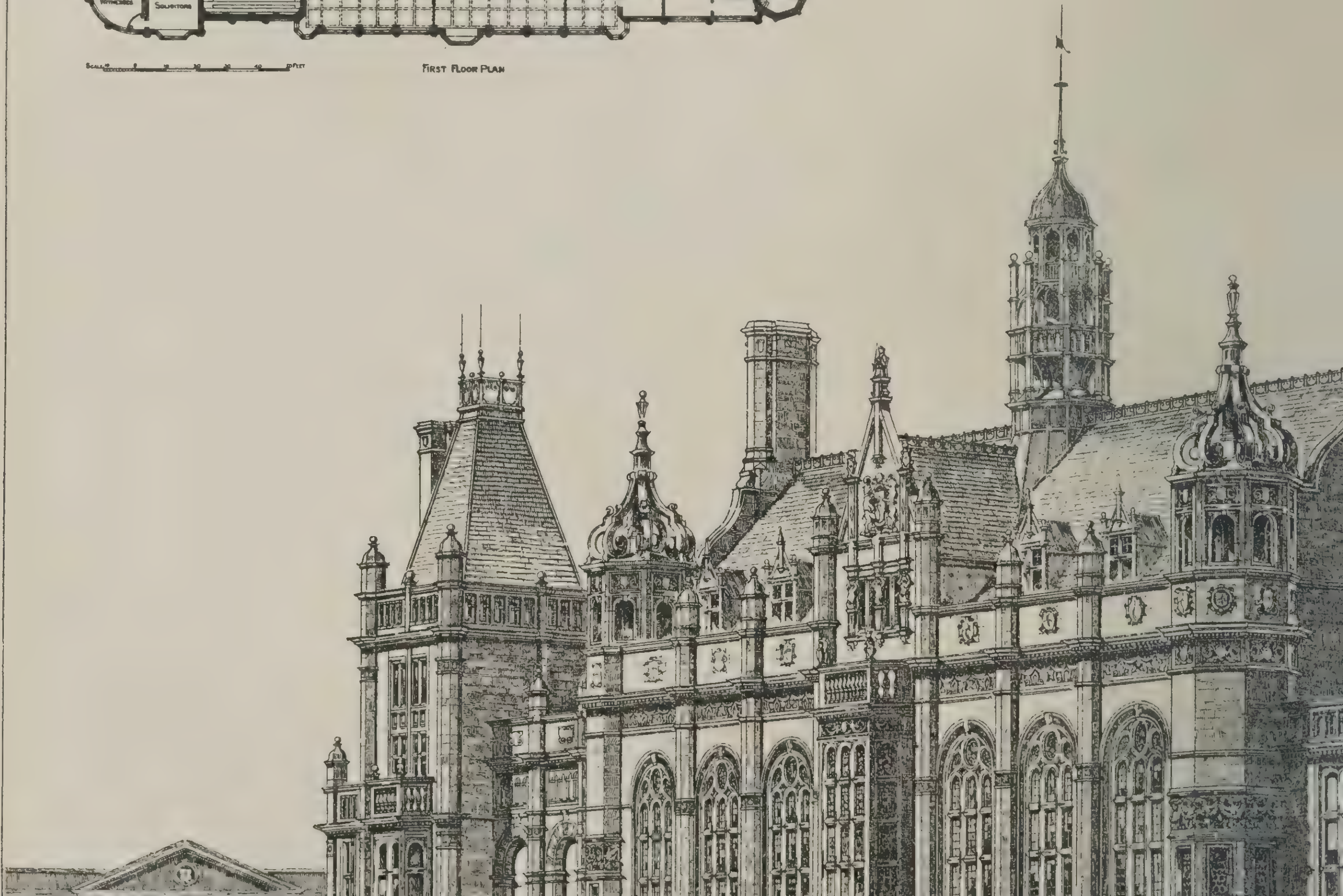
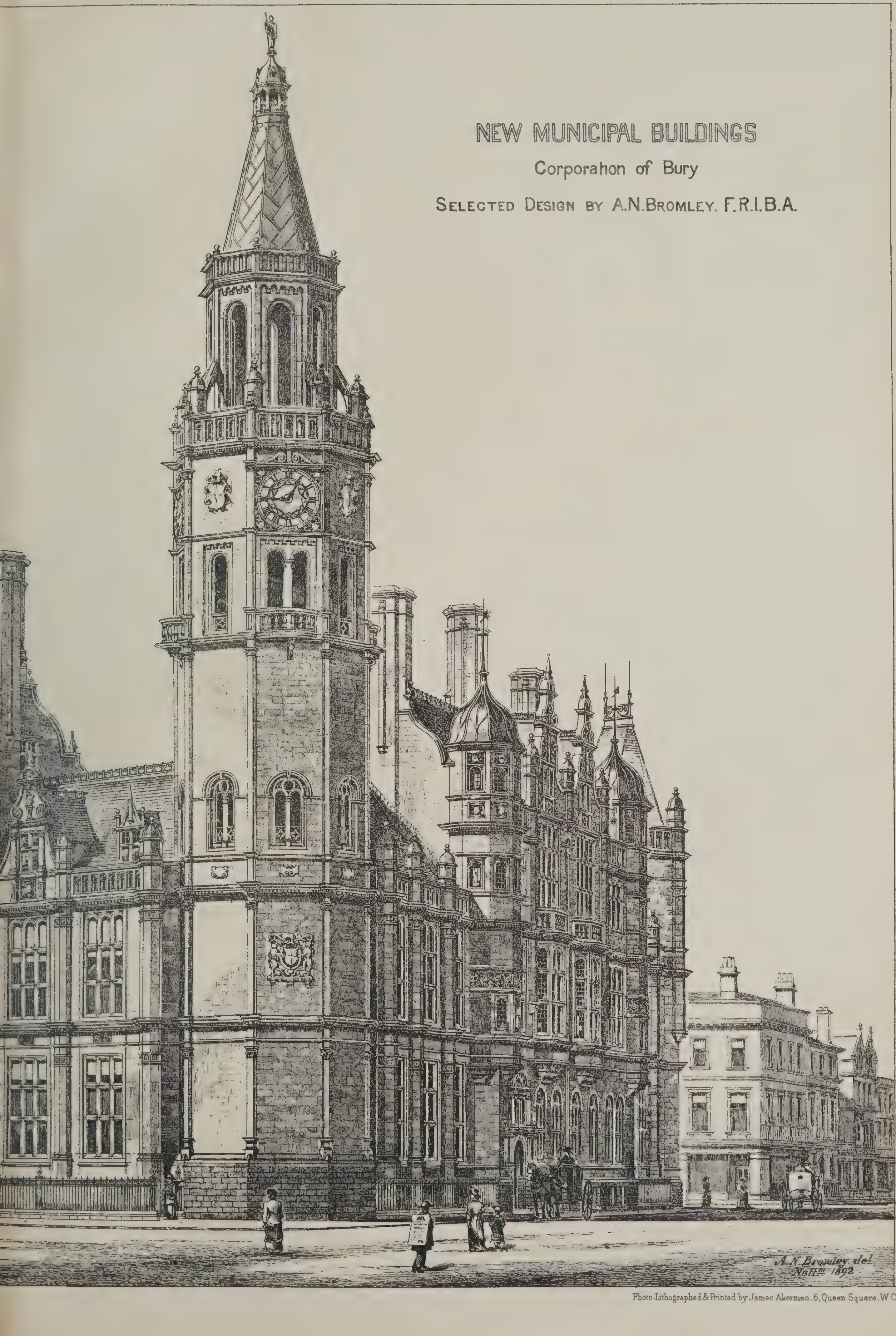


FIRST FLOOR PLAN





NEW MUNICIPAL BUILDINGS

Corporation of Bury

Selected Design by A.N. Bromley. F.R.I.B.A.

Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.C

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXII.—No. 1950.

FRIDAY, MAY 20, 1892.

THE PUPILAGE SYSTEM.

SOONER or later there must be a change in the relation between architects and their pupils, especially if the latter are to avail themselves of the educational agencies that are now open to them, and their masters take a more liberal view of their obligations. Hundreds of youths from want of adequate schooling and age yearly enter professions of which they know absolutely nothing, never having been brought into any contact with duties of a totally different sort than those they have been accustomed to see performed, or with requirements which call for the exercise of faculties quite new to them. Nor can we be surprised at this if we consider that the system of apprenticeship amongst architects, for example, excludes any participation of the pupil as a minor, in the contract. Practically, the indentures are drawn up between the master and the young man's parents; the boy has no knowledge of the legal obligations of the contract made out between himself and the master. Although the youth is actually one of the parties to the contract, he has generally nothing to do with the terms which are arranged for him, and so an irrevocable step is taken when the premium is paid and the deed signed, which commits the lad to a line of duty that is often distasteful to him, but by which the master reaps advantage. We have seen so many of these deplorable contracts made for young men who had neither the inclination nor the capacity for architecture as a profession, that our sympathies are in favour of a reform by which a youth's predilection may be determined, and a preliminary test made of his fitness. To take him out of his school a raw lad, and "article" him to an architect simply because he has a fondness for drawing, is too ridiculous to be entertained, though it is the ordinary course followed by parents. The parent or guardian too often thinks for the boy, and the arrangement is hurried because Mr. So-and-So has a vacancy, or is a leading member of his profession. Probably the best course to test the fitness of a youth for architecture is to give him a period of probation, during which he should be able to ascertain the nature and requirements of the profession in its varied aspects of construction, geometrical drawing, estimating, and the superintendence of work. A form of indenture was, some time ago, issued by the Institute, which indicated the conditions under which alone an architect should take pupils; but we take it that it has not been generally accepted by the profession. As we suggest, the contract is all on one side, the pupil has no voice in the ordinary indentures, which are drawn up by a solicitor who knows nothing at all of the business. One suggestion is that only students should be accepted who are willing to undertake on their own responsibility the conditions laid down; but for youths under a certain age this would be impossible. The desirability of increasing the age at which pupils are taken is clear. One practical plan would be only to take a pupil for a given period, say six months or one year, under certain conditions; at the end of which period the pupil would have a tolerably good idea of the nature of the requirements, and could make up his mind whether he would continue or relinquish the profession for something more agreeable to his taste. It is the one-sided ordeal of pupilage that has sent so many young men into a profession they have not the least aptitude for, and in which they do not seem to make any headway.

An admitted weakness of the system of indentures is that masters do not give facilities to their pupils to acquire a knowledge of certain portions of the business. Books and personal instruction are rarely afforded. The principles and data necessary to prepare a plan, a design, a detail; the principles of valuation, or surveying buildings for various purposes are seldom divulged, and the pupil who asks for information is too often snubbed or told not to trouble himself about matters that he will learn in due time. One of the conditions of a reformed apprenticeship should be that the master provide all necessary elementary treatises for the architectural education and practical knowledge of the pupil, and afford him all necessary personal instruction. We have heard some masters say that the premiums were paid for the advantage of acquiring office routine, and that it was no part of their business to provide books or instruct, and no doubt this has been the general tradition of the profession. Those days have gone by. Architects who now take pupils have obligations to fulfil. They are now required to teach and provide means of instruction, to allow their pupils to attend classes and examinations. One of the clauses in the Institute articles of pupilage requires that the principal shall allow the pupil such absence as he may think reasonable for the purpose of attending lectures, classes, and the examinations.

The methods used by the profession to develop the pupil's capabilities are no doubt in fault. In the office the idea is to give him tasks for which he has no liking, such as to trace plans and copy specifications. They are useful manual exercises, but they do not instruct. A more sensible course is to bring him into contact with actual work and workmen as soon as possible, or as soon as he knows how to draw a plan and section. The legitimate use of materials is the root of good design and construction, but the apprentice is not once brought into contact with the workshop, or even a building in progress, till his term is nearly expired. One able authority says that the pupil should be initiated into all the trades, and, if possible, should actually be taught some handicraft, so as to learn the difficulties and possibilities of working in materials. Again, we should make modelling a necessary factor. By the models of buildings, their constructional parts, the methods and principles of vaulting, domes, and the development of groins, and other difficult points would be learned in a much more practical manner than from merely geometrical diagrams and books. Artistic modelling should form a part of this instruction afforded by the principal at an early stage, and this may be learned at an art school.

In short, a master should at once perceive of what stuff a youth is made. It is ridiculous to try to add a qualification which he has not got, or to try and make him an architect by giving him artistic drawings to copy. Artistic appreciation is the ruling motive, without which a general knowledge of art, superadded to skill in construction or business habits, is of no use. In a recent paper by a well-known architect it was truly observed this motive must be present from the beginning, inspiring and governing the construction. To try and tack on the art afterwards by a course of class attendance or book-reading will not do. Such classes or courses cannot impart the knowledge to anticipate the difficulties of handicraftsmen, and so design to express their methods of working. We often see a working drawing, say, for a piece of framing, that will give extra labour to the workman without any artistic advantage, or an unnecessary labour in stone-cutting that would be much better saved. The (Melbourne) Victorian Institute of Architects have lately been discussing the subject of a paper read by Mr. A. C. Walker, A.R.I.B.A., on this question, with a view to adopt a form of indentures, and some of the suggestions are of value. The author of the paper thinks that it should be optional for a pupil to terminate his articles at the end of a year, so that if he found himself unsuited to the profession he might turn his attention to some other calling. We can imagine a danger in this. Some young men would take advantage of this option, and be inclined to shirk their responsibility and to change their office every year. A probationary term, as we have said, is desirable, but it should be on terms equitable to both parties, and only on the condition that the pupil found himself unfitted for the business should he be allowed to retire. Pupils are often articled at too young an age, and before they have acquired a proper standard of education at school, which should, if possible, be made to lead up to the professional requirements. It should, at least, be as perfect and complete as circumstances permitted, and at the end of their collegiate training they would in all probability be of the age to think for themselves.

THE DECAY OF BUILDINGS.

THE reported condition and need of substantial restoration of one of the late Sir Gilbert Scott's finest churches is a note of warning to all architects and promoters of buildings, whether ecclesiastical or otherwise. We lately mentioned the fact of the repairs to the tower and spire of the church of St. Giles, Camberwell, the cost of which is estimated at over £4,000, and under the Ecclesiastical Intelligence in the *Times* we find that the building requires extensive restoration, which has become a serious matter for the parishioners. Some years ago the west front and nave underwent restoration of the same kind at great cost, the stone dressings being found in a very crumbling condition. When it is added that the church is not yet fifty years old, and that the whole exterior facings have to be renewed, the matter is one calling for attention, and suggests the possible repair of many of our cathedrals and churches at an early date. Only the other day much alarm was caused in Lincoln by the fall of a large piece of stone from the north-western tower of the cathedral, which stone, falling from a height of about 150ft., shattered a flagstone of the pavement beneath. The dean and chapter have since caused a careful examination of the stonework to be made, and a survey to be undertaken, by Mr. J. L. Pearson, R.A., their consulting architect. Many other of our cathedral and parish churches are known to be in need of restoration in parts. The traceried fronts, weatherings, parapets and pinnacles, gable copings, and crosses of many of them are to be seen in a disintegrated and decayed state, ready to fall, or to crumble into dust between the fingers. The condition of many of these edifices calls for attention. It is true most of them have been restored; but such restoration has been necessarily partial, and before many years have elapsed a further renewal will have to be made. The varieties of limestone used for these edifices are numerous, and as it can be easily worked it is not surprising that our church builders in both ancient and modern times have largely availed themselves of limestone. Unfortunately, there is a great difference in quality; some kinds weather badly under the best conditions, others seem to harden; but we attribute a great deal of this varying durability to the modes adopted by the builders. Some stones have been placed in position before being duly seasoned, or when the quarry moisture was in them; again, the fault has been that the stone has not been placed parallel to its natural bed. Many of our modern churches built about 50 years ago are now in rapid decay, owing to the stone having been quarried in winter, when the quarry sap was in it, the first frosts having done irretrievable injury. In most cases no attempt has been made to season the stone by exposure to the atmosphere. In other cases—and we suspect in a large number—false economy has led to the use of an inferior variety, or to blocks in which sand-cracks, vents, and other defects existed. The Bath stone varieties have, on account of ease of working and the large blocks available, been favourite stones with the profession, and the large demand made upon these quarries in the past has probably led to many irregularities in the supply. The upper layers of stone are generally unfit for building, being either flinty or exceedingly irregular in texture. Some varieties of Box Ground stone are sound, others are exceedingly deficient in the qualities of cohesiveness and durability; the flinty veins found in some kinds make it difficult to work. Other more uniform, close-grained, though less desirable weather stones, such as Corsham Down or Corngrit, Farleigh Down, Combe Down, &c., are also very largely used. A greal deal depends, of course, on the locality, position of beds in the quarry, but these are conditions about which the architect knows but little, and relies largely upon the quarryman or stone merchant.

One of the primary causes that have operated in the use of soft freestone for church building is the desire to adopt an elaborate or florid style. When many of our old parish churches underwent rebuilding during the last century, it was a common desire to select a Late Decorated or Perpendicular style, necessitating, of course, much tracery, elaborate pinnacled buttresses, pierced parapets, and carved work in numerous details; crockets were carved on the angles of pinnacles, spires, and hood mouldings, canopied niches to the buttresses, and the various bosses and carvings were required in stringcourses and label mouldings. A hard stone would entail too much labour and necessary cost, so there was a temptation to use those freestones that could be easily worked and were even-textured. The consequence, as might be imagined, led to the use of soft, fine-grained stones, as the softer variety of bed of the Corsham Down, of which there are three kinds, including two soft varieties, and the flinty stone known as Corngrit.

In some buildings the stone was more like chalk in softness, and nothing could be expected but speedy decay. That the premature decay of many of these costly edifices is to be attributed to the ill-advised taste of the early revivalists of Gothic, who repudiated brick, and preferred a florid style in a soft stone to a plainer phase of Pointed in a more durable material, cannot for a moment be questioned. With the return to an earlier and plainer style of Pointed architecture, greater attention has been bestowed on the selection of stone, and we believe that on the whole our recent stone buildings will bear favourable comparison with those of the early part of this century. Unfortunately, architects are still inclined to use the softer varieties of stone for weatherings and other exposed dressings; while for walling a harder material is introduced, whereas properly, the harder and less porous stone should have been used in the dressings.

The restoration of decayed stonework is a matter of serious consideration. It means virtually the entire reconstruction of the dressings and architectural details, just those portions where the artistic skill of architect and carver has been chiefly bestowed. The decomposed details have frequently lost all traces of their form and profile, so that it is often extremely difficult to reinstate the moulded parts or the carved features with any accuracy. In the church to which we have referred, many of the details are so obliterated that the original design has been almost lost. Great care is therefore necessary in obtaining accurate sections of the mouldings and drawings of the bosses and carved portions. Sometimes perhaps the original working details of the architect may be found; but in the majority of cases the architect or mason would have to carefully examine the old work in order to restore it. The substitution of a less porous and more durable stone is equally important; in the case to which we have alluded, the best brown Portland stone is to be used. It is a pity that a more particular record of the quarry bed and mode of setting of the stone is not made at the time of building, so that in after-restoration, the mistakes of the original builders may be avoided. There is no necessity to use the same variety of stone in all the parts of a building; the softer kinds might be used in the parts less exposed, the harder beds in those of weatherings, copings, stringcourses, and labels. Even such a process as "Fluate" for hardening and preserving calcareous stones may be tried with advantage; but whatever is done the need of summer-dried seasoned stone is a necessary precaution in every restoration. The question of repair of our large parish churches is one of serious import for the parishioners, especially in London, where the periodical expenditure in repairs is considerable.

CHRISTCHURCH CATHEDRAL COMPETITION, VICTORIA, B. C.

THE designs for this work have been on view this week at the Church House, Westminster, and Sir Arthur Blomfield, A.R.A., in conjunction with Mr. B. Edmund Ferrey, F.S.A., have made their award, which has been sent to British Columbia for confirmation before being made public. The conditions provided for a building capable of seating 1,200, at a cost (exclusive of chapter-house, decorative carving, and fittings) of 150,000dols. (£30,000), the English architects allowing 30 per cent. for difference in labour and materials. The premiums offered were £150, £100, and £50 for the three best designs, which are to be submitted for final choice to the building committee in Victoria, B.C. The site is on an elevated rock overlooking the city, having main frontages in Burdett-avenue and Rae-street, the west end being in Blanchard-street. We will describe the designs in the order in which we have placed them before the decision is known. "Ars," a monogram device in a circle. This design, though less strikingly original and more orthodox than some in its style—which is Early English in type, with a leaning towards Scotch examples, such as Dunblane Cathedral—would make an exceedingly good church. The composition is massively handled, and would well suit the site. It also looks more in accord with the stipulation as to cost than most of the other available plans. A central tower of much merit marks the crossing, and rises with imposing dignity over the whole. The nave has six bays with wide aisles, and seats are provided for 1,224 persons. A large north porch leads into Rae-street, and there is also a boldly-designed porch on the south side. The west front has three lofty lancets over the main portal, which looks a trifle too pinched in effect. The Baptistery is contrived in a recess north of this entrance, and this, with the seating brought so far west in the church, produces a crowded arrangement which is always best avoided, particularly in the mother church of a diocese, where large processions, &c., constantly occur on festive and other occasions. The nave, in accordance with the conditions, has an open timber roof, and the choir is covered by a pointed barrel vault. Under the belfry the ceiling is flat, as in many old examples. A rich screen elaborately traceried in Early Decorated fashion divides the chancel from the church, and projects slightly after the manner of a canted bay westward. The loft over is handsomely designed, but the rood is very subordinately treated. Return stalls mark the arrangement below, which is well adapted for choral services, and screens to the chancel arcades divide it off from the wide aisles. An ambulatory is provided behind the high altar, and the vestries, as well as the organ, are situated conveniently on the north side. An octagonal chapter-house is placed on the south side, and there are no cloisters. The rough pencil perspectives illustrating this design hardly do it justice.

"Duomo" is more fortunate in this respect, as the views accompanying the plans are capitally rendered. This design looks like a Colonial cathedral, and its chief feature is a large central octagonal area aiming at the congregational service idea, so favoured by those who think that all in a church should see as well as hear. The transepts are necessarily very shallow on plan, but they serve as important features externally at the base of the great conical roof over the octagon, which they cleverly mask. A sort of trefoiled or coffered dome covers the central area inside, with an arcade of openings in the topmost stage; but we fear the effect would be dark, as the lantern lights are too small. The nave is composed of five wide arches and one small bay, with a regular narthex at the west end, where there are two plain and bold handsome towers of square outline without buttresses. These towers have octagonal stair-turret spires on their east faces, which ingeniously break the stepped parapets which occur over the square-headed belfry windows. A semicircular baptistery is placed at the west end, and the main entrances are from the north and south sides. The requirements of fully-rendered services are fairly well met in this design, which is worked out in a treatment of 14th-century Gothic, handled with spirit, knowledge, and dignity. The cost is stated at £30,000.

"New and Old" is unquestionably the most original plan submitted, and in many ways it is the best; but we can hardly add that we think it exactly suitable. The wide flat roof over the body of the church, with the lean-to roofs over the tall aisles would actually be lost sight of entirely on so elevated a site, and in so far as effect externally is concerned, the building might just as well be covered by a lead flat. The perspective, indeed, shows the church so, and the flèche grows out of nothing, its base being hidden by the parapets. The plan of this design is extremely good. The nave is composed of four bays, with aisles merely as passages, and beyond these are low recessed inclosures for mural monuments. The piers of the nave arcade run up to a great height, after the German fashion, with no caps; but with niches and statues on the principal side. Cross arches spring from these piers to the aisle walls, which are carried up level with the crown of the nave arches, so that the church is lighted entirely by the aisle-windows. A vaulted ceiling runs at one level from end to end of the building. There is no special convenience for the font, which is not shown; but at the west end is a narthex porch, and an external gallery over it between two quasi-towers, from which an arch is thrown with crushing effect over the western portal like a flat spanning bridge. These two western towers stop short just above the nave-roof ridge, and being shorn of all finish beyond a plain parapet broken here and there by finials, look most ungainly and incomplete. In the centre over the western gable rises a cage-like structure, inclosing a spire which surmounts the belfry. On the western face of this singularly treated end is a handsome carving of the Crucifix. The turrets projecting from the towers have quaint ogee roofs which hardly belong to the dignity of a cathedral. On the north transept is a semi-octagonal porch, and on the same side of the choir is the morning chapel beyond the wide chancel aisle. The organ is placed on both sides of the choir, which is well furnished with stalls and screens of suitable plan. An ambulatory is provided at the east end, and at the N.E. angle a pretty cloister leads to a square-ended chapter house of subordinate design. The vestries are on the south side. The style chosen is chiefly Flamboyant, with a free use of Renaissance features, recalling the fashion set by the late J. D. Sedding, whose work is here skilfully imitated. The walls of the nave aisles externally have arches between the buttresses, and narrow windows with traceried heads occur in the centre of these, the lower part of them being walled up below the transomes. The monument recesses already named make a dwarf lean-to outside. A parapet from the east end extends so far as the sacrarium, and then stops short meaninglessly. Big rose windows come below with tree-like traceries, and to the organ chambers are narrow lancet slits. The rose windows to the transepts have carved figure medallions in the centre, and the same tree-growing forms are introduced into these as in the decorations inside. A deep frieze of figures is shown below the aisle windows, and these, like the altar, pulpit, and screen, are capitally delineated. The pulpit on plan is located on the south respond of the choir. In the view it figures on the north side of the nave beyond the crossing. This design is very ambitious and costly in character.

“Hope,” another English design, is in its way quite as original as the last, and is from the hand of a well-known church architect. The plan is most ingeniously conceived on the idea of a central tower carried laterally, thus avoiding cumbersome and massive piers in the middle of the building. The plan is difficult to briefly describe. An arcade of four small bays forms the nave proper, then comes a wide pier with two big arches under the tower wall, and a slight central column between them. A big pointed arch throws the weight of the tower N. and S. on to the transept walls. The large central area thus obtained is very commodious, and a vault of one level runs from east to west of the church, leaving the lantern unmarked in the roof inside. A semi-octagonal apse finishes the choir, and a circular chapter-house is situated on the south side, the morning chapel being on the north as a distinct building. The treatment architecturally is in pure Pointed Gothic, designed in a suitable and handsome way quite worthy of the occasion, and detailed with a freedom which sufficiently shows that the author has a keen regard for development in style as well as in planning. This church piles up well in perspective, a great feature being made of the central spire.

The other designs leave us little to say. “1400” has a central tower of a parish-church type, square and simple in arrangement. “Narthex” is Geometrical in design, and has two western towers. The Hebrew motto design is hard and poor, with plate tracery windows. “Mente Manuque” is another Vancouver design. “Omega” has an apsidal-ended choir of regulation merit, shown by poor drawings which do it bare justice. “Servington” does not rise above the parochial type of building, and “In Hoc Signo Vinces,” after a French model, but with a square end, revels in big plate tracery for the fenestration. “Non Sine Lumine” is another design, and “Fides” completes the list with a vast central west tower and spire of Early English character. The rose windows to the transepts give scale. The chapel is on the south side, and the chapter-house, slype-like, comes on the end of the transept. This plan is a good one, but hardly competes with those first described.

SCULPTURE AT THE ROYAL ACADEMY.

WHATEVER the shortcomings of this year's exhibition at Burlington House may be, the sculpture galleries are undoubtedly strong in works of more than average merit, while some few examples deserve unqualified praise. We propose to illustrate, as usual, a few of the more prominent groups and other specimens, such as those which are represented to-day among our lithographic plates—viz., the Shelley Memorial for University College, Oxford, by Mr. E. Onslow Ford, A.R.A., and a wall-fountain in bronze by Mr. W. Reynolds-Stephens, who is perhaps better known as a painter. His delightful decorative painting of “Summer,” which was exhibited in Gallery 3 last year, and illustrated by us at the time (July 10, 1891), has been since executed for the decoration of the end wall of the refreshment-room at the Royal Academy, an apartment which was built a few years since from the plans of Mr. R. Norman Shaw, R.A. We regret exceedingly, however, to find that although this decoration has only been up less than twelve months, the smoke and fumes from the radiator located immediately below it, have so discoloured the painting that its delicate colourings are almost gone, and to make the effect more disastrous, a clean white streak near the centre of the picture stands out like an accidental high light cast from an unseen reflector. After so much talk about encouraging decorative painting at the Academy, this state of things shows how valueless high art schemes are when unaccompanied by practical considerations.

Mr. Reynolds-Stephens's fountain is essentially a decorative work conceived in some respects with possibly a greater freedom than might be expected from a sculptor less accustomed to the use of the brush and pencil. We miss, however, an appreciative recognition of a constructive idea in the piece which, in a way, appears too pictorial for execution thus isolated in bronze. It must be planted on a wall with secret holdfasts, for the design in no way acknowledges its connection with the surface to which by the nature of things it must be fixed. The nymph, the shell, and the fish are prettily grouped, and the bowl is ingeniously contrived. The Shelley Monument is, perhaps, the most noticeable work of the year, as it certainly is the most conspicuous. The poet is represented, quite naked, dead, as if cast upon the shore drowned, and the treatment is distinctly naturalesque, simply indicative of death and the accident associated with the poet's end on earth. Fame is suggested by the wreath, but no attempt is made to embody the idea of immortality. Two winged lions in bronze support the marble effigy, and in front the mourning Muse sits in a graceful attitude, and completes the picturesqueness of the composition, in the arrangement of which we believe Mr. Basil Champneys the architect assisted the sculptor Mr. Ford. The posthumous bust of the late Baron Huddleston, by Mr. Alfred Gilbert, A.R.A., strikes us as being out and away the strongest piece of work in the Exhibition, notwithstanding a certain air of redundancy and almost Rococo fulness in which the artist has grouped the judge's robes. The bust clearly is a masterpiece, admirable as a likeness, powerful in handling, and delightful in colour, showing that Mr. Gilbert can, when he likes, treat a thing broadly, and sink for a time the love of small detail so evident in many of his more ambitious works. His chain of office for the corporation of Preston, in silver gilt and jewels (1999), is essentially characteristic, and in some respects looks needlessly florid. “The Gordon Memorial Shield,” presented by Miss Gordon to the Corps of the Royal Engineers, is another delicate and highly elaborate work in silver, the author being Mr. E. Onslow Ford, A.R.A. It was executed by the electrotype method at Chelsea, we believe, and is a fine example of the capabilities of that process when a fine design needs repeating for such a purpose as applied metal enrichments. In the central hall Mr. Adrian Jones shows his heroic group of “Duncan's Horses.”

> “Beauteous and swift, minions of their race,
> Turn'd wild in nature, broke their stalls, flung out,
> Contending 'gainst obedience, as would make
> War with mankind.
> 'Tis said they eat each other.”
> —*Macbeth*, Act ii. sc. 4.

and here, too, Mr. Henry C. Fehr wins praise by a singularly graceful group called “Favourites”—a girl seated in a chair feeds and plays with some pigeons. The lines of the figure are particularly pleasing, and in some sense call to mind Mr. Alfred Gilbert's “Enchanted Chair,” which secured him recognition some years ago in the same gallery, if not exactly in the same position. Mr. Harry Bates, A.R.A., exhibits his fine memorial to the late James Tennant Caird, and Mr. Montford his Gold Medal group of “Jacob Wrestling with the Angel,” which we have already illustrated (Building News, Feb. 12, 1892). We were charmed with the beauty of Mr. Andrea C. Lucchesi's green bust in bluish bronze of “A Woman,” and “Industry,” a relief for the Imperial Institute, by Mr. Henry A. Pegram, whose model of another of “Britannia” for the same building is shown. Mr. James Gamble is represented by a panel from the “Merchant of Venice”—“A gentle scroll, fair lady, by your leave.” “The Children of the Wolf” is a telling and forcible statue by Mr. George Frampton, and Mr. Hamo Thornycroft, R.A., exhibits a familiar equestrian statuette of “Edward I.,” proposed for one of the piers on Blackfriars Bridge. “Fate Led,” by Mr. Albert Toft, and “Morning,” by Mr. Henry C. Fehr, are other statues worthy of their prominent positions, and so is the group by Mr. Fred. Callcott of “The Reconciliation of Oberon and Titania,” from “Midsummer Night's Dream.”

REFLECTIONS AT THE ROYAL ACADEMY.

“THE Royal Academy of Arts.” First of all, What are the arts? There is a sense in which they are innumerable. Almost all the things that men do may be classed either as art or science; in other words, as invention or discovery, as making or finding. The scientific man devotes himself to ascertaining what existing things are, and how they came to be. His ideal is to dissect the universe. The artistic man sets out at the other end; his ideal is to surround himself with a little universe of his own. He may begin by creating a very small piece of it. The first palæolithic savage who ever chipped a flint into something a little handier than nature left it, was an artist—a maker—in his rudimentary way. His rough stone hammer was the germ from which all later tools have sprung. He was the potential founder of Birmingham and Sheffield, the father of the useful arts. And when, in his leisure hours, he carefully scratched the outline of a mammoth on a fragment of ivory, he became the father of the imitative arts likewise. What he may have done to start the creative arts we hardly know at present, the materials for his history are so scanty. But it is these that we find the furthest advanced in later, though still pre-historic, times. The oldest remains from the site of Troy—the earliest from the Swiss lake-dwellings—are full of art for the sake of art; a primitive art, of course, yet often suggestive, even to us. It is not there because of its material utility; it is not there as an attempt at copying nature; it is there because those who made it loved beauty for its own sake, and were capable of originating it from their internal resources. How well they sometimes succeeded may be seen in our museums; look, for instance, at the fragment of a ceiling from Orchomenos, of which there is a cast at South Kensington.

From very ancient days, then, these three forms of art—the useful, the imitative, and the creative—have flourished side by side. Till lately they have seldom been quite distinct. Useful things have not been wholly shaped by utility; there has been some creative beauty in them also—perhaps, at times, some imitative art in addition. So it comes to pass that a collection of pottery and china, or a collection of chairs and tables, or even of grates and fire-irons, may be well worth looking at. Imitative things, again, have not been wholly shaped by imitation; there has been something creative in them—besides, a great picture has not been just what a coloured photograph would be if it should ever be possible to photograph perfectly in colours. There has been invention in it, and composition—it has copied natural forms, but natural forms well selected and arranged. Creative art, lastly, has contained some imitation of nature, and perhaps some imitation of human work, though, of the two great creative arts, music has admitted little of these things, and architecture much.

Music, of course, from the nature of the case, cannot be one of the arts with which the Royal Academy concerns itself. Its care is confined to those which deal with form or colour. And it does not patronise the useful arts, as such. So far, all is plain and reasonable. Yet it professes to admit architecture, which is partly a useful art, partly a creative, and partly an imitative one. Why, then, does it not admit the minor arts, as we may call them? On what ground does it shut out the artistic handicrafts? Why, in short, does it not set up something of an arts and crafts exhibition? An ideal academy of arts is surely bound to do so. There is no drawing a line between architecture and decoration, architecture and stained glass, architecture and metal-work, architecture and woodwork. All these, when adequately suffused with creative or imitative art, become vital parts of architecture itself. To admit architecture and yet to shut them out is as illogical as to admit the public and yet to give notice that they must not bring their arms and legs or their hands and feet.

Year after year we hear the same complaint: "The architectural room is empty; nobody goes there; does the public care nothing about architecture?" Judging from the notice and interest which any new building of mark is sure to excite, the public cares considerably about it. Then why does it not go to the architectural room? Because there is no architecture there—only the ghost of architecture. It goes into the picture-galleries, and sees the veritable work of Sir Frederick Leighton or Sir John Millais. There hangs the actual product of their brain and hand—the best thing they have given to the world they live in. But, going into the architectural room, it is far enough from seeing the best thing that Mr. Pearson or Mr. Waterhouse can give. If visitors could turn straight into Truro Cathedral or Manchester Town Hall, the architects, we may venture to say, would not find themselves so far behind the painters. But there is no cathedral and no town-hall to be seen in Piccadilly. A "view" of them, so called, there may be. To the trained observer it gives some imperfect notion of what they are. To the untrained one, it is little better than a deception. It does not show a thousandth part of the detail, all carefully studied, and all worth looking at bit by bit. It only exhibits one out of the endless aspects of the building, and yet gives the false impression that this one is the only one. It shows nothing of the beauty of the materials, nothing of the skill of the construction, nothing of the ingenuity of the planning. What it does show, to the uninstructed eye, which brings little with it from bygone examinations of these designers' works, is simply a more or less vague and inadequate suggestion of the general composition. The only thing, in short, that would put painters and architects on a level, at such an exhibition as that of the Academy, would be to exhibit, not the paintings, but only reduced outlines of them, showing the main lines with little or nothing of the detail. This is about as far as architecture can get at a picture exhibition, and if painting were handicapped in the same way, the two arts would not differ much in their share of popular favour.

An exhibition of architecture, then, is impossible; or rather, every good building forms an exhibition of its own. Buildings cannot be brought together: they have to be shown one by one. Yet, there would be a little nearer approach to such an exhibition if selected specimens of the very best which the year has produced in the subsidiary arts could also be on view. A perspective view of a building, along with a few actual specimens of the highest art-work to be found in it, would take spectators a little further than the perspective alone. It would do something to destroy the popular delusion,—a delusion which has been fostered by men who in their hearts knew better—that there is no real art except imitative art. It is time the creative arts took their proper place again. Whenever they do, they will group themselves around architecture as their chief. All will then be living—growing, lasting. The days of monumental art will return. There will be a new and true Academy of Arts, and the show in Piccadilly will call itself what it really is—the Annual Exhibition of British Easel-Pictures. C.

LAND SURVEYING AND LEVELLING, AND THE TESTING, ADJUSTMENT, AND USE OF MATHEMATICAL INSTRUMENTS.

By G. W. Cobham, P.A.S.I.,

("Crawter" and "Special" Prizeman of the Surveyors' Institution.)

(*Continued from page* 596.)

THE general problem is, "Given the position of two points, to find the position of a third relative to them." (See Fig. 1.) We have given A and B—that is, the direction A B and the length A B—to find the position of C. This can be done in three ways: by measuring two lengths, by measuring two angles, by measuring one length and one angle. The first is the basis of Chain Surveying, the second is the basis of Trigonometrical Surveying, the third is the basis of Traversing.

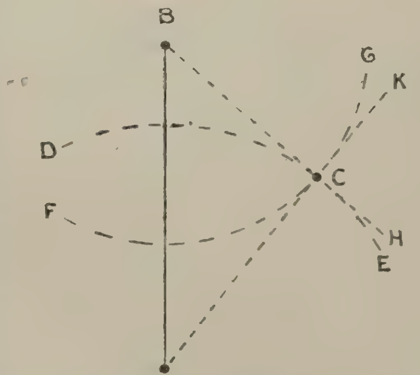


FIG. 1

By Measuring Two Lengths.—Measure A C and B C. Having measured A C, we know that C must lie somewhere on the circumference of the circle D C E, having A for its centre and A C for radius. In the same way, having measured B C, we know that C must lie somewhere on the circumference of the circle F C C, having B for its centre and B C for radius; we know that these circles cut, for they both pass through C. They will cut in two points, and two only (Euclid, III. 10). These two points will lie on opposite sides of A B (Euclid, III. 8). We know which one really represents C by means of the directions of the lines indicated in the field-book.

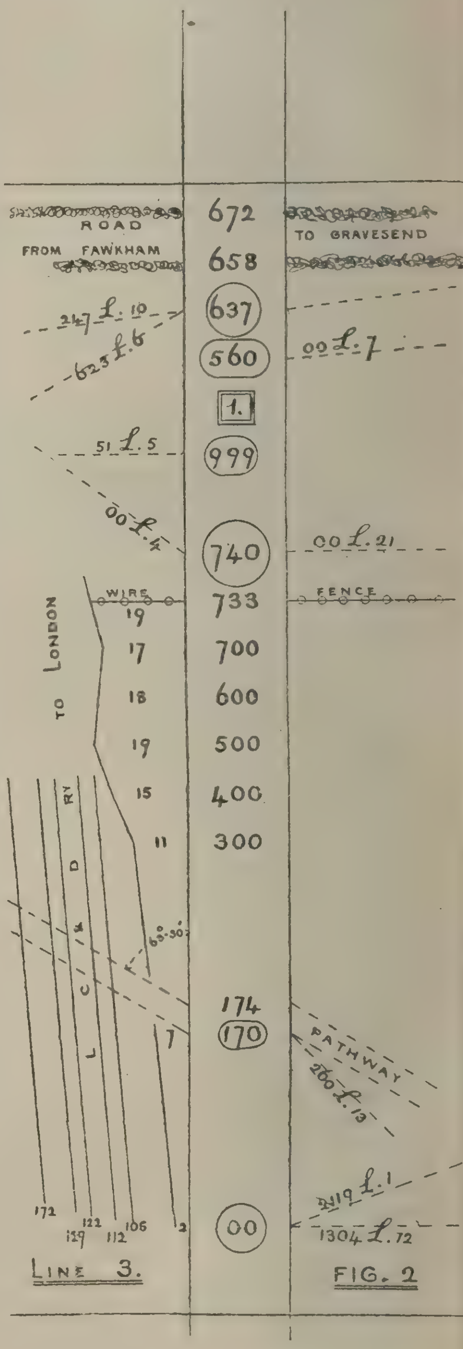


FIG. 2

By Measuring Two Angles.—Measure B A C and A B C. Draw A K, making the angle B A C with B A, then we know that C lies somewhere on it; in the same way we know that it lies somewhere on B H, making the angle A B C with A B; we know they meet because they both pass through C, and they meet in one place only (Euclid, Axiom 10). C is thus completely determined.

By Measuring One Angle and One Length.—Measure the angle B A C and the length A C.

We have now the direction and length of A C, and we therefore have determined C.

These three cases illustrate the whole theory of surveying. Except in a very simple survey, one method alone is never used. Trigonometrical surveying is used for large surveys, and chain surveying is used for smaller work and for filling in detail in the larger. Traversing is used in special cases where a survey is long and narrow, or where it is impossible to see through obstacles such as occur in mines. We have shown in each case how to determine the point C, we will now consider each case separately.

III.—CHAIN SURVEYING.

This term is not quite correct, as the dimensions are frequently taken with a rod or tape, but it is understood, and generally used. We have shown how to determine a point off the main line by measuring up to it; it would, however, be very inconvenient to take up the chain and leave the main line to measure every minor point, and it would not be very accurate when C was close to A B; we therefore use "offsets," that is, measurements in a particular direction to points or "sets," off the main line.

It is a particular case of traversing; the angle with the main line is always a right angle, unless it is otherwise marked in the field-book. To economise time in chaining, the surveyor should have three assistants—one to draw the chain, one to follow, and one to take offsets. If there are only two besides the surveyor, he will have to take the offsets himself, and the field-book will run the risk of getting very dirty through handling the offset rod alternately with it. If there is only one assistant, the surveyor will have to follow the chain himself, and leave it on the ground while he takes offsets and books them. In this case progress will be slow. When about to begin chaining a line, the surveyor takes both handles of the chain in his hand, and throws the rest of the chain in the direction to be measured. The leader takes one handle of the chain with ten arrows and stretches it in the required direction, the follower putting him in the right position by "sighting"—that is, motioning him to move on until, when the follower stands at one end of the chain, the handle held by the leader appears to coincide with the staff at the other end of the line. The chain is then gently shaken up so that it may lie flat and even; it should not be pulled hard, as this stretches the chain and very often pulls the mark over, and this measures the line shorter than it is. The leader puts an arrow into the ground, or if it is too hard he makes a mark and lays the arrow beside it. The surveyor then measures offsets to any object he may wish to include in the survey; this is done with either a rod or a tape. The angle is judged by the eye, unless the offset is very long, when an optical square or cross-staff is used. Long offsets are not to be recommended, and should not be used for important points; but a long offset directed in this manner, or one at any other angle than a right-angle, measured by a box sextant or prismatic compass, frequently enables one to put on points that would not otherwise be included, and which may prove useful afterwards. It saves time to give the direction of a fence or road in this manner. To take an offset the rod should be laid at right-angles with the chain, without looking at the object. When it is so placed, it is easy to see how far up or down it will have to be moved in order to measure to the object. It is not so accurate to lay it towards the object in the first instance, as it is then difficult to insure that it is at right-angles to the chain. When the surveyor has taken offsets to all the objects that he wishes to include, the leader draws the chain on another length, leaving the arrow still in the ground. The follower picks up each arrow as he comes to it. At the end of the tenth chain the leader will put down the last arrow, but he goes on just the same until he comes to the end of the chain, when the offset taker brings all the arrows from the follower to the leader. One should then be put in at the end of the chain, and the chaining proceeds. It will be seen that the number of arrows in the hand of the follower, *including the one at the tail end of the chain*, is the number of chain lengths passed since the last change of arrows. The number of links is read from the chain. Each tenth link has a piece of brass attached—the first one from the handle having one tongue, the next two; then three and four, the middle one being round. The remaining ones follow in reverse order until the other handle is reached. The 60 is the same as the 40, the 70 as the 30, the 80 as the 20, the 90 as the 10. Mistakes are frequently made by reading one for the other. Nothing but care will obviate this.

Fig. 2 is a specimen of a field-book from an actual survey. Last line should be numbered in the order of measurement, a line being drawn across the page between each line. This is much more convenient than the old-fashioned method of numbering the stations. Between each survey a double line should be drawn. Begin the field book at the end and at the bottom of the page, and work towards the beginning. When the book is open the double lines drawn in red or blue down the middle of the pages represent the chain, split so that the lengths can be booked. The off-sets and objects are then put in to the right or left, just as they appear when standing at the tail of the chain, looking towards the leader. The lines drawn round the figures at 00, 170, 740, 999, 560, and 637 indicate that these are stations, or points where a mark is left, so that other lines can be afterwards measured to them. The other lines are put in with their approximate directions, so that one can see at a glance how they fit in. Some surveyors indicate stations by a ring with a dot in the centre, placed in the side column at the side of the figure determining it; but this is not so convenient as the method shown. The length along the lines as 260 L. 13 at 170 L. 3 are put in after they are measured. At 00 the figure 2 on the left indicates that the end of the fence is two links to the left of the chain at this point. Similarly the 300, 400, 500, 600, &c., and the 11, 15, 19, 18, &c., refer to the distances measured up the chain, and the distances off it at right angles to it. At 170, 174, 733, &c., the objects shown and described cross the chain lines; some surveyors in this case draw the line right across the lines, but this tends to confuse the figures; others have only a single line ruled down the centre of the page to represent the chain; this is fashionable just now, but the way shown is less liable to confusion. The part of the pathway at 170 to the left of the chain is shown by the angle it makes with the chain line; this can easily be taken by a prismatic compass or box sextant, and in this case was the only accurate as well as the easiest way, the railway fence being high. The railway lines are not completely determined by this line, the other end being measured in line 10.

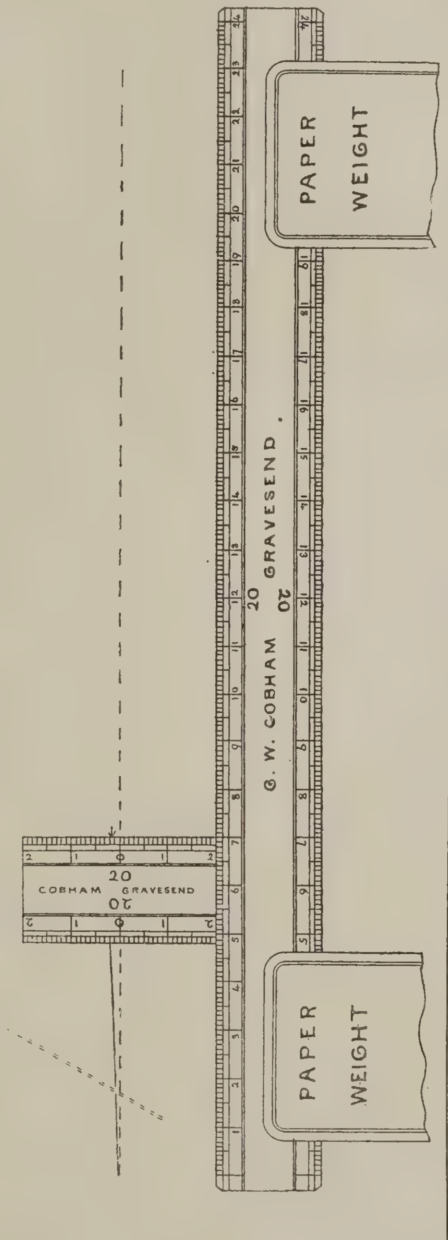


FIG. 3

It will be noticed that at 733 the offsets to the fence become long, so another line (L. 4) was taken close along the fence; when another bend came L. 6 was taken to finish it. These lines could now have been plotted as we have seen, but L. 5 was measured to their intersection as a check. These check lines should always be taken so as to detect errors. In this case the lines could be plotted most accurately by determining the end of L. 4 by means of L. 5, and then checking with the length of L. 6. The figure surrounded with the double square just after 999 indicates that a change of arrows took place here, so that it stands for 1,000. If the lines had extended further, the figures 2, 3, &c., in squares, would have been used to indicate further changes. This prevents having ever to enter more than three figures in the chain length column. The arrows should be counted at each change, and if one is missing and cannot be found, the line must be rechained from the last exchange or other point, when the arrows were known to have been all in use. When one or more are lost, it is better to use a stick, or something similar, to make up the number, as mistakes are very easily made.

Fig. 3 shows the method of plotting a chain line. The extremities of the line are determined and a faint line drawn between them (shown dotted in the figure); the scale is then placed parallel to this line at such a distance from it that the centre mark of the off-set scale travels up and down it. This is done by adjusting each end alternately until both are right. The figure does not require much explanation; the lower part of the fence drawn in the offset scale is at 700, and the arrow indicates where a mark should be made at 17 links to the left of the chain; the fence is afterwards drawn through the points.

(*To be continued.*)

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

An ordinary meeting of the Institute was held on Monday evening, Mr. J. MacVicar Anderson, the President, in the chair, when a paper on

THE ART OF INTERNAL ILLUMINATION OF BUILDINGS BY ELECTRICITY

was read by Mr. W. H. Preece, F.R.S., Electrician to the General Post Office. Mr. Preece, whose remarks were illustrated by numerous specimens of electric lamps, stated that the art of internal illumination of buildings was but just born, for from the earliest ages the lights employed had been dim and crude until the middle of the present century. Electricity was rendering theatres bearable and houses healthier, while the architect was being brought face to face with a new art, in which the aid of the electrician was required to solve some of the difficulties. In correcting our common errors, Mr. Preece pointed out that wherever there was light there was heat, and the hope of the philosopher to supply light without any heat at all was at present but a dream. Light could not be produced without heat, and the higher the temperature the brighter was the light. The candle was the British standard source of light, and the bright surface produced by it at a distance of 1ft. was the standard illumination by which to measure the amount of light distributed by any other means. This standard might be termed a "lux." The great problem was to diffuse light throughout a room so that it was distributed uniformly over the working surfaces with an intensity of a lux. Sixteen-candle glow lamps, suspended 8ft. above the floor and fixed in 8ft. squares, effected this very well; and groups of four such lamps fixed 16ft. high produced a similar result. The light a lamp gave was owing to the expenditure of energy in its carbon filament; an electric current was driven through this filament by electric pressure, its resistance was overcome, and it was intensely heated by the proceeding, the result being pure, unadulterated light. The energy expended per second by an ampère (the standard current), driven by a volt (the standard pressure), was called a "watt." A 16-candle glow lamp took 64 watts, which, assuming the lamps to be fixed 8ft. high, meant that 1 watt per square foot of surface was required to secure ample illumination from lamps so fixed. In designing the normal illumination of rooms, the lecturer took the floor area in square feet and divided it by 64, which gave the number of 16c.p. lamps required, fixed 8ft. high; these being increased or diminished according to the purposes of the room, its form and height, &c. It was not as a mere source of light that the glow lamp was superior to the gas-burner. The former could be put anywhere and used without the adventitious aid of match or fire. It did not vitiate nor unnecessarily warm the air, and it simplified the problem of ventilation, while it lent itself above all to the æsthetic harmony of furniture and decorations. Electric light was not always absolutely safe; security was to be obtained only by good design, perfect materials, first-class workmanship, and rigid inspection. Imperfect materials erected by cheap contractors led to many disasters; on the other hand, no fire had as yet occurred in buildings fitted up under the rules and regulations, and inspected by the officers, of the insurance companies in this country. The author advocated keeping everything as much as possible in view, and not hiding the conductors under wainscots or floors or above ceilings. The glow lamp, excited by three watts per candle, was at present the most perfect source of domestic light, and when the patent expired—in a year or two—would be obtainable at one-third the present price. What was wanted in electric light was to avoid the glare of the incandescent filament in the eyes, and to prevent the lamp from being too obtrusive; it could be shaded from the eye without its effectiveness being destroyed, and without the flow of light being obstructed or its quality being deteriorated. Judging from the Crystal Palace Exhibition, at which several leading firms had not exhibited, the electric light fitter had not, he thought, seized upon the spirit of the age—which was the rule of science over mere conventional æstheticism. Two exhibits at the Crystal Palace, however, especially deserved, the author considered, inspection. The one was a Tudor ribbed ceiling with glow lamps applied to the moulded intersecting pendants in such a way that the feeling of the artist was maintained by day, and was rather intensified, and not marred, by the artificial illuminant at night. The other was a bold attempt of Messrs. Rashleigh, Phipps, and Dawson to design in ironwork the whole of the fittings of a dining-room, so that they should, in combination, convey an idea. The artist (Mr. G. B. Reynolds) had tried to symbolise the solar system, the centre light over the table representing the sun, and the brackets on the walls the planets. In conclusion, the author pointed out that the architect and engineer must work hand in hand.

A short discussion followed, in which Messrs. Sydney Vacher, Taylor-Smith, E. Robins, and G. Bainbridge Reynolds took part, and a vote of thanks was passed to Mr. Preece, on the motion of Messrs. John Slater and Henry Dawson.

THE ARCHITECTURAL ASSOCIATION.

THAT peace and harmony had not been restored by the successful *soirée* of the previous week was but too apparent at last Friday's meeting of the Association, when, although Mr. C. R. Ashbee had come down to read his promised paper on "The Relation of the Architect to the Workman," the whole evening was consumed in explanations, questions, charges, and recriminations arising out of the recent resignation of the *A. A. Notes*' editorial staff. It was manifest very early in the proceedings that a rift has formed within the Association which threatens, if not bridged over by conciliatory movements on both sides, to split the body into two nearly equal parts. So far as could be judged from the reporters' bench, the well-attended meeting—whatever may be the case in the general mass of members—was evenly balanced, the respective champions of the Memorialists and of the Committee obtaining about an equal volume of applause. Mr. F. T. Baggallay, the President, occupied the chair, and held the scales impartially, insisting on a fair hearing for every speaker, allowing, indeed, considerable latitude to all who sought to make explanations. He formally set the ball rolling by expressing his regret that three casual vacancies had occurred on the Committee by the resignations of Messrs. Owen Fleming, Thomas Pryce, and Leonard Stokes. He proposed to adopt the usual course of allowing each of these gentlemen an opportunity of making a personal explanation, if he wished it, and then allow some member of the Committee to reply if it was thought necessary.

Mr. T. E. Pryce asked a series of questions, of which he had given notice, relating to the management of the *A. A. Notes* and the recent resignation of the entire staff. To these the President replied, but ruled that the last one, the nature of which did not transpire, could not be put. Mr. Pryce then made his explanation, in the course of which he said that the differences of opinion had arisen out of a meeting held at Mr. Stokes's rooms, at which several members of the Association, including Messrs. Brodie, Cresswell, Fleming, Gale, Millard, Simpson, Stokes, and himself, met Messrs. T. G. Jackson, Blomfield, Macartney, and Norman Shaw with a view to see if those gentlemen, of undoubted talent, whose help they were all very anxious to gain, would aid the Association. These latter gentlemen explained their objections to certain points in the curriculum, and after some discussion the members of the Association then present agreed to recommend to the Committee of the Association that certain alterations be made to the first portion of the curriculum, and that some slight alterations be made therein so as to lighten the admittedly heavy load. These propositions were brought before the Committee, who rejected the main proposal. He deprecated the action of members of the Association who had written to the professional journals as well as to *A.A. Notes*, discussing matters which ought only to have been dealt with in that room. The result was that feelings were aroused, and, as they knew, one of the editors of *Notes* was called on to resign, which resulted in the resignation of the entire staff. He feared that the issue of that invitation to resign had committed the Association to a line of policy which would be detrimental to its interests. He held that the Committee's action had bound them to any policy that might be adopted by the Institute—(applause, and expressions of dissent)—and he objected to see the Association made the feeding-ground of any one body.

Mr. E. Woodthorpe said the real point of difference was that Mr. Pryce and his friends wanted to cut the Association from the Institute, and the Committee declined to do so.

Mr. F. R. Farrow replied on behalf of the majority of the Committee, and some direct controversy arose between him and Mr. Pryce as to the past and present management of *A.A. Notes*, the discussion being checked on the motion of Mr. Slater, who asked if that was the time or place to allow the discussion of the rival views of Messrs. Farrow and Pryce as to their modes of editorship. Mr. Farrow added that Mr. Pryce had expressed regret that the Committee had declined the proffered help of Mr. Jackson and his friends; but he had not stated the terms on which that aid was to be given—put in a few words it was, "Cut your Association away from the Institute and we will assist you." (Applause and "No, no.") The Committee were willing to accept help from any quarter, but were resolved to maintain their independence. They felt that under these circumstances the *Notes* ought not to be solely the organ of views they could not entertain, and therefore gave the notice of which complaint had been made, so as to give opportunity of appointing one of two editors, and thus secure a fair representation of the divergent views which would always exist in a large body. He denied that the Committee were unwilling to accept help from the Academy if proffered, and said they proposed to maintain the Association as an independent body.

Mr. Stokes said he and his friends were compelled to protest against what seemed to them the mistaken action of the Committee. He and his friends had thought it desirable to secure, if possible, the active co-operation of Mr. Jackson, and to buy off his active opposition. Messrs. Jackson, Norman Shaw, and others had under consideration a scheme of their own; but would, if practicable, prefer to help the Association. The terms to which Mr. Farrow had alluded were very simple. Messrs. Jackson and Shaw desired that no reference should be made in the Brown Book to any examinations; but they did not propose to alter the curriculum of study except in minor details, including the omission of such subjects as geology and chemistry from a confessedly overweighted list. Mr. Jackson held that the first thing for young architects to do was to go in for efficient training, and then if they liked to prepare for examination they might do so. That sound training was the original aim of the curriculum, and not to instruct in certain subjects required for admission to some other body. Mr. Jackson certainly did not wish to convert the Association into a tool of the Memorialists. The only article that had been excluded from the *Notes* was a rabidly anti-Institute one.

Mr. Fleming said he had been connected with the *Notes* almost from the beginning, and had endeavoured to be scrupulously fair to all members. He was content to leave his action to the opinion of his fellow members.

Mr. F. T. W. Goldsmith said Mr. Jackson's propositions were impartially considered by the Committee and were in part adopted. He denied that any one editor was dismissed by name from the *Notes* staff. This being challenged by Mr. Brodie and others, the minutes were called for and read by Mr. Gale; the motion, as recorded, was that "one editor be called upon to resign." Mr. Goldsmith continued to state that the Committee desired to be independent of all, while willing to accept the co-operation of any.

Mr. Earle said, if he had hurt any member's feelings by his letter in the *Notes* for May, he regretted it, but he could not withdraw any statement therein made.

The discussion then became general, questions being asked of previous speakers and of the President by Messrs. A. O. Collard, A. E. Earle, S. Beale, and others. Mr. A. H. Clark inquired if it was competent for a paid lecturer to sit on the Committee, and the President replied that such a member always possessed a seat on the governing body. The question was asked whether the names of those members who had declined to be nominated in the "house list" of the Committee would be struck off the list, to which the President replied that under by-law 31 the nomination of any member nominated by any two others would be received, provided he consented to serve, and it was submitted in writing that evening. There was at once a rush for pens and ink, and it was subsequently announced that Mr. Owen Fleming had been nominated as Vice-President (in opposition to Messrs. E. Woodthorpe and Paul Waterhouse, named on the "house list"), and that seven fresh nominations for the Committee—Messrs. C. H. Brodie, A. W. Cooksey, Gerald Horsley, E. J. May, Walter J. N. Millard, T. E. Pryce, and F. M. Simpson—had been made in due form. Scrutineers were appointed, and the result of the voting is to be made known on Friday, the 27th inst.

It being now half-past nine, the President suggested that the reading of Mr. Ashbee's paper should be adjourned for a fortnight, and that gentleman expressing his willingness to concur in this arrangement, the animated proceedings closed.

AMERICAN BRIDGE-BUILDING.

ONE of the most remarkable cantilever bridges of recent construction is the Red Rock Cantilever Bridge, on the Atlantic and Pacific Railroad, over the Colorado River, between Arizona and California. The main feature of this bridge is the extreme length of centre span, in all 660ft. from centres of east and west piers. The anchor arms, or cantilever arms, are each 165ft. These end or anchor arms are very short, which necessitated a long centre suspended truss, which is in length equal to half the span. A reason for the excessive length of centre truss was that the structure was to be chiefly of steel, and it was found by calculation that for steel these proportions were most economic. For iron the most economic length of the centre suspended truss is shorter than for steel. From the dimensions given it will be noticed that the whole span of the bridge is divided into six equal parts of 165ft. each. Each anchor arm at the end is 165ft., the corresponding centilever arm towards the centre from each main pier is 165ft., and the centre suspended truss is 330ft., or twice 165ft. Lateral stability is secured by the trusses being 25ft. apart. Wind stress was feared, as the winds are sometimes very violent, attaining a velocity of 60 miles an hour, and so strong as to stop work on the bridge. Care has also been taken to provide for expansion and contraction of the metal. The extremes of temperature are 26° Fahr., and the highest 125°, making a range of 100°, causing a total difference in the length (660ft.) between piers of about 5¼in. The resident engineer, Mr. S. M. Rowe, says: "The bridge resting entirely on the two main piers, with the suspended span supported from the cantilever arm by four large eye-bars at each end, and with the lower chord telescoping after erection wedges were removed, this expansion is provided for half at each end." No stress is exerted by this range of temperature on the main piers. The expansion on the anchor arms is provided for by a slight rocking motion of the long anchor bars, which turn on the anchor pin at the bottom of anchor pier. The foundations presented many obstacles. A compact boulder bed was met with which needed to be penetrated by drills, and several holes were drilled 64ft. below low water, which revealed a varying thickness of boulder, sand, and gravel. A strong caisson became necessary, and the work was suspended. Contracts had to be modified to meet the altered conditions. The boulders met with required powerful tools to pierce them, being composed of pure quartz, gneiss, porphyry, trap, and other volcanic rocks. Many interesting details of the progress of the foundation work, the caisson sinking, water-jet used, &c., are given by Mr. Rowe in his paper in the *Transactions* of the American Society of Civil Engineers, where are to be found other papers by Mr. S. W. Robinson, M.Am.C.E., Mr. Henry H. Quimby, M.Am.C.E., and a series of valuable plates illustrating the progress and details of the bridge, which was erected with great haste.

PRICES.* — XXXVI.

(All Prices Include Profit.)

IRONMONGER (*continued*).

Copper Screws, including profit, but not fixing—

2¾in. ditto—

No.		s.	d.	No.		s.	d.
14	per gross	13	6	15	per gross	15	0
16	ditto	16	0	17	ditto	17	0
18	ditto	19	6	19	ditto	21	0
20	ditto	22	0	22	ditto	26	0
24	ditto	30	6	26	ditto	36	0
28	ditto	42	0				

3in. ditto—

No.		s.	d.	No.		s.	d.
14	per gross	14	6	15	per gross	16	0
16	ditto	17	6	17	ditto	19	0
18	ditto	20	6	19	ditto	22	0
20	ditto	24	0	22	ditto	28	0
24	ditto	33	0	26	ditto	38	0
28	ditto	48	0				

Coach Screws, including profit, but not fixing—
(Length from under head to point.)

		£	s	d.
2in. long, ¼in. bolt	per gross	0	4	0
2¼ to 2½ ditto ditto	ditto	0	4	9
2¾ to 3 ditto ditto	ditto	0	5	6
3¼ to 3½ ditto ditto	ditto	0	6	0
3¾ to 4 ditto ditto	ditto	0	6	9
4¼ to 4½ ditto ditto	ditto	0	7	3
4¾ to 5 ditto ditto	ditto	0	7	9
5¼ to 5½ ditto ditto	ditto	0	8	9
5¾ to 6 ditto ditto	ditto	0	9	6
Extra for hexagon heads	ditto	0	0	6
Galvanising	ditto	0	0	10
2in. long, 5/16in. bolt	ditto	0	4	6
2¼ to 2½ ditto ditto	ditto	0	5	6
2¾ to 3 ditto ditto	ditto	0	6	0
3¼ to 3½ ditto ditto	ditto	0	7	0
3¾ to 4 ditto ditto	ditto	0	7	9
4¼ to 4½ ditto ditto	ditto	0	8	3
4¾ to 5 ditto ditto	ditto	0	9	6
5¼ to 5½ ditto ditto	ditto	0	10	6
5¾ to 6 ditto ditto	ditto	0	11	0
Extra for hexagon heads	ditto	0	0	6
Galvanising	ditto	0	1	3
2in. long, ⅜in. bolt	ditto	0	5	9
2¼ to 2½ ditto ditto	ditto	0	7	3
2¾ to 3 ditto ditto	ditto	0	7	9
Hexagonal heads, extra	ditto	0	0	7
2in. long, 7/16in. bolt	ditto	0	7	0
2¼ to 2½ ditto ditto	ditto	0	8	6
2¾ to 3 ditto ditto	ditto	0	8	9
Hexagon heads, extra	ditto	0	0	8
Galvanising	ditto	0	2	0

Wrought-iron Washers, including profit, but not fixing:—

				£	s.	d.
3/16in.	whole size	00	per gross	0	0	9
¼in.	ditto	0	ditto	0	0	10
5/16in.	ditto	1	ditto	0	0	10
⅜in.	ditto	2	ditto	0	0	11
7/16in.	ditto	3	ditto	0	1	0
½in.	ditto	4	ditto	0	1	3
9/16in.	ditto	5	ditto	0	1	6
⅝in.	ditto	6	ditto	0	1	8
11/16in.	ditto	7	ditto	0	2	2
¾in.	ditto	8	ditto	0	2	8
13/16in.	ditto	9	ditto	0	3	6
⅞in.	ditto	10	ditto	0	4	0
15/16in.	ditto	11	ditto	0	5	0
1in.	ditto	12	ditto	0	5	10
1⅛in.	ditto	13	ditto	0	7	6
1¼in.	ditto	14	ditto	0	8	6
1⅜in.	ditto	15	ditto	0	10	6
1½in.	ditto	16	ditto	0	11	9

Machine-made nuts, including profit:—

				£	s.	d.
Square and tapped for		⅜in.	ditto	0	2	9
Ditto	ditto	7/16in.	ditto	0	3	2
Hexagon	ditto	⅜in.	ditto	0	3	2
Ditto	ditto	7/16in.	ditto	0	3	10
Square and tapped		½in.	per cwt.	1	5	0
Ditto	ditto	⅝in.	ditto	1	3	0
Ditto	ditto ¾in to	1¼in.	ditto	1	0	6
Ditto	ditto	1½in.	ditto	1	3	0
Hexagon	ditto	½in.	ditto	1	10	0
Ditto	ditto	⅝in.	ditto	1	5	0
Ditto	ditto ¾in. to	1¼in.	ditto	1	6	0
Ditto	ditto	1½in.	ditto	1	7	0

Square-head bolts and nuts:—

		£	s.	d.
2in. long for ¼in. bolt	per gross	0	5	0
2 to 3 ditto ditto	ditto	0	6	6
3 to 4½ ditto ditto	ditto	0	8	0
4½ to 6 ditto ditto	ditto	0	9	9
6 to 9 ditto ditto	ditto	0	12	6
2in. long, ⅜in. bolt	ditto	0	7	9
2 to 3 ditto ditto	ditto	0	9	0
3 to 4½ ditto ditto	per cwt.	1	12	6
4½ to 6 ditto ditto	ditto	1	10	6
6 to 9 ditto ditto	ditto	1	10	0
9 to 24 ditto ditto	ditto	1	9	0
24 to 48 ditto ditto	ditto	1	7	0
2in. long, 7/16in. ditto	per gross	0	9	0
2 to 3 ditto ditto	ditto	0	11	0
3 to 4½ ditto ditto	per cwt.	1	12	0
4½ to 6 ditto ditto	ditto	1	10	0
6 to 9 ditto ditto	ditto	1	9	0
9 to 24 ditto ditto	ditto	1	7	0
24 to 48 ditto ditto	ditto	1	6	0
Above 48in.	ditto	1	5	0
Extra for galvanising	ditto	0	9	0
2in. long, ½in. bolt	per cwt.	1	12	0
2 to 3 ditto ditto	ditto	1	10	0
3 to 4½ ditto ditto	ditto	1	6	0
4½ to 6 ditto ditto	ditto	1	5	0
6 to 9 ditto ditto	ditto	1	5	0
9 to 24 ditto ditto	ditto	1	3	0
24 to 48 ditto ditto	ditto	1	2	0
Above 48in.	ditto	1	1	0
2in. long, ⅝in. bolt	ditto	1	8	0
2 to 3 ditto ditto	ditto	1	6	0
3 to 4½ ditto ditto	ditto	1	5	0
4½ to 6 ditto ditto	ditto	1	4	0
6 to 9 ditto ditto	ditto	1	3	0
9 to 24 ditto ditto	ditto	1	2	0
24 to 48 ditto ditto	ditto	1	1	0
2in. long, ¾in. bolt	ditto	1	6	0
2 to 3 ditto ditto	ditto	1	5	0
3 to 4½ ditto ditto	ditto	1	4	0
4½ to 6 ditto ditto	ditto	1	3	0
6 to 9 ditto ditto	ditto	1	2	0
9 to 24 ditto ditto	ditto	1	1	0
24 to 48 ditto ditto	ditto	1	0	0
Above 48in.	ditto	0	18	6

Extra for galvanising as before.

Square-headed bolts and nuts—

		£	s.	d.
2in. long, ⅜in. bolt	per gross	0	9	0
2 to 3 ditto ditto	ditto	0	10	6
3 to 4½ ditto ditto	ditto	2	0	0
4½ to 6 ditto ditto	ditto	1	18	0
6 to 9 ditto ditto	ditto	1	16	0
9 to 24 ditto ditto	ditto	1	13	0
24 to 48 ditto ditto	ditto	1	12	0
Above 48in.	ditto	1	11	0
Extra for galvanising	ditto	0	1	9
Ditto ditto	per cwt.	0	9	0

Hexagon-headed bolts and nuts—

		£	s.	d.
2in. long, ⅜in. bolt	per gross	0	9	0
2 to 3 ditto ditto	ditto	0	11	0
3 to 4½ ditto ditto	per cwt.	2	2	0
4½ to 6 ditto ditto	ditto	2	0	0
6 to 9 ditto ditto	ditto	1	18	0
9 to 24 ditto ditto	ditto	1	16	0
24 to 48 ditto ditto	ditto	1	15	0
Above 48in.	ditto	1	14	0

Square bolts with hexagon heads and nuts—

		£	s.	d.
2in. long, ⅜in. bolt	per gross	0	10	3
2 to 3 ditto ditto	ditto	0	11	6
3 to 4½ ditto ditto	per cwt.	2	7	0
4½ to 6 ditto ditto	ditto	2	5	0
6 to 9 ditto ditto	ditto	2	2	0
9 to 24 ditto ditto	ditto	2	0	0
24 to 48 ditto ditto	ditto	1	19	0
Above 48in.	ditto	1	17	0
2in. long, 7/16in. bolt	per gross	0	11	3
2 to 3 ditto ditto	ditto	0	13	6
3 to 4½ ditto ditto	per cwt.	2	4	0
4½ to 6 ditto ditto	ditto	2	2	0
6 to 9 ditto ditto	ditto	2	0	0
9 to 23 ditto ditto	ditto	1	19	0
23 to 47 dittto ditto	ditto	1	16	0
Above 48in.	ditto	1	15	0
2in. long, ½in. bolt	per cwt.	2	0	0
2 to 3 ditto ditto	ditto	1	17	0
3 to 4½ ditto ditto	ditto	1	16	0
4½ to 6 ditto ditto	ditto	1	14	0
6 to 9 ditto ditto	ditto	1	13	0
9 to 24 ditto ditto	ditto	1	10	0
24 to 48 ditto ditto	ditto	1	9	0
Above 48in.	ditto	1	8	0
2in. long, ⅝in. bolt	per cwt.	1	13	0
2 to 3 ditto ditto	ditto	1	12	0
3 to 4½ ditto ditto	ditto	1	11	0
4½ to 6 ditto ditto	ditto	1	10	0
6 to 9 ditto ditto	ditto	1	9	0
9 to 24 ditto ditto	ditto	1	8	0
24 to 48 ditto ditto	ditto	1	7	0
Above 48in.	ditto	1	6	0

Square Bolts, with square heads and nuts—

		£	s.	d.
2in. long, ⅜in. bolt	per gross	0	8	6
2 to 3 ditto ditto	ditto	0	9	6
3 to 4½ ditto ditto	per cwt.	1	19	0
4½ to 6 ditto ditto	ditto	1	17	6
6 to 9 ditto ditto	ditto	1	16	0
9 to 24 ditto ditto	ditto	1	14	0
24 to 48 ditto ditto	ditto	1	11	0
Above 48in.	ditto	1	10	6
2in. long, 7/16in. bolt	per gross	0	10	3
2 to 3 ditto ditto	ditto	0	11	3
3 to 4½ ditto ditto	per cwt.	1	17	0
4½ to 6 ditto ditto	ditto	1	16	0
6 to 9 ditto ditto	ditto	1	14	0
9 to 24 ditto ditto	ditto	1	12	0
24 to 48 ditto ditto	ditto	1	10	0
Above 48in.	ditto	1	9	0
2in. long, ½in. bolt	ditto	1	16	0
2 to 3 ditto ditto	ditto	1	12	0
3 to 4½ ditto ditto	ditto	1	10	0
4½ to 6 ditto ditto	ditto	1	9	0
6 to 9 ditto ditto	ditto	1	7	0
9 to 24 ditto ditto	ditto	1	5	0
24 to 48 ditto ditto	ditto	1	4	0
Above 48in.	ditto	1	3	0
2in. long, ⅝in. bolt	ditto	1	11	0
2 to 3 ditto ditto	ditto	1	9	0
3 to 4½ ditto ditto	ditto	1	8	0
4¼ to 6 ditto ditto	ditto	1	5	0
6 to 9 ditto ditto	ditto	1	4	0
9 to 24 ditto ditto	ditto	1	3	0
24 to 48 ditto ditto	ditto	1	2	0
Above 48in.	ditto	1	0	6

Bolts, cup-head, countersunk or cheese-head.
(Countersunk are measured over all, and the others from head to point)

		£	s.	d.
2in., black heads ¼in.	per gross	0	4	0
2½in.	ditto	0	4	9
3in.	ditto	0	5	3
3½in.	ditto	0	6	3
4in.	ditto	0	7	3
4½in.	ditto	0	7	9
5in.	ditto	0	8	9
6in.	ditto	0	9	6
2in. long, 5/16in. bolt	ditto	0	5	0
2½in. ditto ditto	ditto	0	5	9
3in. ditto ditto	ditto	0	6	9
3½in. ditto ditto	ditto	0	7	3
4in. ditto ditto	ditto	0	7	9
4½in. ditto ditto	ditto	0	8	9
5in. ditto ditto	ditto	0	9	9
6in. ditto ditto	ditto	0	11	6
2in. long, ⅜in. bolt	ditto	0	7	3
2½in. ditto ditto	ditto	0	8	9
3in. ditto ditto	ditto	0	9	0
2in. long, 7/16in. bolt	ditto	0	8	9
2½in. ditto ditto	ditto	0	9	9
3in. ditto ditto	ditto	0	10	6

Forged heads—

		£	s.	d.
2in. long, ¼in. bolt	ditto	0	5	0
2½in. ditto ditto	ditto	0	5	9
3in. ditto ditto	ditto	0	6	3
3½in. ditto ditto	ditto	0	7	0
4in. ditto ditto	ditto	0	8	0
4½in. ditto ditto	ditto	0	8	9
5in. ditto ditto	ditto	0	9	0
6in. ditto ditto	ditto	0	10	6
2in. long, 5/16in. bolt	ditto	0	5	9
2½in. ditto ditto	ditto	0	6	6
3in. ditto ditto	ditto	0	7	3
3½in. ditto ditto	ditto	0	8	0
4in. ditto ditto	ditto	0	9	0
4½in. ditto ditto	ditto	0	9	9
5in. ditto ditto	ditto	0	10	6
6in. ditto ditto	ditto	0	12	6

Stove Screws—

1in.—

No.		s.	d.	No.		s.	d.
14	per gross	1	6	15	per gross	1	8
16	ditto	1	10	17	ditto	2	0
18	ditto	2	4	20			

1¼in.—

No.		s.	d.	No.		s.	d.
15	per gross	1	10	16	per gross	2	0
17	ditto	2	0	18	ditto	2	6
20	ditto	3	0				

1½in.—

No.		s.	d.	No.		s.	d.
15	per gross	2	0	16	per gross	2	1
17	ditto	2	5	18	ditto	2	9
20	ditto	3	3				

Stove Screws, with round heads and nuts—

¾in.—

No.		s.	d.	No.		s.	d.
14	per gross	1	6	15	per gross	1	11
16	ditto	2	0	17	ditto	2	2
18	ditto	2	6	20	ditto	3	0

1in.—

No.		s.	d.	No.		s.	d.
14	per gross	1	8	15	per gross	1	10
16	ditto	2	1	17	ditto	2	2
18	ditto	2	9	20	ditto	3	2

1¼in.—

No.		s.	d.	No.		s.	d.
14	per gross	2	1	15	per gross	2	3
16	ditto	2	7	17	ditto	3	0
18	ditto	3	5	20	ditto	3	9

1½in.—

No.		s.	d.	No.		s.	d.
15	per gross	2	6	16	per gross	2	8
17	ditto	3	2	18	ditto	3	6
20	ditto	3	10				

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STOVE BOLTS, with countersunk heads and with nuts—

				£	s.	d.
¼in.	¾in.	long	per gross	0	3	2
ditto	1in.	ditto	ditto	0	3	4
ditto	1¼in.	ditto	ditto	0	3	6
ditto	1½in.	ditto	ditto	0	3	9
ditto	1¾in.	ditto	ditto	0	4	0
ditto	2in.	ditto	ditto	0	4	4
ditto	2½in.	ditto	ditto	0	4	8
5/16in. to	¾in.	ditto	ditto	0	4	0
ditto	1in.	ditto	ditto	0	4	6
ditto	1¼in.	ditto	ditto	0	4	10
ditto	1½in.	ditto	ditto	0	5	0
ditto	1¾in.	ditto	ditto	0	5	4
ditto	2in.	ditto	ditto	0	5	7
ditto	2¼in.	ditto	ditto	0	6	3

(Round heads are the same prices.)

DOWEL SCREWS—

No.		s.	d.	No.		s.	d.
1½in.—							
10	per gross	0	11	12	per gross	1	0
2in.—							
10	ditto	1	2	12	ditto	1	5
2½in.—							
10	ditto	1	3	12	ditto	1	8
14	ditto	2	2				
3in.—							
14	ditto	3	0	16	ditto	3	9

HANDRAIL SCREWS—

5/16in.—							
4in.	per dozen	2	0	4½in.	per dozen	2	0
5in.	ditto	2	2	6in.	ditto	2	3
7in.	ditto	2	4	8in.	ditto	2	6
⅜in.—							
4in.	ditto	2	5	5in.	ditto	2	6
5in.	ditto	2	6	5in.	ditto	2	8
7in.	ditto	2	9	8in.	ditto	2	10
7/16in.—							
4in.	ditto	3	5	4½in.	ditto	3	6
5in.	ditto	3	7	6in.	ditto	3	9
7in.	ditto	3	10	8in.	ditto	3	10
½in.—							
4in.	ditto	4	6	5in.	ditto	4	8
5in.	ditto	4	9	6in.	ditto	5	0
7in.	ditto	5	2	8in.	ditto	5	4

(Hand-rails screws with one nut are about 10 per cent. less than those with two nuts.)

COACH BOLTS, Wednesbury bright heads—

Sizes ¼in. to 3in.	per gross	0	6	3
5/16in. ditto	ditto	0	7	6
For each ½in above 3in. add 10d. per gross.				
Sizes ⅜in. to 3in.	ditto	0	10	3
Add for each ½in. above	ditto	0	1	3
⅜in. and 7/16in. above 3in.	per lb.	0	0	5
½in. to ⅝in.	ditto	0	0	3¾

HINGES, including profit and screws, but not fixing—

CAST-IRON BUTTS—

		Per pair.				Per pair.	
1¼in. No.	200	0	2¼	3in. No.	200	0	4
Ditto	333	0	2¾	Ditto	333	0	4½
Ditto	564	0	3	Ditto	564	0	5
1½in.	200	0	2¾	3½in.	200	0	5
Ditto	333	0	3	Ditto	333	0	5½
Ditto	564	0	3¼	Ditto	564	0	6
2in.	200	0	3	4in.	200	0	5
Ditto	333	0	3¼	Ditto	333	0	6
Ditto	564	0	3½	Ditto	564	0	7
2½in.	200	0	3¼	5in.	200	0	9
Ditto	333	0	3½	Ditto	333	0	11
Ditto	564	0	4	Ditto	564	1	0

BROAD CAST-IRON BUTTS—

	Per pair.			Per pair.	
3in. by 3in. light cast	0	6	3in. by 3in. best cast	0	7
3in. by 3½in. ditto	0	7	3in. by 3½in. ditto	0	8
3½in. by 3½in. ditto	0	7½	3½in. by 3½in. ditto	0	9
3½in. by 4in. ditto	0	8½	3½in. by 4in. ditto	0	10
4in. by 4in. ditto	0	10	4in. by 4in. ditto	0	11
4in. by 4½in. ditto	0	11	4in. by 4½in. ditto	1	1
4in. by 5in. ditto	1	0	4in. by 5in. ditto	1	2

LIFTING CAST-IRON BUTTS—

		per pair.				Per pair.	
1½in. No.	200	0	3	3in., No.	200	0	5
1½in.	333	0	3½	3in.	333	0	6
2in.	200	0	3½	3½in.	200	0	6½
2in.	333	0	4	3½in.	333	0	7
2½in.	200	0	4	4in.	200	0	7½
2½in.	333	0	4½	4in.	333	0	9

SKEW OR RISING BUTTS, best cast—

2½in.	0	8	4in.	1	0
3in.	0	10½	4½in.	1	2
3½in.	0	11	5in.	1	8

DITTO DOUBLE ACTION, cast—

2½in.	0	7½	4in.	1	8
3in.	1	0	4½in.	1	11
3½in.	1	4	5in.	2	1

BROAD BUTTS, wrought welded—

3in. by 3½in.	1	1	4in by 4½in.	1	11
3½in. by 4in.	1	5	4in. by 5in.	2	1

LIFTING BUTTS, wrought—

2½in.	0	9	3½in.	1	0
3in.	0	10	4in.	1	2

SKEW BUTTS or Rising, wrought—

3in.	0	5	4½in.	0	7½
3½in.	0	5½	5in.	0	8½
4in.	0	6½			

WROUGHT WELDED BUTTS—

1½in.	single joint	0	4	1½in.	double joint	0	6
2in.	ditto	0	5	2in.	ditto	0	6½
2½in.	ditto	0	6½	2½in.	ditto	0	8½
3in.	ditto	0	7½	3in.	ditto	0	11½
3½in.	ditto	0	10½	3½in.	ditto	1	3
4in.	ditte	1	2	4in.	ditto	1	5
5in.	ditto	1	10	5in.	ditto	2	5
6in.	ditto	2	5	6in.	ditto	3	6

SURVEYORS' INSTITUTION EXAMINATIONS.

THE council of the Surveyors' Institution have just issued a revised and amended edition of the syllabus and rules of their professional examinations. One of the principal changes which has been made consists in the revival, in a modified form, of the "direct" examination for admission to the Fellowship of the Institution. It will probably be within the knowledge, at least, of our surveyor readers, that the qualification for election by length of practice ceased at the expiration of ten years after the date of the Charter of Incorporation—viz., on Aug. 26 last (1891), and that at that date the passing of an examination became a necessary preliminary to joining the Institution. Since the inception of the examination system there has always been a section by means of passing which candidates might qualify direct for the Fellowship of the Institution; but the number of candidates has, we understand, been so limited, that for the last few years this branch of the examination has been suspended. The cause of this scarcity of candidates does not seem far to seek, when it is stated that the examination occupied five days, and embraced in some of the subdivisions as many as seventeen subjects. The Council have therefore determined to shorten and condense this examination until it can be comprised within the space of two or three days, and to reduce the subjects to about one-half of their former number. The work of condensing the syllabus has been done with a firm but judicious hand; the more theoretical subjects only have been sacrificed, and the practical ones retained, while to these latter have been added, in the "Valuation" subdivision, for instance, the subject of "Development of Building Estates," the examination in which, to judge from the syllabus, will cover the whole range of a practical surveyor's work in the direction indicated by the title. There is, so far as we are aware, no other examination which tests the knowledge of a candidate in the details of this very ordinary branch of a surveyor's practice.

The subject of valuations has been divided into two branches; that for the Associate candidates dealing with the application and use of valuation tables, and that for the Fellowship candidates going farther into the subject and taking the case of typical blocks of property under various conditions as to situation and surroundings.

The subject of "Farm Buildings" has also, we notice, been somewhat expanded, so as to embrace the whole of this very useful branch of a land agent's practice, and the syllabus contains many new example papers and diagrams which cannot fail to be of use to the candidates in these examinations. We notice that in all divisions of the "Building" surveyors' examination due prominence is given to such subjects as "Bills of Quantities," "Measurement of Artificers' Work," "Constructive and Working Drawings," "Iron and Timber Roofs," and "Sanitary Science," as well as the law of "Fixtures, Dilapidations, and Light and Air," and that in the other branches of the examination—viz., the "Land Agency" and the the "Valuation" sections—equally practical subjects—are dealt with in an equally practical way.

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OBITUARY.

MR. WILLIAM RIDLEY, contractor, of Tow Law, county Durham, was interred on Monday last. The deceased gentleman was 65 years of age, and recently succumbed to failure of the heart's action. Mr. Ridley was a native of West Durham, and at an early age commenced business as a contractor in Tow Law. During the last 30 or 40 years he has executed many large contracts for the principal coal owners, notably the Consett Iron Co., Limited, and at the time of his death he had contracts for this company amounting to about £20,000.

We regret to announce the death of Mr. George Freeth Roper, the well-known architect, which occurred on Saturday, the 14th inst. The deceased was interred yesterday (Thursday) at St. Martin's Church, Marple Bridge, near Stockport. He was only 49 years of age.

The death of James Thomson, LL.D., F.R.S., Emeritus Professor of Civil Engineers and Mechanics at Glasgow University, took place at his residence, Florentine-gardens, Glasgow, recently, after a short illness. Professor Thomson was born in Belfast in 1822, his father being for many years Professor of Mathematics in the Royal Belfast Academical Institution, and subsequently the occupant of the Mathematical Chair of Glasgow University, while the late Professor's younger brother is Lord Kelvin. After the term of his apprenticeship was concluded, Mr. James Thomson commenced business in Belfast as a civil and mechanical and hydraulic engineer. His inventions of a vortex water-wheel and a centrifugal pump became widely known, and he was intrusted with work of much importance, both at home and abroad, and, in particular, designed and constructed great pumps for the drainage of sugar plantations in Demerara. He was also engineer to the Belfast Water Commissioners, and to the Lagan Navigation Works. Dr. Thomson was in 1857 elected Professor of Civil Engineering in Queen's College, Belfast, and in 1872 he was appointed to a similar chair in Glasgow University, continuing to hold the appointment till 1889, when he retired, owing to failing eyesight. Prof. Thomson was the author of numerous scientific papers, including one on "The lowering by pressure of the freezing-point of water," which he communicated in 1847 to the Royal Society of Edinburgh, and another in March of this year on "The grand currents of atmospheric circulation," the Royal Society making it the Bakerian lecture of the year. We regret to add that his widow has since died, aged 74 years. One son and two daughters survive.

The death is announced from New York of Marc Eidlitz, who for the past quarter of a century has been recognised as the head of the builders and contractors in business in that city. The two Eidlitz brothers, Leopold (now a successful architect), and the builder Marc, emigrated to the United States from Bohemia many years ago, when very young. Marc was apprenticed for four years to a builder in New York, and at the early age of twenty-six started in business for himself. His work spoke for itself, and he soon had many contracts on his hands. Among many other private houses, he built those of Robert L. Stuart, J. Pierpont Morgan, and Ogden Goelet; while among the public buildings he erected are the Astor Library, the Broadway Tabernacle, the German Hospital, the Church of the Incarnation, the Gallatin Bank, the Metropolitan Opera House, and Steinway Hall. He was from the first an active member of the National Association of Master Builders, and was president of the Building Trades' Club and of the Germania Savings Bank.

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CHIPS.

The memorial stone of a new assembly hall in connection with the Holy Trinity Church schools, Idle, was laid on Saturday. The building is to be 67ft. by 31ft., and will cost £1,500. Messrs. Jowett Kendal and J. Harper Bakes, M.S.A., of Leeds and Idle, are the architects, and Mr. E. Whitfield, of Idle, the builder.

The parish church of Uphill, Somerset, was reopened on Tuesday, May 10, by Bishop Bromby, acting as commissary for the Bishop of Bath and Wells, after the building of a new and spacious chancel, in addition to which new choir and clergy vestries, organ-chamber, north and south porches have been erected, and the nave reseated with oak seats. The architect for the work is Mr. G. F. Burr, M.S.A., of Hastings, and the contractor Mr. Charles Addicott, of Weston-super-Mare. The cost has been about £1,650. The wrought-iron gates to the chancel screen, which is of oak and carved chestnut, were executed by Mr. George Wilson, of Broad-street, Birmingham, from the designs of the architect.

Grange Congregational Church, Bradford, which provides accommodation for 500 people, and has been erected at a cost of about £5,000, has been opened.

The Louvre has recently obtained two important works: a fine landscape by Corot, showing Castel-Gandolfo, near Rome, with the town and lake in the middle distance, and the Alban hills closing the prospect; and a bronze equestrian statuette of the Italian Renaissance, which has been recognised as the portrait of Gianfrancesco II. Gonzaga, Lord of Mantua.

The foundation-stone of St. John, the Evangelist's Church, Greengates, in the parish of Eccleshill, was laid on Saturday, the 7th inst. The church, which is designed in the Early English style, will be seated for 300 people, and will cost £2,400. Messrs. Jowett Kendall and J. Harper Bakes, M.S.A., of Leeds and Idle, are the architects, and Messrs. Thomas Obank and Sons, of Idle, the builders.

CONTENTS.

The Pupilage System 689
The Decay of Buildings 689
Christchurch Cathedral Competition, Victoria, B.C.... 690
Sculpture at the Royal Academy 691
Reflections at the Royal Academy 691
Land Surveying and Levelling, and the Testing, Adjustment, and Use of Mathematical Instruments 692
The Royal Institute of British Architects 693
The Architectural Association 694
American Bridge-Building... 694
Notes on Building Prices.—XXXVI. 695
Surveyors' Institution Examinations 696
Obituary 696
Our Illustrations 697
Competitions 697
The BUILDING NEWS Directory XIII
Wayside Notes 716
Architectural and Archæological Societies 716
Books Received 717
Building Intelligence 717
Engineering Notes... 717
Correspondence 718
Intercommunication 718
Legal 719
Legal Intelligence 719
Parliamentary Notes 720
Water Supply and Sanitary Matters 720
Our Office Table 721
Meetings for the Ensuing Week 721
Trade News 722
Tenders 722

ILLUSTRATIONS.

THE SHELLEY MONUMENT.—A WALL FOUNTAIN.—PARR'S BANK AT SOUTHPORT.—DETAILS AND INTERIOR OF THE GLASGOW ART GALLERIES AND MUSEUM.—ADDITIONS TO "THE WERN."—SKETCHES OF EXHIBITS BY MESSRS. STRODE AND CO. AND OTHERS, AT THE ARMOURERS' AND BRASIERS' EXHIBITION.—ST. AUGUSTINE'S CHURCH, BRINKSWAY.

Our Illustrations.

SCULPTURE AT THE ROYAL ACADEMY.

(THESE illustrations are described in article on page 691.)

NEW BANK FOR PARR'S BANKING COMPANY, LIMITED, AT SOUTHPORT.

THIS bank is about to be erected at the corner of Lord-street and London-street in Southport, along the line of Cambridge Hall, the Town-hall, and other important buildings, and will be wholly of stone. The premises will be used solely for the purposes of the banking company and as a residence for the local manager. The architect is Mr. William Owen, F.R.I.B.A., of Warrington.

GLASGOW ART GALLERIES, KELVINGROVE-PARK—SELECTED DESIGN.

WE complete to-day our series of illustrations (see the BUILDING NEWS for April 15th, 22nd, 1892) of the chosen design for this work by giving an interior view of the Great Hall and a detail of the central bay of the north elevation. This feature forms a conspicuous object in the general composition when seen from the park as shown in the perspective drawing which we printed in the BUILDING NEWS for April 15th, 1892. Messrs. J. W. Simpson and E. J. Milner Allen are the architects.

ALTERATIONS AND ADDITIONS TO "THE WERN," TREMADOC, NORTH WALES, FOR MR. R. M. GREAVES.

THE original house was of plain character, but of substantially-built walls and roofs. The general lines of these will remain intact as shown in the centre portion of the view; but all the gables, mullioned windows, chimneys, &c., will be of new work in Gwespyr stone, and the internal disposition of the rooms will be entirely rearranged and the fittings renewed. The walls of the old portion are covered with a luxuriant growth of ivy, which will be retained as far as possible. The wing to the left will be entirely new, comprising a large saloon (of one story in height) 40ft. by 24ft. 6in. on plan, with a large square bay (an entrance hall) 34ft. by 14ft., and a porch of rich character. The saloon will have an oak open-timbered roof, oak panelling, and carved chimneypiece. The kitchen and offices on the right of the drawing will be rebuilt as shown. The whole of the rooms are to be heated with hot water supplementing the open fires. The work is now being carried out by Mr. Greaves' estate workmen, with the exception of the dressed masonry, which the Gwespyr Stone Co. have in hand. The architects are Messrs. Douglas and Fordham, Chester. The drawing shown is now on view at the Royal Academy.

METAL ART AT THE EXHIBITION OF THE ARMOURERS' AND BRASIERS' COMPANY.

WE give herewith some sketches from the above exhibition at the Armourers' Hall, Coleman-street, City. The electric lamp for which Messrs. Strode and Co. obtained the first prize is constructed entirely of sheet-brass and wire, the ornamental parts being saw-pierced. It is so constructed as to be suitable for either gas or electric lighting. The hanging candelabrum by the same firm in brass bronzed to an antique colour; the execution of this fine piece of work has been attended with difficulty owing to its somewhat small detail; but the difficulty has only excited a zeal on the part of designer and craftsman that has resulted in success. It is made almost entirely of sheet-brass, except the bosses, &c., and has been designed for electric candles so much in use. We illustrate a candlestick, also by Messrs. Strode and Co., for which that firm obtained the second prize. The finger-plate for a door, a graceful design, obtained a well-merited third prize for its author, Mr. Alfred E. Lewis. The two panels of engraved copper by Miss G. E. Cave France are designed and executed with that lady's usual ability, the fish and sea-weed being particularly good. The hall lantern, contributed by Messrs. Cox, Sons, Buckley and Co., is made in copper and brass, and the copper sconce by the Guild and School of Handicraft is well adapted for its purpose and is of pleasing design, the prominent bossing out of the centre and other points being well designed to catch and reflect the light. We gave a general description of the exhibition in our last week's issue.

ST. AUGUSTINE'S CHURCH, BRINKSWAY.

THIS drawing, which is at present exhibited in the Royal Academy, is the north-west view of a church now being erected to supply the needs of an outlying district of Stockport. It is built generally of the local red brick, the doorways, windows, and principal features being of Northwich terracotta in 9in. courses. The interior is faced with buff bricks relieved with red terracotta dressings, and there is a golden brown dado of glazed bricks round the greater portion of the building. All the roofs are open-timbered and boarded and of pitch pine, as likewise the seats and fittings throughout. On the side of the church shown in the drawing there is the main entrance, and one for the morning chapel. Above the latter is the bell turret of oak half-timber work. The porch to the main entrance is constructed similarly, and these two features are designed to mark the association of the building with the county of Cheshire. The total accommodation provided is 530 sittings. The architects are Messrs. Preston and Vaughan, of Diocesan Chambers, Manchester, and the builder is Mr. J. Broadhurst, of Stockport.

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At the last meeting of the Heywood town council, the modified plans for the technical school, by Messrs. Woodhouse and Willoughby, to whom the first premium was awarded in the recent competition, were adopted for execution, and the authors were appointed architects for the undertaking.

A memorial stone of a new wing to the church schools at Idle was laid on Saturday. An assembly hall is being erected, and a rearrangement of the old schools is being made. The cost of the additions and alterations will be £1,600. Messrs. Kendall and Bakes, of Leeds and Idle, are the architects.

The new board schools at Kingswood, Bristol, which Mr. Campbell-Bannerman, M.P., will open to-day (Friday), are Gothic in style. The planning is on the class-room system. The three divisions for boys, girls, and infants have accommodation for 809 children, and around the exterior of the building play-yards are provided. The construction has been carried out by Mr. J. Perrott, of Bristol, from designs by Mr. W. L. Bernard, Baldwin-street, in that city.

The Rhyl Improvement Commissioners are endeavouring to attract visitors by improving their promenade. Besides asphalting the same, at a cost of over £2,000, three embayments are in course of erection, jutting out from the promenade. The central one is much larger than the other two, it being intended to erect a large band-stand and shelter in the middle. Opposite this, on the promenade, an ornamental fountain will also be erected.

COMPETITIONS.

ASPATRIA.—The designs of Messrs. Moffat and Bently, architects, of Whitehaven and Manchester, have been selected in open competition for reading and recreation rooms at Aspatria, Carlisle, and they have been instructed to prepare the necessary drawings, &c.

LEDBURY.—The winner in the Barrett-Browning Memorial Clock Tower competition at Ledbury is Mr. Brightwen Binyon, of Ipswich. The second place is assigned to Mr. Lunn, of Malvern. An exhibition of the designs is arranged at the town-hall, Ledbury, and they will continue on view one week.

SHREWSBURY.—At the last meeting of the town council, the Baths Committee reported that in response to advertisements six tenders were received for the erection of the proposed baths. They exceedingly regretted to report that the lowest tender of £9,807 was, to their surprise and annoyance, much in excess of the sum for which Mr. Johnson undertook to have the baths erected. This fact having been communicated to the architect, he had simply suggested that certain omissions and deductions should be made, which he alleged would in the result bring the cost down to about £7,385. The committee were of opinion that it would not be advisable to carry out the plan curtailed as suggested by Mr. Johnson, and having submitted the whole of the facts to the council in committee, the matter had been most carefully considered in all its bearings, and certain action taken. The report was adopted.

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CHIPS.

A company has been formed with the object of constructing an incline passenger-lift at Sandgate Hill. The work is being carried out under the superintendence of Mr. Reginald Pope, architect; and Mr. C. E. Robinson, C.E., of Torquay, is the consulting engineer.

The ventilation of Roche Hospital has been intrusted to Messrs. Baird, Thompson, and Co., the well known ventilating engineers, of London and Glasgow.

At a recent meeting of the Banffshire County Council, the subject of the reconstruction of the Lettoch Bridge at Dufftown, which collapsed last winter shortly after it was opened for traffic, was discussed at length, and a unanimous resolution was arrived at to rebuild the bridge according to plans prepared by Mr. P. M. Barnett, of Aberdeen.

Colonel Hasted, an Inspector of the Local Government Board, held an inquiry at the Town Hall, Ripon, on Friday, with respect to the application by the Corporation for sanction to borrow £886 for the erection of a new iron bridge at Bondgate, and £970 for works of street improvement. The application was made under the Public Health Act, 1875, and the Highways and Bridges Act, 1891. The city surveyor, Mr. H. Deardon, explained the proposals.

Good progress is being made in the construction of the Yeadon Branch Railway, and it is hoped to have it completed in three months. The station buildings at Henshaw are in course of erection, and the bridges at different points of the line are nearing completion. The junction with the Midland system can be used, and the new line will now be utilised for the deliverance of the contractors' material. Messrs. Whittaker Bros., Horsforth, are the contractors.

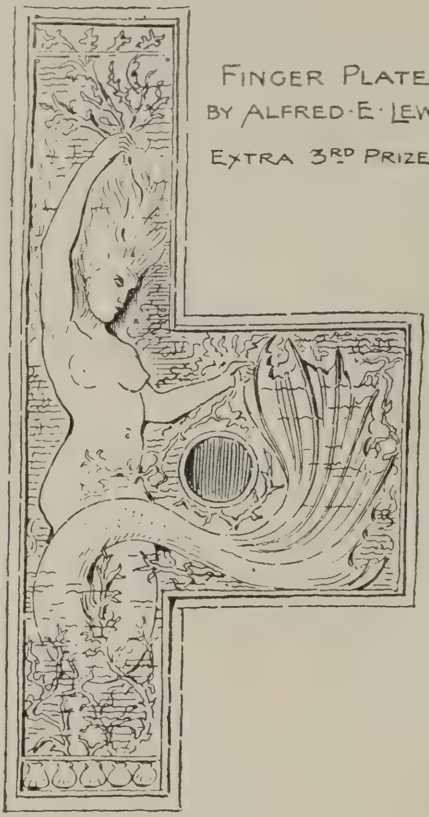
The Bishop of Richmond has reopened the parish church of St. Alkelda, Giggleswick, after restoration, at an outlay of £3,500.

The Indian Institute in Broad-street, Oxford, for which Mr. Basil Champneys's design has hitherto been only partially carried out, is now to be completed, the funds for that purpose having been obtained by Sir Monier Monier-Williams.

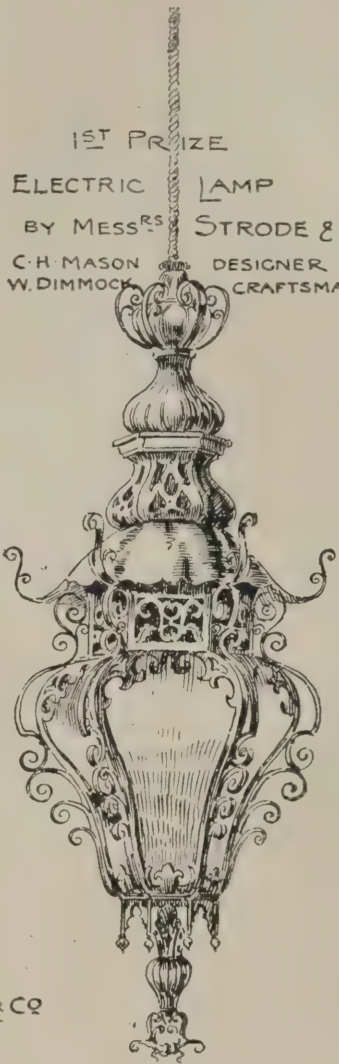
Mr. William Boulton has intimated his resignation as burgh surveyor of Aberdeen on account of advancing age. A special committee of the town council has received his resignation, and resolved to recommend that it be accepted, and that, in view of Mr. Boulton's long and faithful services, he be granted a retiring allowance of £250 per annum.

Mr. Thomas F. Bunting, of Colchester, has been appointed assistant borough surveyor of Maidstone, in succession to Mr. W. Terrill, now surveyor to the local board of Ashford, Kent.

On Thursday, the 12th inst., was opened the second modern church on Holy Island, and the first edifice for Presbyterian worship. The Presbyterian Church now opened is 40ft. by 24ft. The style is Early English, and there is accommodation for about 200 persons.

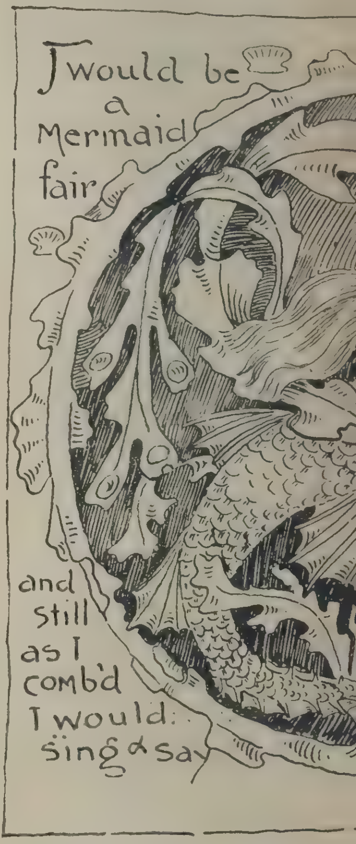


FINGER PLATE
BY ALFRED·E·LEWIS
EXTRA 3RD PRIZE

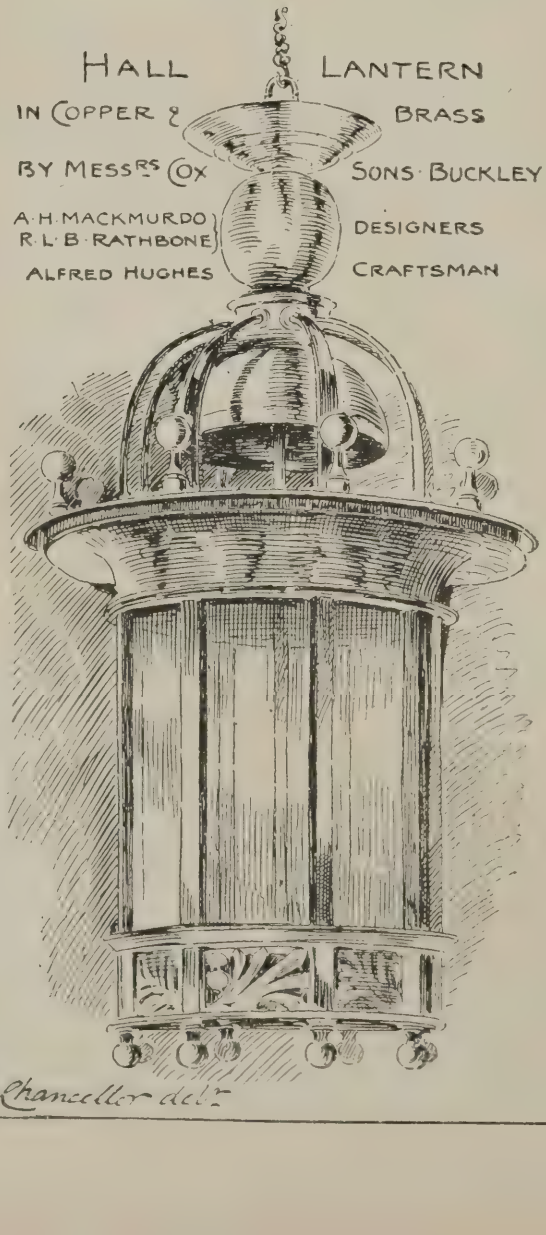


1ST PRIZE
ELECTRIC LAMP
BY MESSRS STRODE & CO
C·H·MASON DESIGNER
W. DIMMOCK CRAFTSMAN

ENGRAVED PANEL B

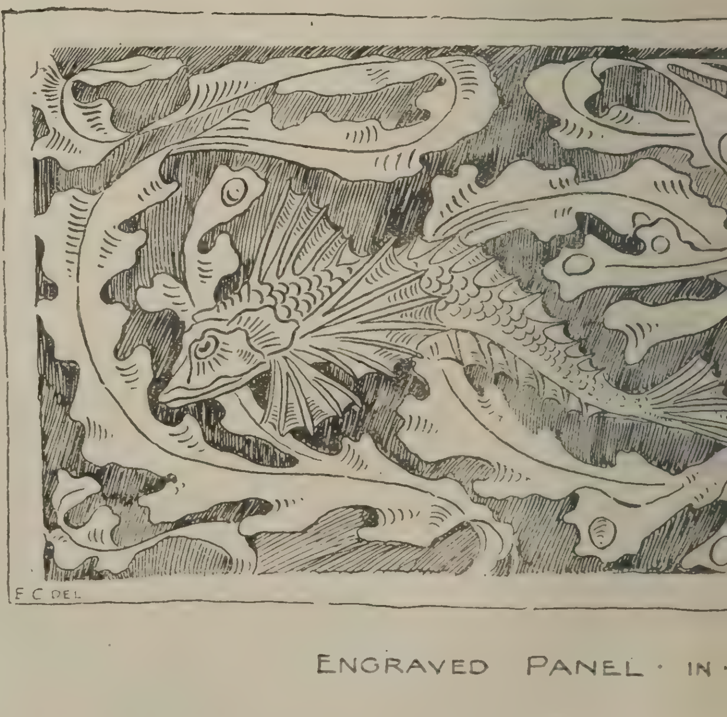


I would be a Mermaid fair
and still as I comb'd I would sing & say



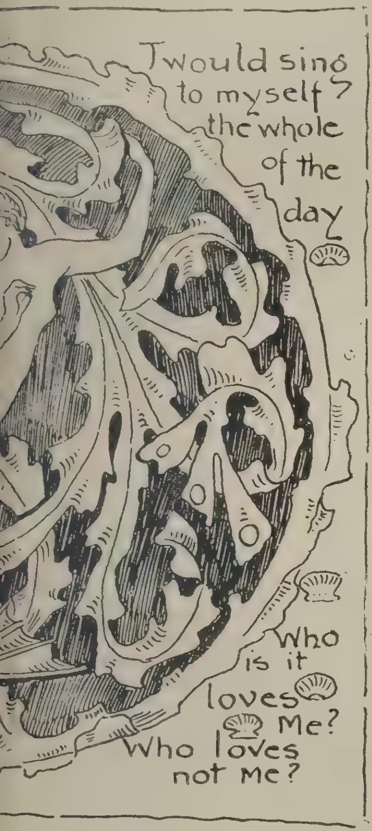
HALL LANTERN
IN COPPER & BRASS
BY MESSRS COX SONS·BUCKLEY & CO
A·H·MACKMURDO
R·L·B·RATHBONE
DESIGNERS
ALFRED HUGHES CRAFTSMAN

META
— AT · THE · T
OF · THE · ARMOURER

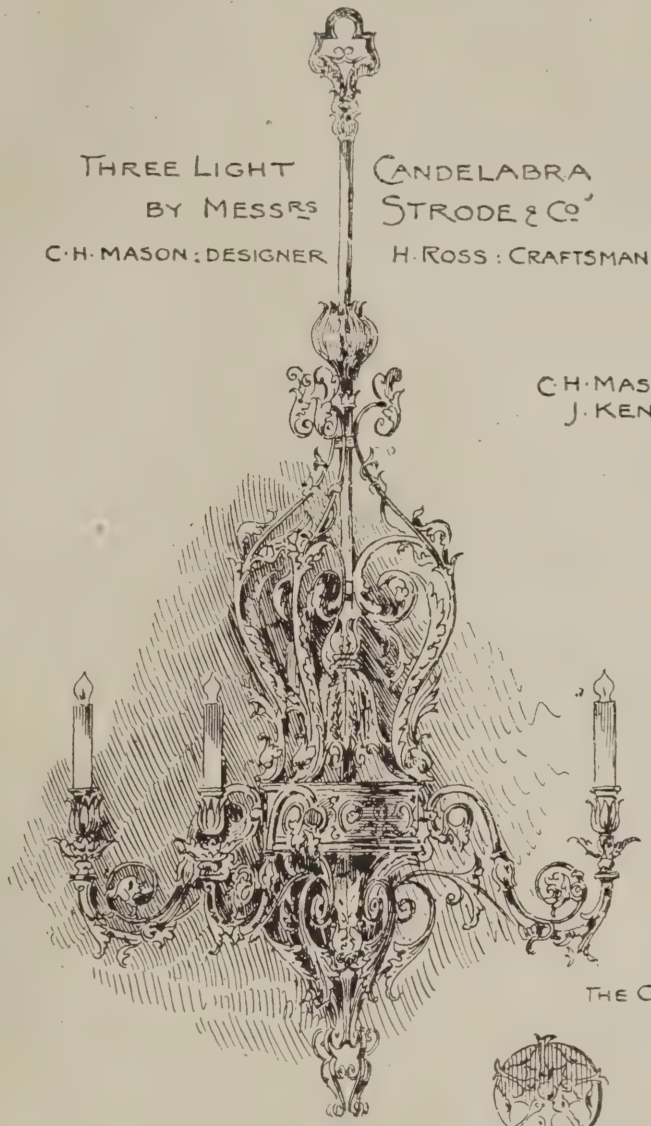


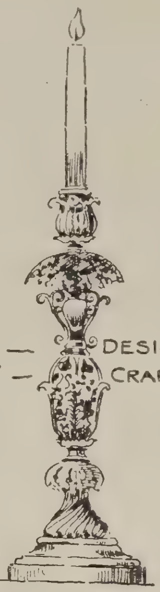
ENGRAVED PANEL · IN ·

ISS G·CAVE FRANCE·


I would sing to myself the whole of the day
Who is it loves Me? Who loves not Me?

THREE LIGHT CANDELABRA
BY MESSRS STRODE & CO'
C·H·MASON : DESIGNER H·ROSS : CRAFTSMAN





C·H·MASON — DESIGNER
J·KENNEDY — CRAFTSMAN

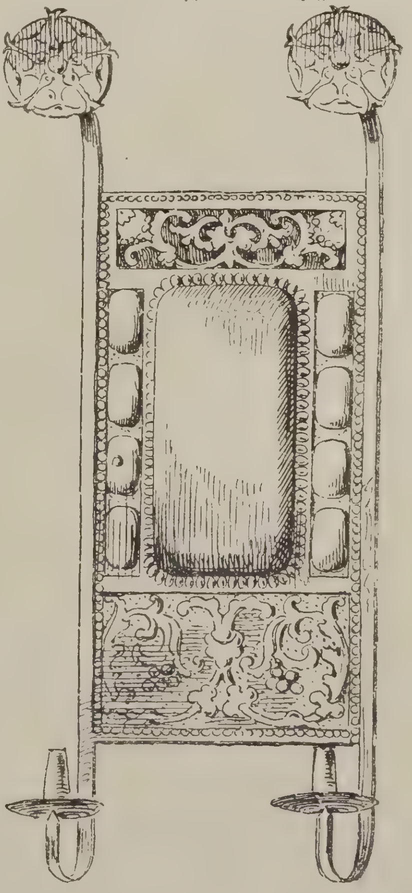
CANDLESTICK
BY MESSRS STRODE
& COMPY ·

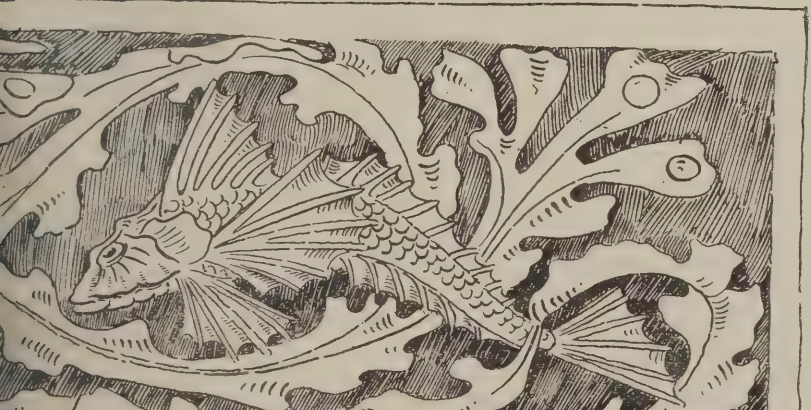
ART

D· EXHIBITION —

& · BRASIERS' COMPY

COPPER SCONCE
BY
THE GUILD & SCHOOL OF
HANDICRAFT ·





PPER BY MISS·G·E·CAVE·FRANCE

· DESIGNED & MADE BY W·A·WHITE

WAYSIDE NOTES.

TO-DAY sees the last of the broad-gauge system. The Board of Directors of the G.W.R. have arranged quite an acrobatic performance in the way of transforming the broad to the narrow gauge, music-hall dress-changing being a fool to it. Navvies from all parts of the company's line will repair to the West of England, and ere this number of the "B.N." is in the hands of readers, miles of work will have been accomplished. The early hours of Monday morning are expected to witness the completion of the work so far as the forming of a serviceable track is concerned, minor matters being left for more leisurely completion. The conversion of the three-lined tracks will thus be accomplished as may be convenient. Special urgency is only to be observed on such parts of the railway as consists solely of the broad-gauge. For the reception of the old broad-gauge rolling stock, it is stated that the company have prepared some 25 miles of siding at Swindon. So much of the old stock as is convertible will be placed on the 4ft. 8½in. gauge wheels. The last broad-gauge train leaves Paddington to-day. Perhaps presently the G.W.R. may be persuaded to show a little energy nearer London. It took me nine hours and twenty minutes to get to Watlington and back last Monday—a little over fifty miles each way!

Who is to go? The St. John's Wood people are again clamouring about the proposed extension of the M. and S.L.R. to London. They suggest that the railway could be taken through another district, to a site in Somers Town, near the existing termini of the Northern lines. It is said, however, that the reply of the inhabitants of this district is, that the St. John's Wood people can keep the railway to themselves. Many of the working-men residents in the locality strongly object to displacements by further railways. So here we have a pretty state of things! In St. John's Wood they say: Send the railway through Somers Town; in Somers Town they say the railway may go to Jericho, but they don't want it there. In a great working man's age, with a working man's County Council, one may imagine that the inhabitants of Somers Town will be able to hold their own in regard to this proposition. It may be just pointed out that the St. Pancras route would cut through an area stated to be condemned under the Housing of the Working Classes Act. This makes the St. John's Wood petition plausible.

The County Council have not given up the betterment principle yet. In their "General Powers Bill," now before Parliament, they prorose the erection of the Cromwell Road Bridge at Fulham, and to apply the principle of betterment by casting a portion of the expense upon the owners of property who benefit by the improvement.

I see quite a list of competitions advertised in your last issue. The proposed City of Manchester Municipal Technical School is attracting a good deal of attention, I believe, as it naturally would do, the premiums being liberal, and numbering four, in the place of the customary three. The Aberdare advertisement does not look very enticing; but these two advertisements coming together, at one and the same time, go to prove what I have pointed out—viz., that there is a growing demand for technical schools. I notice that the inaugurators of the competition for the Newcastle-upon-Tyne Central Masonic Hall have devised a rather novel method of dealing with the premiums: In the event of the competitor who is placed first carrying out the work, the total of the two premiums (£75) will be divided proportionately between the second and third approved plans. There is something to say in favour of this arrangement—No. 3 competitor could say a good deal, no doubt—but it has always been my argument that the first man should stick to his premium, as well as receive the usual commission, for a job won in competition deserves some greater reward than ordinarily. The promoters of the Newcastle competition, however, are much more generous than the average run of competition inaugurators. Most such have simply an eye to saving the first premium in saying that it shall "merge" in the commission. At Newcastle they only propose to disburse the money differently, and it is all given for the benefit of the competitors.

I was about to complain of the arrangement of the competition for illuminated clock-tower for the city of New Sarum; but inasmuch as the premium offered seems to cover nearly the amount of professional charges for design and superintendence, it is not a great deal to ask for a full specification. Where the trouble comes in is in requiring such a document from every competitor. This seems a sad waste of time, but is, perhaps, no more to be remedied than loss of time and money over the actual drawings. It is a very common thing, we know, to demand a specification with competition plans; but "specification" in such cases means rather a descriptive report. The town council of New Sarum ask for a "full specification" in order that the city surveyor may carry out the work. This sort of competition is not to be encouraged.

Which reminds me that some anonymous correspondent has forwarded a handbill headed "Shanklin Local Board," and setting forth that the board propose to appoint as their "surveyor'—"surveyor (?)" my correspondent makes it—"a first-class mechanic, who will be required to give his whole time to the service of the board." The duties of this "first-class mechanic" will comprise the superintending of all matters and works in relation to the roadways, footways, sewers, and works of water supply," the keeping of accounts, and the "carrying out of all such works and directions as may from time to time be ordered or given." "*Further* particulars may be obtained at the offices of the Board." The candidate, if appointed, must "give satisfactory security in the sum of £100 for the faithful execution of his office." For and in consideration of all these accomplishments and securities, the fortunate individual will receive the princely salary of £75 per annum, payable monthly.

"To the Shanklin local bord.

"Gentlemen i beg to aply for the sitwation of surveyer as advertized by you, i am a 1st class mechanic, a carpenter by trade, and no my bizness well. I am a Totel Abstainer, and do not Smoke and all though I can drawer arkitectur i have never belonged to the royal Institute of british Arkiteks or any other Union. I can Desyne and Plane and asking your pardon for saying it as shouldnt i mite do better for the plaice than more hartistic men that are unpraktical. I can sho how to make roadwaies and no a good drane wen i see it. i ave many testimoneals from gentlemen i have worked for i could leave my Plaice at once.

"gentlemen I trust you will consider my aplication and am yours respfly,

"Jack Plane.

"P.S.—I ave sum drawerins I could sho you.—J. P."

I congratulate the Benchers of Gray's Inn, who have quite lately become æsthetic, and begun to spend their money on architecture instead of old port, on the elegant structure just put up in the old garden, to the horror of the rooks. Nobody seems to know exactly what the affair is meant for. Some think it is a public lavatory for the laundresses, who flit to and fro like Hebes of the Gods of the Law. Some say it is meant permanently to take the place of the present hall and chapel; which, after tinkering about during the past six months, till the old pile has become an eyesore, it has been resolved to sweep away altogether. The Gray's Inn Benchers are so eminently religious a set of men that not a Sunday could be allowed to elapse without public worship; and possibly the result of their piety is the present tin gospel-shop in the garden. Gray's Inn has always been the grimiest of its species; the recent zeal of its guardians threatens to make it, at no distant date, the most hideous as well.

If you want to take a fashionable holiday this year, go to Norway. I see no less than seven announcements of pleasure steamers sailing to the Norwegian coasts during the season. Some go to the "fyords," others to the "fiords." It is evidently important that the tourist should decide which he will go to see. Goth.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

Architectural Association Excursion.—The head-quarters of the A. A. Excursion will be held at Taunton from August 15th to 20th, when the district round the highlands of West Somerset and parts of Devonshire will be visited, and perhaps a day or two spent round Exeter, where there are architects enough, at any rate, to render the visit a fraternal one.

Edinburgh Architectural Association.—On Saturday, May 7th, the members, under the leadership of Mr. Thomas Ross, architect, visited the old castles of Pitteadie and Seafield, both situated in the parish of Kinghorn. It is a ruin in a state of tolerable preservation, although totally neglected. It is approached through a round-arched gateway containing the carved arms, crest, and initials of William Calderwood of Pitteadie, with date 1686. The castle itself is considerably older than the gateway or than the time of William Calderwood. It may have been built about 1564, and certainly existed in 1609, but was modernised about the time that Calderwood built the gateway. Previously the entrance door appears to have been on the first-floor level, which was reached probably by a ladder from the outside; but a door was constructed on the ground-floor, and other improvements effected. The members walked from Pitteadie to Seafield Castle, a lofty ruined tower standing on the seashore near Kirkcaldy, with an outlook over the Firth of Forth. The tower is not so well preserved as its neighbour; but it still gives a good idea of the accommodation to be found in such structures, where defence was of more consequence than comfort. Seafield was built by a family of the name of Moultray, but the date of the building is not known.

Northern Architectural Association: Students' Sketching Club.—The annual meeting was held on Thursday, the 12th inst., at Newcastle, Mr. J. W. Twist, A.R.I.B.A., in the chair. The annual report showed the club to be in a flourishing condition, and stated that several meetings were held during last summer, notably at Durham Castle and Cathedral, Chester-le-Street Church, Finchale Abbey, Ovingham Church and Prudhoe Castle, Morpeth Parish Church, and Tynemouth Priory. A new series of meetings were arranged, and will start with a visit to Seaton Delaval Hall on Saturday next, the 21st inst., and a committee were appointed as follows:—Messrs. R. B. Dick, J. W. Boyd, J. W. Twist, and Edmund Rich, with Charles S. Errington as secretary.

Sheffield Society of Architects and Surveyors.—The annual meeting of this society was held on Tuesday, the 10th inst., Mr. C. J. Innocent, president, in the chair. The secretary's and treasurer's reports were read and adopted. Mr. C. J. Innocent was re-elected president and Mr. E. M. Gibbs vice-president, Mr. C. Hadfield hon. secretary, and Mr. J. B. Mitchell-Withers treasurer. The old council, Messrs. E. M. Gibbs, T. J. Flockton, W. H. Lancashire, W. F. Hemsoll, and W. C. Fenton, were re-elected for the coming session. The secretary announced with much regret the recent decease of Messrs. J. M'Inery and J. F. Wightman, fellows of the society. A paper on "Timber, its Growth and Characteristics," was read by Mr. W. H. Bidlake, M.A., architect, Birmingham. The paper was followed by a discussion. A vote of thanks was awarded to Mr. Bidlake on the motion of Mr. J. B. Mitchell-Withers, and supported by Messrs. Hadfield, Winder, and H. W. Lockwood.

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On Saturday, Mr. J. W. Bradley, assistant to the borough surveyor of Leicester, was selected from amongst 93 applicants as borough surveyor of Nelson. The office, to which a salary of £250 per annum is attached, became vacant by the appointment of the present surveyor (Mr. J. A. Crowther, formerly of Leeds) as borough surveyor of Bootle.

A new public clock has just been fixed in Coniscliffe parish church, Darlington, by Messrs. W. Potts and Sons, Clock Manufacturers, Leeds. The time is shown outside upon a 5ft. 6in. dial, well painted and gilt, and strikes the hours upon the largest bell of the peal. Messrs. Potts also made the clock in the station tower, Darlington, Hunworth and Gainford-on-Tees parish church clocks, and clocks in other important buildings, and are making clock and chimes for Great St. Mary's, Cambridge, where the Cambridge chimes were first fixed.

BOOKS RECEIVED.

House Drainage, A Handbook for Architects and Building Inspectors. By G. A. T. Middleton, A.R.I.B.A., M.S.A., &c. (London: B. T. Batsford, High Holborn.)—In this little book Mr. Middleton enunciates the accepted principles of house drainage, and by the aid of plans shows a system of drainage for a country house and a errace shop. The arrangements shown in the lans indicate the position of the intercepting rap, the inspection chambers near the building t the changes of direction of the sewer, the soil ipes, gullies, outlets, and lines of drains for soil nd water. The principles are briefly described n the first chapter; in the other chapters the uthor explains in more detail the disconnection rom the sewer, the chamber necessary for this urpose being detailed in plan and section to a arger scale. Of intercepting traps, the author nentions Crapper's "Kenon" and Cliff's, also Angell's trap, as among the best. We should ay the "Kenon" has many advantages in ts shape. Pipes and joints are discussed: he author refers to Messrs. Doulton's composi- ion joints for pipe drains, which are admirable or the purpose. The remarks on jointing iron ipes by tow and lead or iron filings and sal- mmoniac, and the means for preventing rust, he junction of the lead soil-pipe to the stoneware rain, show that the author has availed himself f some of the recent suggestions. One serious efect might have been mentioned—viz., the ettlement of the stoneware bend of the drain, nd the consequent breakage of the joint at the unction, a point often neglected. Certain forms f closets are illustrated, and their merits dis- ussed; though other patents might have been entioned, and it would be easy to find good and ad points in any of the numerous types in the arket. We find the author falls into the opular error of spelling siphon with a "y"; he word is derived from the Greek σιφλος, ollow, through the Latin word "siphon." ther chapters deal with rain-water, wastes nd overflows, stable drainage, flushing, drain- esting, and a model specification for house rainage is added. The author has taken reat pains to describe certain manufactured ppliances, and his book will be useful to e student, for whom an elucidation of the rinciples of drainage is necessary. The diagrams appliances are drawn to a good scale.—— *ndon Street Improvements.* By Henry Clarke, hairman of the Improvements Committee of the irst London County Council, 1892 (London: s. Truscott and Son).—Mr. Clarke has rendered service by giving in a readable compass an count of the London County Council's work in reet improvements. His remarks are worth ading. It will be surprising to be told that the treets in London measured in 1891 between 900 and 2,000 miles, and the length of streets ded annually is about 30 miles, and that the nual average increase of houses during this ntury has been about 4,706. We agree to the mark that many evils have been the result of rmitting railway companies to cut up the etropolis into sections, severing important dis- cts, and rendering additional thoroughfares most impracticable. Tramways have also ocked streets, and have rendered their widen- g desirable. The remarks on cost and method carrying out improvements, recoupments, and betterment" are of interest. Mr. Clarke ows that the money spent in the cost of earlier settings back" remains unproductive until the npletion of the scheme, besides being incon- nient to passengers and occupiers, and that the ings effected by the waiting policy is very ubtful. The lists of improvements, passed and ggested, are of value, and the map showing se is useful.

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Alterations have been made to the police-court, dmin, embracing the ventilation, which is now ried out on the Boyle system, the latest improved m of the self-acting air-pump ventilator being pted for the extraction of the vitiated air.

It is proposed to expend £32,000 in applying the using of the Working Classes Act, 1890, to pro- ies in the poorer parts of Sunderland. The mate prepared by the borough surveyor (Mr. nthwaite) shows that it is proposed to deal with different blocks, containing 223 houses and dis- ing 374 tenants. The estimated value of the perties to be acquired is £25,695, which, with cost of street formation, the demolition of the ses, &c., will bring the aggregate cost to the l already named. The streets to be altered are ng the oldest in the town.

Building Intelligence.

Brecon.—The corner-stone of the new board-schools in Mount-street, was laid by the mayor of the borough, Col. Morgan, on the 15th ult. The accommodation will be for 198 infants, in three rooms on the ground-floor, where are also all the cloak-rooms and lavatories; the mixed schoolroom and two classrooms for 119 boys and 119 girls being above. The whole forms a well-arranged and compact block. Everything will be provided as regards materials, ventilation, heating, and sanitation on the most modern principles, the offices being at the back of site. Mr. E. H. Lingen Barker, of Hereford, is architect to the board, and the contractor of these schools is Mr. B. Jenkins, of Brecon, whose contract amounts to £2,586.

Kimberley, S.A. — The South African and International Exhibition at Kimberley is now nearing completion. It is constructed entirely of light wood framing, covered with corrugated galvanised iron, except the Fine Art Gallery, which is a brick building. The central portion is a large hall, 275ft. by 80ft. wide, with a gallery round three sides. At one end of this hall is a stage for dramatic performances. On each side of the hall are placed the various courts, each 100ft. by 51ft. Already considerable extensions are being put in hand. The two machinery halls are constructed on the same principle as the main building. "Duroline" is used for all skylights and lanterns, and the buildings are ventilated by Boyle's patent air exhausts. The cost of the buildings will be about £14,000. Messrs. Grant and Downie, of Kimberley, are the contractors, and Mr. D. J. Byrne the clerk of works, the work being carried out under the supervision of the architect, Mr. D. W. Greatbatch.

Roath, Cardiff.—On Wednesday of last week, Mr. J. M. Maclean, M.P., reopened the premises of the Roath Conservative Club, which have been rebuilt and enlarged from the designs of Messrs. Veall and Sant, architects, Cardiff. The chief architectural feature is a handsome entrance in the Italian Renaissance style, which is executed in Forest of Dean and Corsham Down stone, richly moulded, and with massive corbels carrying a balcony over the entrance. In the pediment the arms of the club have been beautifully carved by Mr. W. H. Wormleighton, of Cardiff. The club consists of large assembly-room, kitchen, committee-room, and private room on the first floor; billiard-room, smoking-room, reading-room, and bar on the ground floor, with entrance hall and staircase. Messrs. Jones and Willis supplied the handsome memorial brass erected on the staircase.

Werrington.—After undergoing enlargement and extensive alterations, the church of St. Martin, Werrington, near Launceston, which was built some 130 years ago, was reopened on Thursday, the 28th ult. The works have included the provision of a chancel and organ chamber, the reseating of the nave in pitch pine, reflooring with tiles in the central passage, and wood blocks under the seats. The old private pews over the porches, formerly approached by outside staircases, have been walled up, and will be used as Sunday schoolrooms and approached by circular turret steps. An open timber roof has given place to a flat ceiling. The windows, formerly plain, have been fitted with two-light Perpendicular mullions. The chancel is rather narrow, and has a five-light window in the end, which has been fitted with stained glass representing the Crucifixion. The choir-stalls are of wainscot oak. The altar is raised seven steps above the nave, the flooring being of glass mosaic. The work has cost £2,500. The architects were Messrs. St. Aubyn, Lamb Buildings, Temple, London, and Mr. W. Burt, builder, of Launceston, carried out the contract.

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The second portion of the Murrieta collection was disposed of by auction last Saturday and Monday. The sales realised £23,601.

The foundation-stone of St. John the Evangelist's Church, Greengates, in the parish of Eccleshill, was laid last week. The church, which is estimated to cost £2,400, is designed in the Early English style. Messrs. Jowett Kendall and J. Harper Bakes, M.S.A., of Leeds and Idle, are the architects, the builders being Messrs. Thomas Obank and Sons, of Idle.

Engineering Notes.

Subway Railways in London.—The Lords and Commons Joint Committee to consider the Bills for constructing underground electric or cable railways in London, is sitting. Mr. G. P. Goldney, City Remembrancer, gave an outline of the six schemes, four of which touched the City, and said the proposed lines seemed unobjectionable. The Central London Railway Bill proposed a large new central railway station near the Mansion House, and another station at Liverpool-street; those would be the only new stations in the City on that line, but there would be a terminal station near the Mansion House for the Waterloo and City Railway, and in connection with the City and South London Extension to Islington, there would be a station in King William-street, opposite the existing terminus, and another at Moorgate-street. The engineers of the Corporation were satisfied as to the tunnels under the Thames threatening no injury to Blackfriars-bridge. The Great Northern and City was to be constructed with tubes large enough to admit of the working of ordinary rolling stock, and it followed a convenient line of route north and south. The Central Railway Bill proposed that the whole space between the Mansion House, the Bank, and the Royal Exchange should be utilised for large underground station, with subways for foot-passengers. That scheme could only be carried out at great expense, and at very prolonged public inconvenience. Mr. J. H. Greathead said he was joint engineer for all the proposed railways. The Waterloo and City Railway with a three minutes' service would be capable of carrying nearly 26,000,000 passengers per annum, assuming the trains to be only one-third full. This railway would pass under the Thames to the west of Blackfriars Bridge, and then under Queen Victoria-street to the Mansion House. The line would be one and a half mile in length. The estimated cost of construction was £500,000. The Baker-street and Waterloo Railway, starting from the Baker-street Station of the Metropolitan Railway, would pass eastward under Regent's Park, then down Portland-place to Oxford-circus, where there would be an exchange station with the Central London Railway, then along Regent-circus, Piccadilly, and the Haymarket, under Northumberland-avenue and the Thames to Waterloo Station. The length of the line would be about three miles. The estimated cost was £990,000. The Hampstead, St. Pancras, and Charing Cross Railway would be four and a-half miles long, with a branch three-quarters of a mile long to King's-cross. The cost would be £1,250,000. It was proposed to work that line by cable traction. The South London Extension Railway was a continuation of the existing line, which would be carried on as far as the Angel at Islington, at an estimated cost of £706,600. The Central London Railway was an extension of the line authorised last year from Shepherd's-bush to the Royal Exchange; it was now proposed to carry it on to Liverpool-street. This supplementary line was about three-quarters of a mile long, and would cost about £150,000. The Great Northern and City Railway would commence by a junction with the Great Northern line at Drayton Park, and run to Finsbury-pavement. The estimate for that railway was £1,200,000.

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The Berkhampstead rural sanitary authority appointed at their last meeting Mr. Robert Bailey, of Northchurch, as surveyor and inspector of nuisances for the Berkhampstead district, and Mr. W. Baines to similar offices for the Tring district.

Mr. William Chapman, builder, of Hanworth, Norfolk, died on Sunday, aged 71 years. He was at the time of his death carrying out the contract for the Fletcher Convalescent Home at Cromer, and was a large employer of labour.

The Theatres and Music-hall Committee, acting as the licensing authority of the London County Council, granted, in November last, a music and dancing license to the Shoreditch Town Hall conditionally upon certain structural alterations being carried out by the vestry according to the plans of Mr. Charles Barry, F.S.A. The Shoreditch Vestry have now been informed by the Council's solicitors that they cannot sanction the proposed loan of £5,500 for the purpose of carrying out the Council's requirements, on the ground of the vestry's legal incapacity to contract such expenditure.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

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SITUATIONS.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is ONE SHILLING for TWENTY-FOUR WORDS, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., L., LI., LIII., LIV., LVIII., LIX., and LX. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

RECEIVED.—F. R. M.—J. and R. Co.—Franciscan.—B. A. —A. B. R. (Canterbury).—M. S. and Co.

G. B. D. (The little book, "The Coal-devouring Cooking Range and its Progeny, Smoke and Fog," is not obtainable at book stores, as it was written chiefly for trade purposes. The author, F. Dye, 176, Regent-street, London, will give you a copy if you send him a stamped envelope, or, if you require several copies, would doubtless charge quite a nominal sum for them.)

"BUILDING NEWS" DESIGNING CLUB.

DRAWINGS RECEIVED.—"Peterboro," "Black Prince," "Old Postage Stamp."

Correspondence.

BLACKBURN COUNTY ASYLUM COMPETITION.

To the Editor of the BUILDING NEWS.

SIR,—It may be a matter of great interest and much importance to your many readers in Blackburn and elsewhere if you will kindly allow me to refer to the adjudication in connection with the above proposed asylum.

On the 31st October, 1891, an advertisement appeared in the local papers showing that a local competition was invited, to be decided by qualified assessors, and to be carried out in strict accord with the instructions of the Commissioners in Lunacy. The premiums offered were £100, £75, and £50, and the designs were expected to be both workable and *economical.* Nearly all the local firms entered for the competition, irrespective of age and date of existence, *to be judged solely on the merits of their individual designs.*

Of course I need not tell you that all plans, or sets of plans, were to be unrecognisable, save by motto, accompanied by name and address under sealed cover.

Messrs. Hind and Odgers, of Plymouth, were the assessors appointed, and Dr. McPhail, of Derby, the medical superintendent. The plans were sent from the Town Hall, Blackburn, to Plymouth, and thence to Derby.

At the first meeting of the visiting committee (composed of members of the town council), both at the meeting and in the town it was known that certain plans were *recognisable,* not only by measurement, but *actually* by motto, and also lithographed copies of designs had been received by members of the committee.

When this became known, I addressed a letter to the local organ of the Council—the Conservative Press—couched in similar terms to this, which the editor had not the courtesy to even acknowledge.

And what is now the result? The assessors and the medical superintendent have placed the competitors in the successful list thus:—(1) Smith, Wilkinson, and Bertwistle ("Arte et Labore"), £100; (2) Briggs and Wolstenholme ("Hold-fast"), £75; (3) Stones and Gradwell ("Aureola"), £50. As to 1, the report of the assessors runs:—

> "The arrangements for heating and ventilating have been well thought out. Whilst we consider this plan most excellent on the whole, and that it will require *less modification than any other*, in order to receive the *approval* of the Commissioners in Lunacy, the elevations accompanying them are of a peculiarly inferior character. . . . On account, however, of the great merit of the plans, we recommend that the design be awarded the first premium, but the elevations, although *subordinate* in importance to the plans, will . . . have to be recast."

This design, as also that of the second successful firm, has been pronounced to be in accordance with the *directions* given to all competing architects, and is the only likely to come under the proposed cost. So far, one has no cause for complaint. But, Sir, what are the facts? The committee, notwithstanding the excellent character and ability of *their own appointed* assessors and medical superintendent, have placed the first *last* and the last *first.* Well, as may be naturally supposed, there is great dissatisfaction in professional circles, and, pending the decision of the whole town council (2nd June), I should be glad if you could get copies of the three designs mentioned. The gentlemen who have been awarded the premiums by the assessors are told by the committee they are "too young!" But what about those who have been placed over their heads? Only this, the disclosed motto is the same one used in the third successful set. In the meantime, I hold myself ready to answer any statement or defend any argument I have made and brought forward.—I am, &c.,

C. FRED. JAMES N. STOTT, Builders' Clerk.

St. Alban's, Blackburn, May 17.

ATTENDANCES OF COMMITTEEMEN OF THE R.I.B.A.

SIR,—As a large number of the members of the four standing committees never attended any meetings last year, or, at most, only went once or twice, I am at a loss to know why these gentlemen have been re-nominated.

On, at least, one occasion only one man attended an Art Committee meeting! (See list of attendances issued by the R.I.B.A. on the 5th inst.)

It is to be hoped that a greater number of voters will take part in the election this year; last time comparatively few voted.—I am, &c.,

May 18th. A FELLOW.

CONSTRUCTIONAL DRAWINGS.—III.—DETAILS OF TIMBER GANTRY.

SIR,—Will readers kindly insert the following notes, which should have been printed under the diagram of "bending moments" in your last issue.

$$C.W = W \times a \quad D.W = W \times b.$$

The moment of the loads divided by the depth of the beam will give the horizontal strain on the extreme fibres in its upper and lower sides.

When two equal concentrated loads, separated by a constant distance, roll over a beam, there will be two points in the beam where the bending moments will be a maximum; these points are situated at each side of the centre of the span, and at a distance from it equal to one-fourth of the distance between the two weights.—I am, &c.,

STUART H. DAVIES.

SIR,—The author of the drawing and specification published in your last issue does not appear to have given the subject the amount of attention that might have been expected prior to its publication.

In the trussed beam for travelling crane, the $2\frac{1}{4}$in. tie rod is shown to pass through the eyes at ends of cast-iron struts, instead of being connected with hinged joints; the $1\frac{5}{8}$in. cross ties are therefore useless, and have practically no strain.

The gallery has an inch gas-pipe for hand-rail, supported by standards *thirty* feet apart. The floor of gallery consists of 3in. planks laid flat, bolted to brackets 30ft. apart; no intermediate supports are shown.

In the specification the description of the cast iron is vague, and the same remark applies to the quality of the timber. Baltic timber may be either Prussian, Russian, Finnish, or Swedish—varying greatly in quality and suitability. Red Baltic timber is called *fir* not *pine* in practice, and I suppose the subject is intended to illustrate practical work rather than botany.—I am, &c.,

6, Crosby-square. WM. GILBERT.

TERRACOTTA SCUM.

SIR,—We said we did not wish to enter into any controversy, and we would not have done so if "R. A. R." had put his name and address to his contribution. But we must assure him that we have but slight opinion of his acquaintance of patent law when he says that he has a plan similar to Messrs. Edwards Bros. and Co.'s, and intends to patent it. We would like, also, to confess that our sordid human nature will not allow us to forfeit at the first asking the protection we have just been granted, or any infringement of it.

With regard to a "mixture," which is of course a secret, we can give your subscribers ten, or a hundred and ten, such mixtures, all successful in defying scum, always provided they are applied as per our patent process, which is a "hermetic coating whilst the moisture is in the clay," &c.

We do not desire to trespass on your space as a cheap advertisement for ourselves, and promise not to trouble you again on the subject.—We are, &c., EDWARDS BROTHERS AND CO.

The Depot, Rhosddu, Wrexham.

Intercommunication.

QUESTIONS.

[10775.]—**Hydraulics.**—Will some reader give rule for finding velocity and also discharge in sewer when running half-full at various inclinations?—B. S. D.

[10776.]—**Damp Walls.**—My house, recently purchased by me, is built of brick, with Penkridge stone coping. The stone is porous, absorbs rain, and the brick walls absorb wet from stone. Can you tell me of a cure for this? Is there anything that the stone will absorb and retain preventing it being porous, and causing it to throw the wet off?—MOSELEY.

[10777.]—**Heraldry.**—Can any of your readers recommend me a cheap book on heraldry, and be so good as to tell me (1) What are the "Nine Honourable Ordinaries"? (2) What is a "dexter"? and (3) What is a "sinister" bar or bend?—T. M.

[10778.]—**Concrete Floor.**—I shall be glad if any reader can give me any particulars as to the greatest span they may know of in which a concrete floor has been laid without any iron joists or other bearers, and if they know of any tables for calculating the breaking weights, and of thickness to span of such floors? Also the proportions and materials used where flooring boards are nailed directly upon and into it?—STUDENT.

REPLIES.

[10770.]—**Paint to Prevent Condensation.**—The paint for iron ceilings and beams in ironclads is mixed up with "cork dust," which effectually acts as a non conductor of heat, and prevents the moisture in the air from condensing and constantly dripping. It is a wonder it is not oftener used for bottoms of iron and slate cisterns, &c.—W. M. GLYNN, 2, Heald-place, Manchester.

[10771.] — **Waterproofing Walls.** — Claridge's patent asphalte would be found effectual.—O. SNORTER.

* * *

The City of York memorial to the late Duke of Clarence will take the form of a life-sized marble bust and pedestal in the entrance hall of the new Courts of Justice in Clifford-street, York. A competition will be instituted.

No fewer than 72 old churches are condemned for demolition at Naples to meet the requirements of the resanitation of that city. Eleven of these have already disappeared. None has any importance as a work of architecture, and very few contain notable historic objects.

At the last meeting of the board of guardians for Barton, near Manchester, a resolution was passed authorising the board to apply for power to borrow £32,891 for the erection and fitting up of a new workhouse on land which has been acquired near the existing union offices and buildings in Green-lane, Patricroft. The plans, which have been prepared by Messrs. Maugnall and Littlewoods, architects, Manchester, have received the sanction of the Local Government Board.

Legal.

THE COVENANT FOR QUIET ENJOYMENT.

THE usual words of this covenant in a lease are that the lessee shall use and enjoy the premises "without any interruption from the lessor or any person whomsoever claiming by, through, or under him." Where the lessee loses possession of the property by the fault of his lessor bringing a forfeiture from the superior landlord, has he any remedy under this covenant? The Court of Appeal, in the recent case of "Kelly v. Rogers" (*Times*, May 10th), has just decided that he has not, because the superior landlord does not claim "by, through, or under" the lessor, but by virtue of a superior title. Of course, in a general way a sub-lessee can protect himself, and, in fact, is protected as long as he sees that the covenants affecting the property are performed. But in this case the difficulty arose because there had been two houses in the original lease, only one of which was sub-leased to the plaintiff, while it was for breach of his covenant to repair the other one that the defendant forfeited both to his superior landlord. From the facts stated it appeared that the defendant's predecessor in title had in 1857 become lessee of two houses in one lease in Bermondsey for 99 years. In 1863 he had sub-leased one of these houses to the plaintiff's predecessor in title for the rest of the term less ten days; and in that lease there was the usual lessor's covenant for quiet enjoyment in the words quoted above. The superior landlord and original lessors of the two houses in 1857 had lately obtained judgment for possession of both houses under a breach of defendant's covenant to repair the other house, which, though in the same lease, did not belong to the plaintiff. Under these circumstances the plaintiff sued his immediate lessor for damage for breach of his covenant for quiet enjoyment, and he recovered a verdict for £500 at the trial. But the defendant now moved for judgment on the ground that he was not legally liable. The Master of the Rolls put the point very plainly. The defendant had omitted to comply with his covenant to repair another house, and this gave his superior landlord a right to take possession of the plaintiff's house as well, which was in the same lease. The act of interruption was the act of the superior landlord. But, in his opinion, the words of the covenant for quiet enjoyment did not include any act or omission of the defendant which gave his superior landlord this right to take possession. Lord Esher referred to a case 50 years old which took this view, adding that he should have held in the same way without any authority. The result is, no doubt, technically very good law; but it certainly works injustice to the plaintiff, who has lost his property through no fault of his own, and who is left entirely without a remedy against anyone. Probably for the future covenants for quiet enjoyment will be drawn more clearly.

FRED WETHERFIELD, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

NOTE.—All questions for reply in this column must be headed "BUILDING NEWS," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

W. W. — DRAWINGS. — CONTRACTOR. — The builder is entitled to the free use of the working drawings for the purpose of carrying out his contract, and so far he would be entitled to their custody. But they belong to the architect until the whole works are completed and he is paid, when they legally become the ultimate property of the employer.

G. B.—BUILDINGS.—WEAK FOUNDATIONS.—This is really not a question of law at all, but of fact. Upon the surveyor's report sent, A. could not be held liable, so far as I can see. But there would doubtless be expert evidence on the other side. The real cause of the collapse seems to be in the weak foundations.

CONSTANT READER.—CHARACTER. — LIBEL. — There is no ground of action for libel here unless some malice can be shown in C., because a letter *bonâ fide* replying to a reference for a character is a privileged communication; and, in the absence of malice, the writer is protected, although what he says may be injurious, and even untrue.

J. H.—CONTRACT.—GENERAL CLAUSE.—I do not see how the general clause suggested could prevent an architect being legally liable to his employer for breach of contract. But the question is really too vague for any useful reply to be given.

L.—PLANS.—DELAY. —NEGLIGENCE. — It would have been better if you had refused to receive the plans on ground of delay. Still, it is a question of evidence for a judge upon his claim for payment, and you could put forward by a counterclaim a demand for damages caused by his delay and incapacity to estimate.

LEGAL INTELLIGENCE.

WHAT IS A NEW STREET?—VESTRY OF ST. GILES, CAMBERWELL v. THE CRYSTAL PALACE COMPANY.—(Before the Master of the Rolls and Lord Justices Fry and Lopes.)—In this case the vestry authority of St. Giles, Camberwell, sought to recover from the defendant company the sum of £2,926 8s. 2d., being the defendants' proportion of the cost of paving the Crystal Palace-parade, under the 105th Section of the Metropolis Local Management Act, 1855, and the 77th Section of the Metropolis Local Management Act, 1862. The defendants were the owners of land and houses abutting on the alleged "new street," but they denied liability on the ground that the thoroughfare in question was a new street, as they had constructed it under the Crystal Palace Act of 1853 as the widening of and substitution for an ancient highway forming the north-western boundary of the estate of the defendants, the said highway being previously repavable by the inhabitants at large. At the trial at the Guildhall, before Mr. Justice Day without a jury, his Lordship held that the highway never was taken over by the vestry, and that it was a new street within the meaning of the Act; therefore he found for the plaintiffs' claim. The Master of the Rolls said the judgment of Mr. Justice Day must be affirmed. Lords Justices Fry and Lopes concurred.

JOHNSON AND CO. v. THE HORNSEY LOCAL BOARD.—An interesting arbitration has just been heard at the Law Courts, which occupied five days in hearing, before Professor Henry Robinson, M.Inst.C.E., between Messrs. S. H. Johnson and Co., of Stratford, and the Hornsey Local Board, as to payment for certain sewage-pressing machinery at the Hornsey Sewage Works. The Board's engineer (Mr. T. de Courcy Meade, M.Inst.C.E.) refused to certify for the final payment of the machinery on the ground that it did not work to his satisfaction. The Board finally removed the machinery and replaced it with other machinery of another firm. Messrs. Johnson sued for the balance (10 per cent.) and the Board counterclaimed for the difference in cost between the machinery removed and that substituted. Mr. Mead gave evidence in support of the Board's case, and his views were confirmed by Mr. Santo Crimp, M.Inst.C.E., district engineer to the London County Council, Mr. G. R. Strachan, Assoc.M.Inst.C.E., of Westminster, and Mr. Wm. Warner, of the firm of Goddard, Massey, and Warner, who erected the substituted machinery. On behalf of Messrs. Johnson evidence was given by Mr. S. H. Johnson and Mr. Hutchinson, members of the firm, Mr. J. C. Melliss, Assoc.M.Inst.C.E., and by several of the men in the employ of Messrs. Johnson. Professor Robinson has now issued his award, which directs the local board to pay to Messrs. Johnson the sum of £36 17s. 6d. for a screen which was not included in the contract, the board not to pay Messrs. Johnson the balance on the contract amount, and Messrs. Johnson to pay the Board £150 as damages, and also to pay the cost of the award.

RE OVERTON AND AIRS.—A first meeting of creditors was held in this case on the 5th inst., before Mr. Chapman, assistant receiver. The debtors were company promoters, carrying on business at Beaufort Mansions, Westminster, and prior to March, 1890, they were in partnership as architects and surveyors. The joint liabilities were estimated at about £8,000 or £9,000, with assets consisting chiefly of claims and shares, the value of which is not yet ascertained. The failure was attributed to the liability of the debtors on account of a contract for the sale of a mill at King's Cross, to losses by the depreciation in the value of shares in various industrial companies (£1,250), and payments made on the attempted promotion of mining and other companies (£6,000). The profits of the firm were estimated to have amounted to about £3,000 a year. A resolution for bankruptcy was passed, and a trustee of the estate, together with a committee of inspection, were appointed.

THE EMPLOYERS' LIABILITY ACT AND BUILDINGS IN PROGRESS.—Judge Stonor recently delivered judgment at the Marylebone County Court in the case of "Bradley v. Gas Light and Coke Company," heard at the March court. In August last the plaintiff was in the employment of the defendants, erecting machinery in the retort-house at Kensal-green. He was engaged in pinning up with brick a heavy retort which was held in position temporarily by a wooden strut. This strut was displaced, and the retort fell on the plaintiff, inflicting serious injuries. The plaintiff asserted that the accident happened through the strut being placed against a round iron retort instead of against a flat piece of wood. The defendants denied this, and denied also that the accident was occasioned in this way. It was submitted, on behalf of the defendants, that plaintiff ought to be nonsuited, on the ground that the machinery in question was incomplete and not then "connected with or used in the business" of the defendant company within section 1, subsection 1, of the Employers' Liability Act. His Honour declined to stop the case. The jury found, on the questions of fact as to the defect in the condition of the machinery, in favour of the plaintiff, and assessed the damages at £150. As to nonsuit, the defendant's counsel relied upon the decision in the case of "Howe v. Finch," decided by Justices Mathew and A. L. Smith. In that case the defendants were constructing an external wall of a building intended to be used as a warehouse, but which had not been used at the time when the accident occurred through the wall falling upon the plaintiff. The court held that the facts did not show "a defect in the condition of the works connected with or used in the business" of the defendants within the subsection 1. Judge Stonor now held that this case of "Howe v. Finch" did not apply, and decided that the plaintiff had made out a case to go to the jury, and that he was entitled to judgment under the subsections 1 and 2 of section 1 of the Act.

DAMAGES FOR FLOODING AGAINST A LOCAL BOARD.—In the Liverpool County Court on the 5th inst. before his Honour Judge Collier and a jury, an action was brought by Mr. Thomas M'Cracken, wine merchant, Liverpool, against the West Derby Local Board, to recover £24 2s. 6d. for damage done to stock in store cellar in West Derby-road, due to the rising of water and sewage in consequence of the alleged inadequacy of the sewers. The case for the plaintiff was that on two very wet days in June and July last, the sewers under plaintiff's cellar overflowed and flooded the place to the depth of about 5ft. On behalf of the board it was contended that this flooding was no fault of theirs. On the dates in question the rainfalls were excessive. The sewers were properly constructed, were quite sufficient for their purpose, and were periodically surveyed. He called a large number of witnesses, who spoke of the rainfalls on the dates in question as extraordinary, and also professional men, who said the sewers were ample and adequate. The jury found for the plaintiff for the amount claimed. A stay of execution for 21 days was granted to allow of an appeal.

OWNER'S LIABILITY FOR ABATEMENT OF NUISANCE.—GEBHARDT v. SAUNDERS AND OTHERS.—In the Queen's Bench Division, on the 10th inst., Justices Day and Charles heard an action by a tenant against his landlords to recover about £18 for the expense of abating a nuisance arising from a defect in the drain of the house he occupied. It was originally tried before Mr. Commissioner Kerr, who nonsuited the plaintiff, but gave leave to appeal. The appellant received from the local authorities a notice which was addressed both to him and the owner under the provisions of the Public Health Act, 1891, to abate the nuisance in question forthwith. In default of the landlord's doing anything, the appellant had the work done, and he now sought under the Act to recover the money from the respondents. For the respondents, it was contended that there was a defect in the notice, which was not served upon them, but only left upon the premises, and also that the appellant could not recover the money he had expended because he was not legally compellable to repair a structural defect. Mr. Justice Day thought that appellant had wisely and properly carried out the order of the local authorities forthwith, and that under the Act he was entitled to recover the money from the respondents. Therefore, judgment would be entered for the appellant, the plaintiff in the action. Mr. Justice Charles concurred. Judgment for the appellant accordingly.

THE ARCHITECT AND HIS DUST-BIN.—ELLIS v. THE STRAND DISTRICT BOARD OF WORKS.—In the Queen's Bench Division, Mr. Grantham recently heard an action brought against defendants for damages for breach of duty on their part in not removing dust and refuse from the plaintiff's house. The plaintiff was an architect, and in August, 1889, he became leaseholder of No. 28, Essex-street, Strand, and carried on his profession there. His case was that for two years he had continual difficulty with the defendants in consequence of their not removing the dust and refuse from his house. The result of this was that bad smells arose, and the plaintiff and his clerk became seriously ill. It was denied that the defendants were required by law to clear out the dust-bins, and also that they had refused to remove the dust and refuse in this particular case. It was further said that they were entitled by statute to six months' notice of action. Mr. Justice Grantham expressed his opinion that there was a statutory liability upon the defendants to remove dust and refuse from the houses of their parishioners. The jury returned a verdict for the plaintiff for £75. A stay of proceedings was granted with a view to appeal.

FRONTAGE LINES AND THE BUILDING ACT.—WORLEY v. THE VESTRY OF ST. MARY ABBOTT'S, KENSINGTON.—An action relating to the power of a London vestry to compel the building owner to keep his new buildings back within a building line laid down by the certificate of the superintending architect of the London County Council was heard by Mr. Justice North last week. The site is part of the garden of the mansion erected by Baron Grant in Kensington and pulled down in 1880. Baron Grant's premises occupied the site of two old houses and their grounds, pulled down in 1873. Mr. Worley, the plaintiff, took a building lease of ground between a London and County Bank (which is in line with High-street) and Kensington-court, and commenced to erect a row of houses in a line with the bank. On March 8, 1892, the superintending architect of the London County Council made a certificate under section 75 of the Metropolis Management Amendment Act, 1862, by which he declared the building line of the plaintiff's property fronting Kensington-road to be level with the buildings on the west side of Kensington-court, therefore farther back than the bank and the building line of High-street. The vestry served notice on the plaintiff to put his buildings back within the line defined by the superintending architect's certificate. The plaintiff, under the London County Council (General Powers) Act, 1890, appealed to a tribunal constituted by that Act against the finding of the superintending architect. He also commenced this action to restrain the vestry from taking steps before a magistrate to make him comply with the requisition to set the buildings back. The action was now brought on, on motion for an interlocutory injunction. The matter had already come before the tribunal of appeal from the architect's finding, consisting of three persons, appointed by the London County Council, the Institute of Architects, and the Institution of Surveyors respectively, and they had adjourned their decision till the hearing of this motion. If section 75, under which the superintending architect acted, applied, his decision would have been final but for the appeal given by the Act of 1890. It follows that the decision of the new tribunal would also be final, and there would be no jurisdiction in the High Court to interfere. It was contended, however, on behalf of the plaintiff, that as to a part of the ground he was building on he was in effect re-erecting a structure on the site of an old structure, and that, therefore, whatever right the vestry might have to set the street back under section 74 of the Act of 1862, they had no right to compel him to keep his buildings back as being buildings on an open space under section 75 of the Act. Mr. Justice North, in giving judgment, said that in this case the site of the proposed structure intended to be erected was to be treated as a vacant space, and not, as to any part of it, as the site of an old building which it had always been intended to re-erect, and that the case came within the 75th section of the Act of 1862. That was the result, he considered, of the judgments of the Lords Justices in "Lord Auckland v. Westminster Local Board of Works"—a case relied upon by the plaintiff, where the site of buildings taken by a railway company was used for the construction of the railway and part sold to Lord Auckland. It was held in that case that, there never having been an intention that the site should be used otherwise than as building ground, the case came within section 74, and not within section 75, and that if the building line was thrown back compensation must be paid. His Lordship read extracts from the judgment of Lord Justice James and Lord Justice Mellish in support of this view. His Lordship also referred to the remarks of Lord Justice Cotton's decision in "Barlow v. the Kensington Vestry"—a case in which Lord Auckland's case was distinguished, and it was held section 75 did apply, and the Lord Justice took the same view of the effect of Lord Auckland's case as His Lordship. The action was therefore dismissed.

Damages for Defective House Drainage.—Bettell v. Potter.—In this case, held at the Bristol County-court on the 25th ult. before Judge Metcalfe, the plaintiff's claim was for £10 rent of a house, 17, St. John's-road, Clifton, due under an agreement dated March 25th, 1891. This was admitted by the defendant, who counter-claimed in respect of damages alleged to have been sustained in consequence of the defective condition of the drainage of the house. Having heard the evidence of plaintiff, his medical attendant, and other witnesses, his Honour said it had been clearly made out that plaintiff represented that the house was fit for habitation, and properly drained, when such was not really the case. He gave judgment for the defendant for £21 on the counter-claim, with costs. He also gave judgment for the plaintiff for £10 rent, without costs.

Builders' Offices and the Building Act.—London County Council v. Pearce and another.—(Queen's Bench Division, before Mr. Baron Pollock and Mr. Justice Williams.)—This case was recently stated for the opinion of the Court by Mr. Bros, the Metropolitan police magistrate, upon the application of the London County Council, who were dissatisfied with the decision given in regard to a summons taken out at their instance against Messrs Pearce and Heatley, builders, of 646, Holloway-road. The summons charged the respondents with setting up a wooden structure or erection of a movable or temporary character within the meaning of the Metropolis Building Amendment Act without the license in writing of the Council, the structure in question being an ordinary builder's office upon wheels, fitted with a desk, and having a small window. This class of erection was under the Act specially exempted from being dealt with as temporary or movable structures requiring a license when they were erected by a builder for use during the construction, alteration, and repair of any building, unless they were not taken down and removed immediately after the work had been completed. In the present case the office had been stationed for some time in the forecourt of respondent's own premises, and had on some occasions been used as a pay-office. Under these circumstances, it was said, a license was required; but the magistrate came to the conclusion that the structure formed part of a builder's plant intended for use during building operations, and dismissed the summons. The Court dismissed the appeal with costs.

PARLIAMENTARY NOTES.

The Ordnance Survey.—In reply to Mr. Buchanan, Mr. Chaplin has explained that a departmental committee has been appointed to inquire into and report on the present condition of the Ordnance Survey, and especially to consider—(1) What steps should be taken to expedite the completion and publication of the new or revised 1in. map (with or without hill-shading) of the British Isles; (2) what permanent arrangements should be made for the continuous revision and speedy publication of the maps (1·500 (towns), 25in., 6in., and 1in. scales); (3) whether the maps as at present issued satisfy the reasonable requirements of the public in regard to style of execution, form, information conveyed, and price; and whether any improvement can be made in the catalogue and indexes. The report and proceedings of the committee will be published as a Parliamentary paper. The inquiry will extend to Ireland.

CHIPS.

Mr. Samuel Joseph Smith, one of the Inspectors of the Local Government Board, held on Tuesday, in the Mayor's Parlour at the Town Hall, Manchester, an inquiry into the application of the town council to borrow the sum of £150,000 for purposes of electric lighting, and £12,000 for providing a public library for the Openshaw district.

The sum of £5,825 has been subscribed towards the fund for rebuilding the church of All Saints, Hertford, which was totally destroyed by fire about six months ago.

Mr. Walton, Local Government Board Inspector, opened an inquiry at Nelson on Tuesday, into an application by the corporation for sanction to borrow £10,000 for electric lighting purposes, £10,000 for purchasing a cemetery, £7,500 for the erection of a public library and technical school, and for the appropriation of land now possessed by the corporation as a site for the technical school.

The Bishop of Rochester consecrated the new church of All Saints, Wimbledon, on Saturday. So far only the chancel, the side chapel, the eastern bay of the nave, and the north aisle have been built, the iron church serving as a temporary nave. The work has cost £3,000.

An inquiry was held in the Town-hall, Berkhampstead, on Wednesday week, before General Crozier, of the Local Government Board, in reference to an application by the rural sanitary authority for the loan of £10,000 for the purposes of sewerage and sewage disposal for the parishes of Berkhampstead and Northchurch. Mr. Urban Smith, C.E., explained the details of the scheme.

The Philadelphia Art Club has decided to establish a Paris scholarship, similar to those already founded in New York and Boston. Like the others, the income of the Philadelphia Scholarship will be about £180 sterling a year. The necessary money has already been assured for five years.

The Idle Local Board signed, on Monday, a contract with Mr. W. H. Simpson, of Leeds, for the first contract for the construction of new sewers. The total expenditure upon the scheme was stated to be nearly £25,000, the amount of the present contract being nearly £5,000.

The corner stone of St. Andrew's Church, Orpington, was recently laid by Earl Stanhope. It will replace an iron mission-room in Anglesea-road, erected in 1867. The eastern section of the church will be built first, with sittings for 300. The builders are Messrs. Norris and Son, of Sunningdale, Ascot, and the plans have been prepared by Messrs. Hide and Newberry.

The "Sturge Ward" of the Temperance Hospital, Hampstead-road, which was opened on the 11th inst., has been laid with Bassant's patent ½in. parquet flooring, and contains 1,700ft. Mr. Bassant has likewise just received the contract for 7,000ft. of his patent ½in. teak flooring for three wards and nurses' rooms in the East London Hospital.

WATER SUPPLY AND SANITARY MATTERS.

Barnoldswick Water Works.—The water works at this place were opened a short time ago, and are now in full operation. They consist of a pumping shaft or well 10ft. diameter and 105ft. deep. From the bottom of the well a 12in. bore-hole has been sunk 400ft., making the total depth from surface 505ft. Both the well and the bore-hole are sunk in the grits and shales of the Lower Millstone-grit series. An engine-house and boiler-house of neat design have been erected, and the water is pumped from the well into the service-reservoir containing 450,000 gallons, and having an elevation of 95ft. above engine-house floor. From this reservoir the water, which is of excellent quality, gravitates with ample pressure through the district, almost every house now being supplied. The cost of the works, exclusive of land, has been about £10,000. Mr. C. E. de Rance, F.G.S., was consulted, and advised the board as to the site of the well, and the works were designed by, and carried out under the superintendence of, Messrs. Brierley and Holt, civil engineers, Blackburn and Manchester.

Metropolitan Water Supply.—The Royal Commission of Inquiry into the water supply of London commenced its sittings on Monday, Lord Balfour presiding. Mr. J. Searle, Clerk; Mr. J. Francis and Mr. E. Collins, engineers; and Mr. E. L. Morris, engine superintendent, all of the New River Company, gave evidence as to the sources of supply and the quantities distributed.

Preston Water Supply.—Mr. Hudson Reah, C.E., the Preston borough engineer, has issued a report on the present water supply and storage accommodation, with elaborate statistics, maps, and plans, in which he recommends the construction of works which will more than double the present supply to the town. Mr. Reah recommends the laying of two iron mains, with straining-chambers, at a cost of £35,500, and the construction of a new reservoir on the site of Alston College and adjoining land, the property of the corporation, to contain 275,000,000 gallons of water, in addition to the present supply of 253,390,354 gallons. He estimates the total cost of all these works at £95,500. The report and recommendations have been adopted by the corporation.

The Thirlmere Water Supply for Manchester.—The annual report of the progress of this undertaking was presented to the city council of Manchester last week. Contract No. 1 (Messrs. Morrison and Mason, contractors) is all but completed. In Contract No. 2 all the pipes for the main line of aqueduct comprised in the contracts of Messrs. Macfarlane, Strang, and Co., Limited, and the Staveley Coal and Iron Company, Limited, have been delivered, and only a few incidental and irregular pipes are now required. Contract No. 3 (Messrs. Morrison and Mason, contractors).—Section 4 of this contract is all completed. On section 5 the tunnel lining and the cut and cover are also practically finished; the principal work still remaining to be done is the completion of 503 yards of invert and the laying of 472 yards of pipes on the Scandale and Troutbeck siphons. Contract No. 4 (Messrs. Monk and Newell, contractors).—On this contract the whole of the tunnels are driven, and about 460 yards remain to be lined; 1,291 yards of cut and cover and 1,749 yards of pipe laying also remain to be done. Contract No. 5 (Messrs. M'Crea and M'Farlane, contractors).—The tunnels on this contract are all driven and lined, and the cut and cover is completed. The pipe laying is also finished with the exception of about 200 yards. At the bridge over the river Lune all masonry that can be built in prior to the actual erection of the ironwork and the laying of the pipes across the bridge is completed. Contract No. 6 (Messrs. John Aird and Sons, contractors).—This contract, with the exception of the Grizedale siphon, is completed. Contract No. 7 (Messrs. Watt and Wilson, contractors).—On this contract the tunnel lining is practically finished, but 2,080 yards of invert remain to be put in. The length of work to be done in the cut and cover is 233 yards, and of pipe laying 808 yards. Contract No. 8 (Mr. William Webster, contractor).—The tunnelling and cut and cover on this contract are completed—only 283 yards of pipe laying remain to be done; this cannot be finished until two bridges are erected. Contract No. 9, Prestwich New Reservoir (Messrs. Kirk, Knight, and Co., contractors).—This reservoir is completed, and has been filled with water. Contract No. 10 (Messrs. Morrison and Mason, contractors).—This contract embraces the embankments, roads, and other works in connection with the raising of the level of the lake. The concrete, masonry, and the ashlar facing of embankment No. 2 have made progress; but at embankment No. 1 considerable difficulty has been met with in arriving at a solid foundation. Invert work and dressing up of the land along the line of the aqueduct is generally fast approaching completion. The condition of the aqueduct may be approximately stated as follows:—Tunnels: Driving all finished, about 503 yards require to be lined, and a rather longer length of invert remains to be put in. Cut and cover: About 1,524 yards of lining remain to be completed. Pipes: 3,512 yards to be laid, making a length of 3 miles 276 yards, out of a total length of 95 miles 728 yards. The contracts for valves of all descriptions, and for ironwork for bridges, wells, manholes, &c, are well advanced. All the ironwork of the Lune and Ribble bridges has been delivered, and that of the Irwell bridge has been erected in the contractor's yard, and is about ready for delivery and erection in its place.

WEST COWES.—The new waterworks at Broadfields were opened on Monday week. They have been carried out for the local board of West Cowes from plans by Mr. Brown, C.E. The depth of the well, including the bore pipe, is 440ft. from the surface, and at that depth a satisfactory supply of excellent water has been found. Messrs. Hill and Co. carried out the boring contract; Messrs. Gimson and Co, of Leicester, the contract for machinery; and Mr. W. G. Thomas, of West Cowes, erected the pumping-house.

WHITCHURCH.—At a meeting of the Cardiff rural sanitary authority held at their offices, Queen's Chambers, Cardiff, on the 11th inst., an elaborate scheme of drainage for the parish of Whitchurch, prepared by their surveyor, Mr. William Fraser, Assoc.M.Inst.C.E., &c., was considered and referred to a sub-committee. The scheme is estimated to cost £6,200, and consists of over 6½ miles of stoneware pipes, ranging in size from 9in. to 18in. in diameter, with all necessary manholes, ventilators, and automatic flushing tanks, &c., having an outfall and eight connections into the Ystradyfodwg and Pontypridd main sewer, which passes through the district of the authority, emptying into the Bristol Channel, near Rumney.

CHIPS.

The question of the registration of plumbers is being taken up in New South Wales, and a preliminary circular has just been issued by a committee of the operative plumbers of Sydney, showing the necessity for taking this step.

The new workhouse infirmary, Hull, is nearing completion. The large wards are being warmed and ventilated throughout by means of Shorland's patent Manchester stoves with descending smoke flues, the same being supplied by Mr. E. H. Shorland, of Manchester.

Stained glass has been inserted into the east window of Upper Hopton Church, Mirfield, as a memorial of the late Rev. G. P. Kerr, the first vicar. The chief openings contain representations of the Agony in the Garden, the Crucifixion, the Resurrection, and St. Peter and St. John coming to the Sepulchre; and the tracery contains a choir of angels in adoration. The work is from the studio of Messrs. Powell Bros., of Park-square, Leeds.

Lord Rayleigh, the Lord Lieutenant of Essex, will, on Wednesday, June 29, open the new Grammar School at Chelmsford, which has been built at a cost of about £5,000, from plans by Mr. H. A. Cheers, of Twickenham.

Two bricklayers, named Luff and Stedman, were being lowered into a well at Ewhurst, near Guildford, on Saturday, when they fell out of the bucket, being stupefied by foul air, and were killed. The well was 75ft. deep.

New sewerage works at Tettenhall, near Wolverhampton, have been completed this week. Mr. Marten was the engineer, and Mr. Holloway the contractor.

The premises of the Liverpool Building Material and Cement Company in Wye-street, Liverpool, were destroyed by fire on Saturday morning.

The festivities in connection with the coming of age of Lord Warkworth, eldest son of Earl Percy, and grandson of the Duke of Northumberland, came to an end on Saturday, when a dinner to workmen and allotment holders and their wives was given in the temporary banqueting hall at Alnwick Castle. Mr. George Reavell, of Alnwick, who has been architect to the Duke for the last quarter of a century, presided.

The white marble statue of the late Dr. James Prescott Joule, which is being executed by Mr. Alfred Gilbert, A.R.A., for the Manchester Joule Memorial Committee, is very nearly complete, and will be unveiled in July.

The new library for the Society of Solicitors of the Supreme Court of Scotland, at Edinburgh, was formally opened by the Lord Justice-General on Monday. The building has been erected at a cost of £30,000, from plans by Mr. James B. Dunn, of Edinburgh, whose design, selected in competition, was illustrated in the BUILDING NEWS for Aug. 10, 1888.

Mr. Parker Smith, M.P., opened a new board school at Possilpark, belonging to the school board for Maryhill, near Glasgow. The buildings have cost £11,700.

Our Office Table.

AT the last meeting of the city council of Oxford a long discussion took place on the limitation of the height of buildings. Some years since the Oxford corporation passed a by-law that no buildings in any street not then in existence should be more than 40ft. in height. Since then a new thoroughfare, George-street, has been made from the city to the station, and plans prepared by Mr. H. G. W. Drinkwater were submitted by Messrs. Lucas and Co., showing a substantial building to be erected on land leased from the corporation, for which permission was sought to go to a height of 56ft. The sanitary and estate committee thought sanction should be given, as the premises would be a public improvement; but when the recommendation came up for confirmation before the city council determined opposition was manifested, and the Provost of Queen's College moved as an amendment that the 40ft. limit of height be adhered to, on the ground that a bad precedent would be created, from which it would be impossible to recede should other applications be made. The council had leased the land to Messrs. Lucas, and ought to be most careful therefore to conform to their own by-laws. Alderman Bushell said if this rule were made hard and fast, the city council ought not to have allowed Brazenose College to reconstruct their buildings to a greater height than the old ones, especially in so narrow a thoroughfare as Catherine-street. Mr. Drinkwater's design, if carried out, would be a public improvement, and would adhere to the spirit, if not the letter, of the by-laws. Mr. Kingerlee said a rule like this would prevent the reconstruction of old properties, and so be against the public interests, while other members contended that to sanction the erection of large and lofty warehouses was not in the public interests. In the end the Provost of Queen's amendment was rejected by 32 to 16, and the plans were approved.

THE first course of the fifth annual series of spring lectures given at the Guild and School of Handicraft, Essex House, Mile End-road, E., will be given this (Friday) evening, at 8 o'clock, by Mr. S. Barter, whose subject is "Manual Training in Public Elementary Schools." On Wednesday evening next Mr. J. S. Thornton will lecture at the Guild School on "Slöyd," and on Friday, June 3rd, Mr. John Gamgee will give an address on "The Relation of the Skilled Handicraftsmen to Physical Discoveries."

PROFESSIONAL opinion in Sydney is just now exercised concerning the action of the New South Wales Government as to the completion of the Sydney Hospital in Macquarie-street. So far back as 1879 a competition under motto was instituted for plans for this hospital, and a design submitted by Mr. Thomas Rowe, F.R.I.B.A., was chosen, the second and third being awarded to Mr. Benjamin Backhouse, also of Sydney. More extensive plans were obtained from Mr. Rowe, showing 80 more beds, the facing material was changed from brick to stone, and works estimated to cost £140,000 were sanctioned, the competition plans being entirely abandoned, although Mr. Rowe was appointed architect. In 1888, when £69,000 had been spent on the buildings, a change of Government took place, and the new Ministry stopped the works on the ground that the original estimates had been exceeded. The commission for completion has recently, after a legislative discussion, been given to Mr. Kirkpatrick, whose plans gained no premium in the original competition, and who is said to be a personal friend of Mr. Dibbs, the Premier. The action of the Government is equally condemned by the *Contractors' News* and the *Building Journal*, the leading Australasian technical papers, and the matter has been discussed with refreshing candour in the Colonial Legislature, and by the N.S.W. Institute of Architects. The President of the latter body, Mr. J. Horbery Hunt, in closing the proceedings, remarked that he gave evidence before the Public Work Committee with the object of protesting against the rotten system of competitive designs, which he described as pitting one man against another as to who could put the biggest lie on paper.

MR. JAMES BARNET, the last occupant of the post of Colonial Architect for New South Wales, has addressed a letter to the Government of that colony on the works carried out by him during his tenure of the office which has just been abolished. Mr. Barnet remarks that he has held the office under sixteen different Ministers of Works, in twenty Governments, for a period of nearly thirty years. In August, 1860, by request, Mr. Barnet joined the Department as clerk of works; in October, 1862, he was appointed acting colonial architect on the retirement of his predecessor, the late Mr. Alexander Dawson, and in January, 1865, he was gazetted colonial architect, at a salary of £1,000 per annum. There were then only 324 buildings under the care of the office, and the number of officers employed 17. At the end of last year there were 1,351 buildings throughout the colony in charge of the Department, the number of officers employed being 64. During his term of office there have been expended upwards of £6,000,000 sterling on some 12,000 works, and an accompanying memo. of expenditure shows that the rate for professional services has been 3·19 per cent., clerical 0·91, superintendence 1·50, and travelling expenses, contingencies, &c., 0·69 on the outlay. The works in Sydney and its vicinity included the General Post Office, Colonial Secretary's Office and the Public Works Office, Lands Office, Museum, Custom House, Public Library, Darlinghurst Gaol and Court-house additions, Medical School, Sydney University, mortuary stations, Callan Park Hospital for Insane, also suburban post and telegraph offices, and police stations; and in the country, gaols, court-houses, and post and telegraph offices at Goulburn and Bathurst; and throughout the colony, 169 post and telegraph offices, 130 court-houses, 155 police buildings, 110 lock-ups, and 20 lighthouses.

MEETINGS FOR THE ENSUING WEEK.

TUESDAY. — Institution of Civil Engineers. "The Measurement of High Temperatures," by Professor W. C. Roberts-Austen, C.B., F.R.S. 8 p.m.
Society of Arts. "The Extension of Colonial Trade," by Colonel Howard Vincent, C.B., M.P. 8 p.m.
WEDNESDAY.—Society of Arts. "Researches and Photochromy," by F. E. A. Ives. 8 p.m.
Guild and School of Handicraft, Essex House, Mile End-road, E. "Slöyd," by J. S. Thornton. 8 p.m.
FRIDAY.—Architectural Association. "The Relation of the Architect to the Workman," by C. R. Ashbee, M.A. 7.30 p.m.

The Architectural Association. — May 27th. The Fourteenth Ordinary General Meeting at 7.30 p.m. Paper by C. R. Ashbee, Esq., M.A. (postponed from May 13th).

ERNEST S. GALE } Hon. Secs.
F. T. W. GOLDSMITH }

Under the will of Mr. W. H. Haymann, a statue, "The Morning Star," by Edward Foley, is left to the Nottingham Castle Museum.

At a literary and musical festival held at Bangor last week, the premium offered for the best design for a public hall suited to local needs was awarded to Mr. H. Harold Hughes, A.R.I.B.A., of that city.

The new filtration works erected at Loch Ascog by the Corporation of Rothesay for the purpose of improving the town's water supply were formally put in operation on Monday. The engineers for the scheme were Messrs. Leslie and Reid, Edinburgh, the total cost being about £8,000. The loch has been raised 6ft., and the new filters erected.

The Bishop of Liverpool has officiated at the laying of a foundation-stone of a new chancel for St. Peter's Church, Newton-le-Willows. The addition comprises a chancel, organ-chamber, south choir aisle, vestry, and heating-chamber. The east end of the present church will be taken down, and these alterations are the commencement of the rebuilding of the church.

Wellington College, after being closed for six months, and undergoing extensive sanitary alterations, was reopened last week. The whole of the drainage has been overhauled under the superintendence of Mr. Rogers Field, C.E., whose self-acting siphon flushing cisterns, which are described as his "1889 patent," and bear the name of Bowes, Scott, and Western, London, as the sole licensees and manufacturers, have been used.

The Emperor William has relinquished the idea of a third competition for the monument proposed to be erected to his grandfather, William the First, on the Schlossfreiheit. As was anticipated, his Majesty has intrusted the sculptural part of the work to Prof. Begas, and the architectural portion he has confided to Herr Ernst Ihne, son of the Professor of English in the University of Heidelberg, and the architect of the Empress Frederick's seat at Friedrichshof, near Homburg.

Trade News.

WAGES MOVEMENTS.

Arbroath.—The Arbroath joiners who resolved to strike work on Monday morning last for an increase of wages at the rate of ½d. per hour, which had been refused, a conference between them and the employers took place on Saturday night, when the latter offered an increase of ¼d. per hour for three months, and a meeting of masters and men then to be held for the purpose of fixing the rate of wages for twelve months thereafter. This offer was accepted by the operatives.

Birmingham.—Both the master builders and the bricklayers being willing to refer the matters in dispute (and which led to the strike which commenced on the 2nd inst.) to arbitration by the stipendiary magistrate, Mr. T. M. Colmore, that gentleman heard the points raised on either side yesterday (Thursday). The differences between the employers and the bricklayers' labourers were also set forth before the arbitrator. Mr. Colmore's decision is not yet known.

Cardiff.—The strike still continues, but at the last meeting of the town council it was resolved to increase the wages of the masons in the employ of the Corporation from 8d. to 9d.

Huddersfield.—The wages of carpenters and joiners in this town were advanced on Monday from 6¾d. to 7d. per hour.

Kirkcaldy.—On Saturday evening a meeting of the joiners of this district was held for the purpose of considering the wages question. It was agreed to ask the masters for an increase from 7d. to 7½d. per hour, and also weekly wages. The increase to take place on and after the 28th inst.

Liverpool.—His Honour Judge Collier, as arbitrator in the wages dispute between the Liverpool stonemasons and their employers, has issued his award. He held a conference with representatives of both parties, and it was explained that previously to 1879 the stonemasons in Liverpool had 9d. per hour, but during the subsequent depression in the building trade they were reduced to 8d. In 1890, trade having revived, the men again demanded 9d. and a reduction of hours, and Judge Collier, who was the arbitrator, gave them 8½d. and a reduction of five hours per week. The present advance from 8½d. to 9d. is demanded on the ground that trade is sufficiently brisk to warrant it, and that the rate now paid amounts to only 28s. a week all the year round. Judge Collier has decided in favour of the increase demanded, and some minor points in dispute have been amicably settled. The men resumed work a few days ago pending the arbitrator's award, which is binding on both parties.

Sheffield.—The builders of this town have conceded the bricklayers 9d. per hour, and the strike has ended.

The Lake District.—For a long time past, says the *Westmoreland Gazette*, workmen of every kind have been in great request in the district. The building trade has been specially brisk, and masons and joiners have been masters of the situation. At the present time there is no such thing as a man looking for work, but numbers of people hunting for someone to work for them, very often without success. The Manchester "pipe track" which goes through the district, has naturally found work for large numbers of natives as well as strangers.

The Potteries.—The lock-out in the pottery trade is expected to come to an end in the course of the next few days, as a compromise has been brought about on the principal question in dispute.

Walsall.—The builders on strike in this town have not accepted the offer of arbitration by the Conciliation and Arbitration Board and the Chamber of Commerce, but are willing to go in and work at the old rate of wages till June 1, on condition that their demand for ½d. an hour advance be then conceded. The masters, on the other hand, are willing to concede an advance of ¼d. per hour from July 1.

* * *

Mr. Dixon-Hartland has given notice to move the rejection of the Architects' Registration Bill, the second reading of which is set down for June 2nd.

The Bideford Gas Company met the Bideford Town Council, sitting in committee last week, and it was decided that the gasworks and all the property of the company should be bought by the town council for the sum of £15,000.

Mr. Reginald G. Pinder, F.R.I.B.A., M.S.A., of Arcade-chambers, Bournemouth, has been appointed architect to the school extension committee at Bournemouth.

Under the will of the late Sir William Bowman, the portrait of Mr. G. F. Watts, R.A., painted by Mr. Watts for Sir Wm. Bowman, is bequeathed to such public gallery as shall receive the pictures, or the majority of them, given by Mr. Watts to the nation.

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* * *

TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

Abingdon.—For repairs, refitting, and redecoration of the Manor House, Shippon, on the Duchy of Cornwall Estate. Mr. J. G. T. West, M.S.A., The Knowl, Abingdon, architect:—

	£	s.	d.
Hutchings, builder, Oxford; and Osborne, plumber, Abingdon ...	£1,180	0	0
Thatcher, builder; and Stroud, plumber, Abingdon	1,020	0	0

Appleford.—For alterations and repairs to the Carpenters' Arms, Appleford, for Messrs. Townsend, the Tower Steam Brewery, Abingdon. Mr. J. G. T. West, M.S.A., The Knowl, Abingdon, architect:—

	£	s.	d.
Cox and Holloway	£398	16	0
Barrett, T.	319	0	0

Bagenalstown.—For new chancel, chapels, and sacristy, at the parish church of Leighlinbridge, near Bagenalstown, Co. Carlow. Mr. W. G Doolin, M.A., 20, Ely-place, Dublin, architect. Quantities by Mr. D. W. Morris:—

	£	s.	d.
Morrison Bros., Bagenalstown ...	£1,475	0	0

(Modified amount accepted.)

Bedford.—For building new shops on the forecourts of Nos. 50, 52, 54, and 56, Bromham-road, Bedford, for Messrs. Smith and Barnes. Mr. W. Barnard Davis, architect:—

	£	s.	d.
Haynes, W.	£814	0	0
Harrison, G.	773	0	0
Fathers, G. E.	733	0	0
Dawson, T.	693	0	0
Coleman, T. H. (accepted)	685	0	0

Bethnal-Green, E.—For enlarging by 388 school places, and rearranging the Columbia-road School (built in 1874, and originally known as Barnet-street School), for the London School Board:—

	£	s.	d.	A. £	s.	d.
Gregar, W., and Son ...	£15,365	0	0	£200	0	0
Willmott, J., and Son ...	14,335	0	0	185	0	0
Coxhead, F. J.	14,322	6	11	180	10	6
Co-operative Builders, Ltd.	13,727	0	0	126	0	0
Williams, G. S. S., & Son	13,332	0	0	100	0	0
Dabbs, W. M.	13,190	0	0	155	0	0
Grover, J., and Son ...	12,944	0	0	93	0	0
Killby and Gayford, Worship-street, E.C.* ...	12,940	0	0	149	0	0

A.—If brickwork be built in cement, add.
* Accepted.

[(*a*) Cost of school buildings and closets, £8,976; (*b*) tar pavement and covered playgrounds, £553; (*c*) boundary walls and gates, £150; (*d*) three teachers' rooms, £300; (*e*) schoolkeeper's house, £1,035; (*f*) works to existing school, 1,379; (*g*) extra depth of foundations, £547—Total, £12,940. Cost per head of (*a*), £23 2s. 8d.; total cost per head of the original school with enlargements now proposed, £15 5s. 3d.]

Blackburn.—For the erection of two houses at Feniscowles, near Blackburn, for Mr. W. Miller. Mr. T. C. M. Crook, Old Cross Chambers, King William-street, Blackburn, architect:—

Lloyd and Millward, Blackburn (accepted).

Bristol.—For warehouse and offices, Bridge-street, for Messrs. Lindred and Co. Mr. Herbert J. Jones, M.S.A., Bristol, architect:—

	£	s.	d.
Gay, E.	£3,286	0	0
Davis, J. E.	3,162	0	0
Church, W.	3,043	0	0
Stephens, Bastow, and Co. ...	3,030	0	0
Eastabrook and Sons	2,998	0	0
Humphreys, G.	2,985	0	0
Galbraith, W.	2,970	0	0
Perrott, J.	2,920	0	0
Cowlin, W., and Son	2,878	0	0
Walters, E.	2,832	0	0
Wilkins, R., and Sons	2,749	0	0
Wilkins, G. H. (accepted)	2,678	0	0

All of Bristol.

Bromley, Kent.—For the erection of a chapel and gatehouse and laying out the cemetery, Burnt Ash-lane, for the Plaistow Burial Board. Messrs. Wadmore, Wadmore, and Mallett, 35, Great St. Helen's, E.C., architects. Quantities supplied by Messrs. C. Stanger and Son:—

	A. £	s.	d.	B. £	s.	d.	C. £	s.	d.
Lowe, R. A. ...	£3,084	0	0	£3,329	0	0	£2,983	0	0
Rowe Bros. ...	2,860	0	0	3,080	0	0	3,000	0	0
Dove Bros. ...	2,775	0	0	2,925	0	0	2,865	0	0
Downs, W. ...	2,700	0	0	2,720	0	0	2,530	0	0
Otway, J. ...	2,636	0	0	2,681	0	0	2,451	0	0
Duthoit, F. P.	2,512	0	0	2,776	0	0	2,355	0	0
Grubb, W. ...	2,509	0	0	2,534	0	0	2,400	0	0
Crossley, T. ...	2,458	0	0	2,540	0	0	2,310	0	0
Avard, R. ...	2,346	0	0	2,455	0	0	2,289	0	0
Jones, G. J. ...	2,337	16	8	2,416	10	9½	2,269	5	2
Graty, T. D., Bromley, Kent*	2,299	0	0	2,429	0	0	2,149	0	0

A.—Kentish stone random. B.—Ditto all coursed.
C.—Red brick facings.

Carriage-drives and paths:—

	£	s.	d.
Mayo and Co.	£540	0	0
Jackson, J.	500	0	0
Peil	497	0	0
Lansbury, T., Bromley, Kent*	463	0	0

Oak fencing:—

	A. £	s.	d.	B. £	s.	d.
Ellis Bros.	£268	15	0	£3	2	6
Murray Marshall	253	14	0	2	19	0
Beadle Bros.	249	8	0	2	18	0
Taylor and Brooker ...	243	0	0	2	16	6
Roland Bros.	211	15	6	2	9	3
Avard, R.	210	0	0	2	8	10
Barratt, Bromley, Kent*	207	13	1	2	8	3½

A.—For 86 rods. B.—Per rod for extra.
* Accepted.

Chiswick.—For the erection of stabling for West Metropolitan Tramway Co. Mr. J. Henry Richardson, Shepherd's Bush, architect. Quantities by Mr. Henry Lovegrove, 26, Budge-row, E.C.:—

	£	s.	d.
Chamberlen Bros. (accepted) ...	£584	0	0

Clerkenwell.—For the erection of bakery, Field-place. Mr. J. Henry Richardson, Shepherd's Bush, architect:—

	£	s.	d.
Veale, G., and Co. (accepted) ...	£450	0	0

Grafton.—For villa at Grafton, near Hereford. Mr. W. W. Robinson, architect:—

	£	s.	d.
Bowers and Co., Hereford	£425	0	0

Guildford.—For carrying out works at the town baths, for the town council:—

	£	s.	d.
Smith, R.	£53	0	0
Higlett and Hammond...	52	10	0
Billimore	49	19	6
Downes, T. E.	49	10	0
Ellis, S. (accepted)	41	0	0

Halesworth.—For the enlargement and improvements to the Rifle Hall. Messrs. Bottle and Olley, Great Yarmouth, architects:—

	£	s.	d.
Hindes and Son, Beccles	£734	0	0
Howard, S. and Sons,* Halesworth	661	0	0

* Accepted.

Hereford.—For four semi-detached villas, Hereford. Mr. W. W. Robinson, architect:—

	£	s.	d.
Taylor, R., Hereford	£1,330	0	0

Hereford.—For additions to Beechwood, Hereford. Mr. W. W. Robinson, architect:—

	£	s.	d.
Beavan and Hodges, Hereford ...	£543	0	0

Hereford.—For hop-kiln and stores, Burghill, Hereford. Mr. W. W. Robinson, architect:—

	£	s.	d.
Andrews and Rudge, Hereford ...	£330	0	0
Davies, Hereford	265	0	0
Lloyd, Hereford	247	0	0
Andrews and Son, Hereford	246	15	0
Powis, Wellington, near Hereford*	225	0	0

* Accepted.

Heywood, Lancs.—For the supply of iron gas-pipes, for the town council:—

Newton, Chambers, and Co. (accepted).

Heywood, Lancs.—For the supply and erection of gas-purifiers, for the town council:

Dempster, R. and J. (accepted).

Hornsey.—For alterations and painting at the Priory, Hornsey, for Mr. Williams. Mr. E. J. Paine, 11, Great James-street, W.C., architect:—

	£	s.	d.
Stimpson and Co.	£345	0	0
Harris and Wardrop	613	0	0
Houghton and Son, Stroud-green ...	568	0	0

Idle, Bradford.—For the construction of section 2 of new sewers, for the local board:—

Simpson, W. H., Leeds (accepted), about £5,000

Lavender-hill, S.W.—For improvements to the drainage and sanitary arrangements in connection with the Gideon-road School, Lavender-hill:—

	£	s.	d.
Holloway Bros.	£193	0	0
Garrett, J., and Son, Old Town, Clapham (accepted)	300	0	0

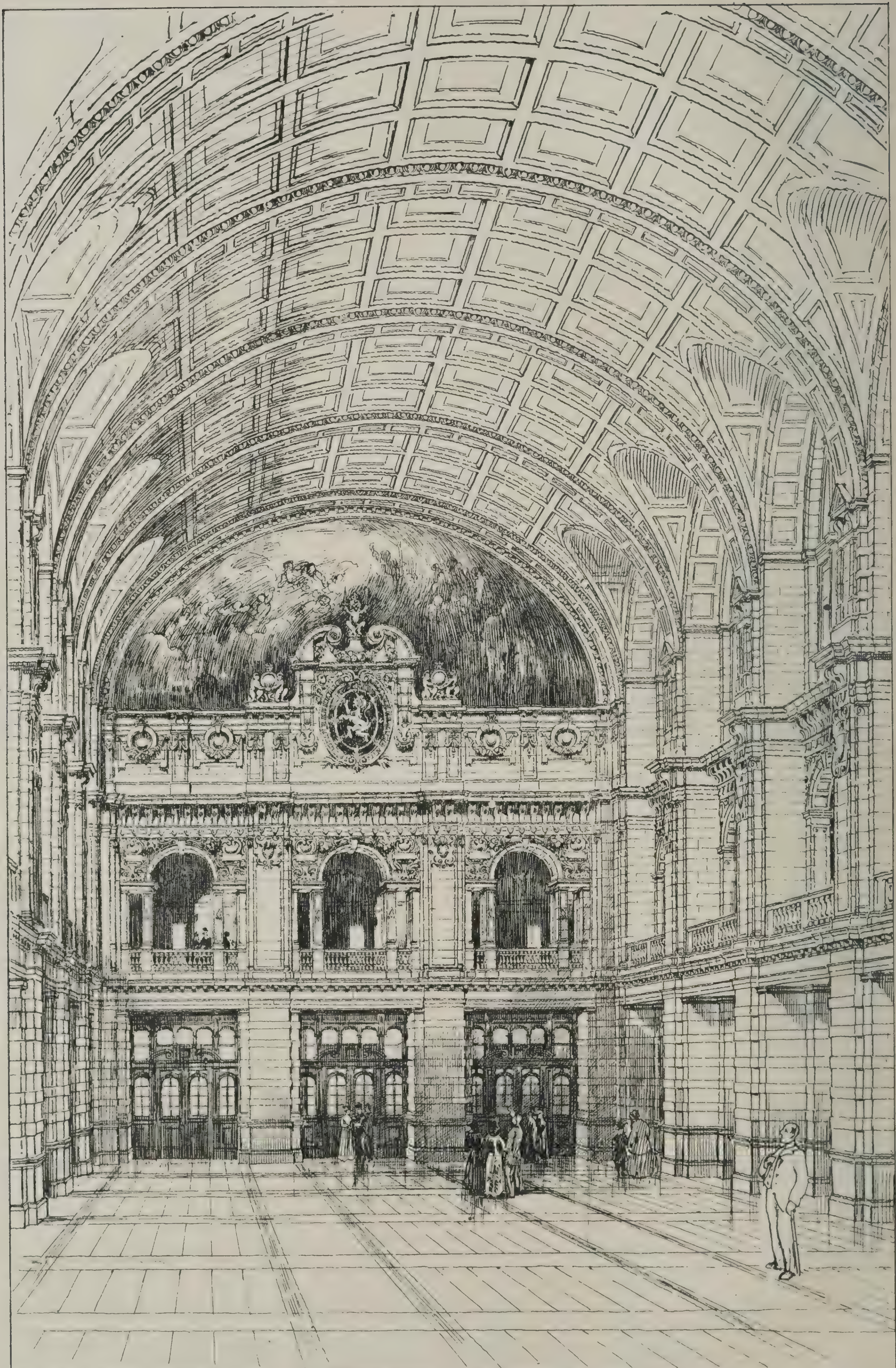
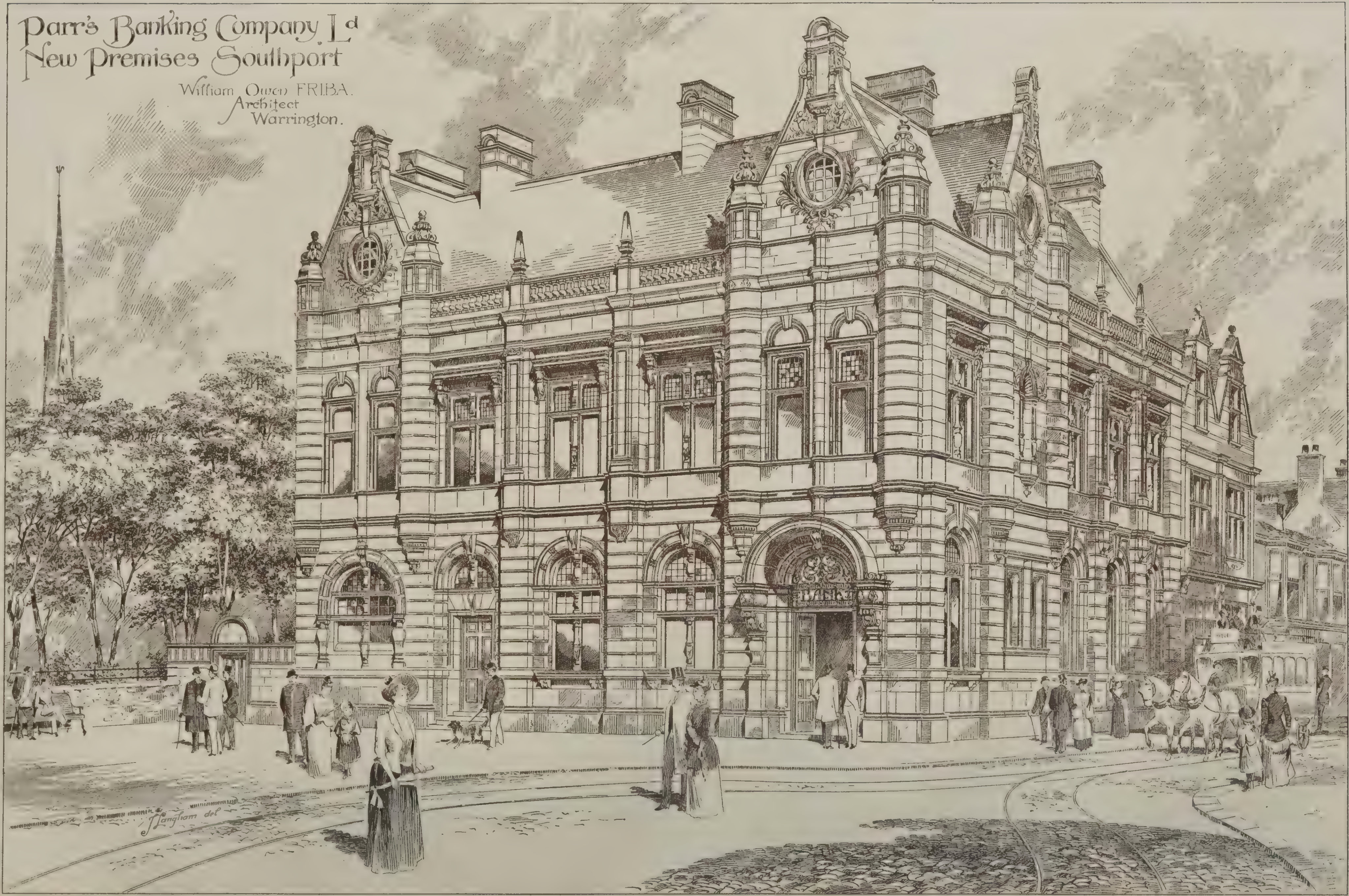


Photo-Lithographed & Printed by James Akerman 6 Queen Square. W.C.

THE GREAT HALL. GLASGOW ART GALLERIES & MUSEUM. GLASGOW.

JOHN W. SIMPSON & E. J. MILNER ALLEN. ARCHITECTS.



Parr's Banking Company Ld
New Premises Southport

William Owen FRIBA.
Architect
Warrington.

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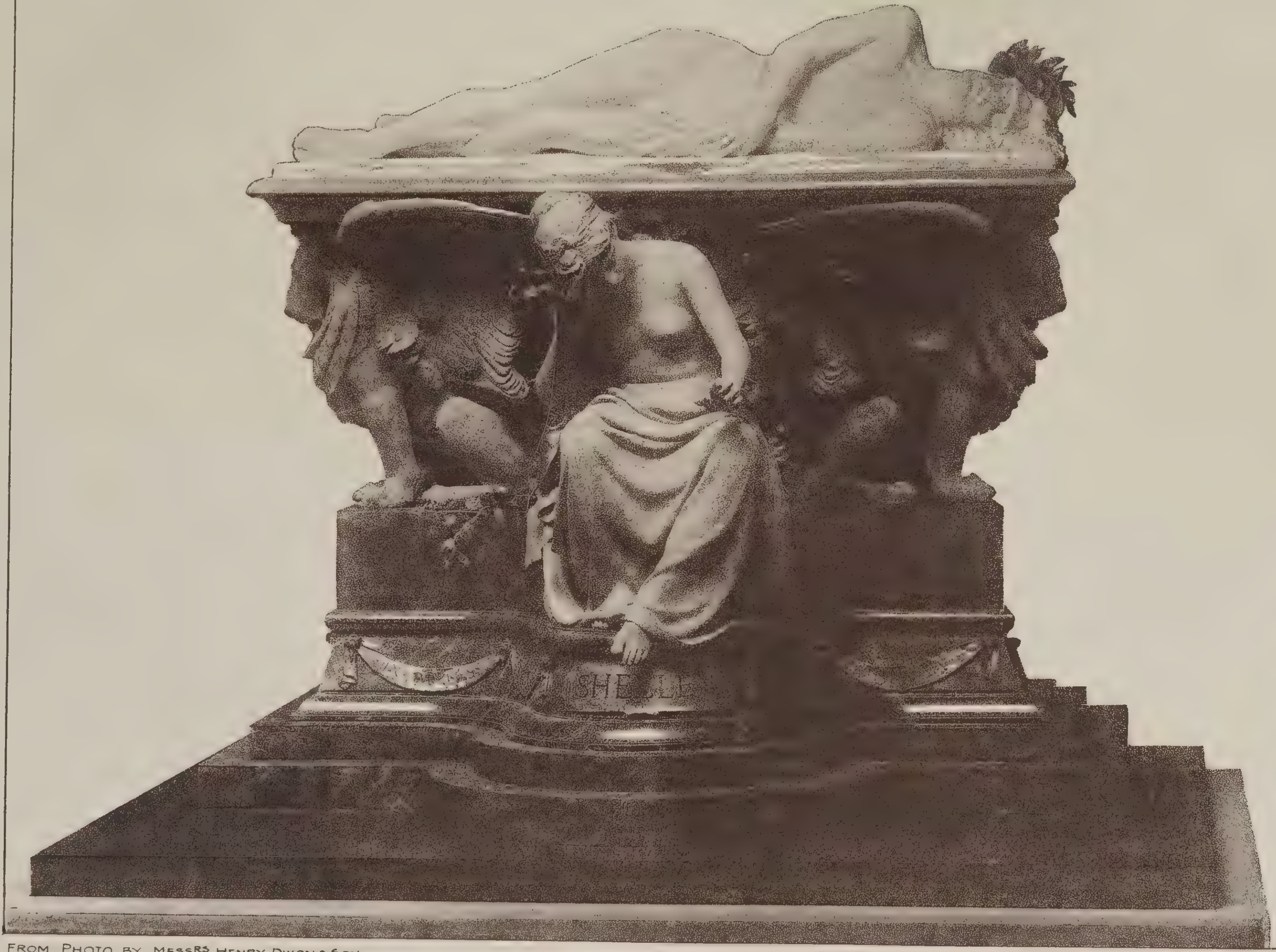
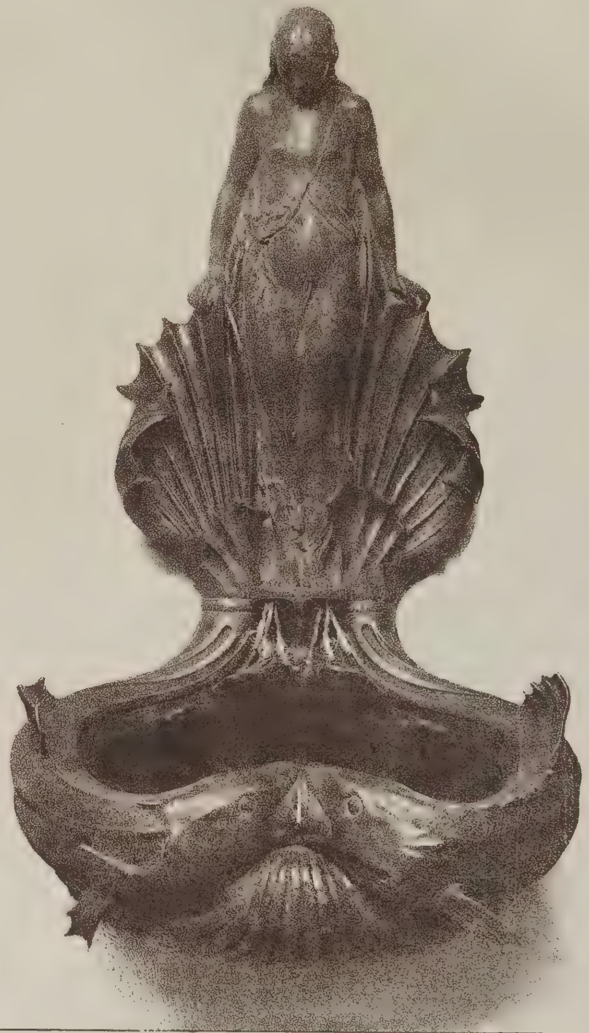
SCULPTURE · AT · THE · ROYAL · ACADEMY · 1892 ·

THE · SHELLEY · MONUMENT · BY · E · ONSLOW · FORD · A · R · A · BASIL · CHAMPNEYS · ARCHT

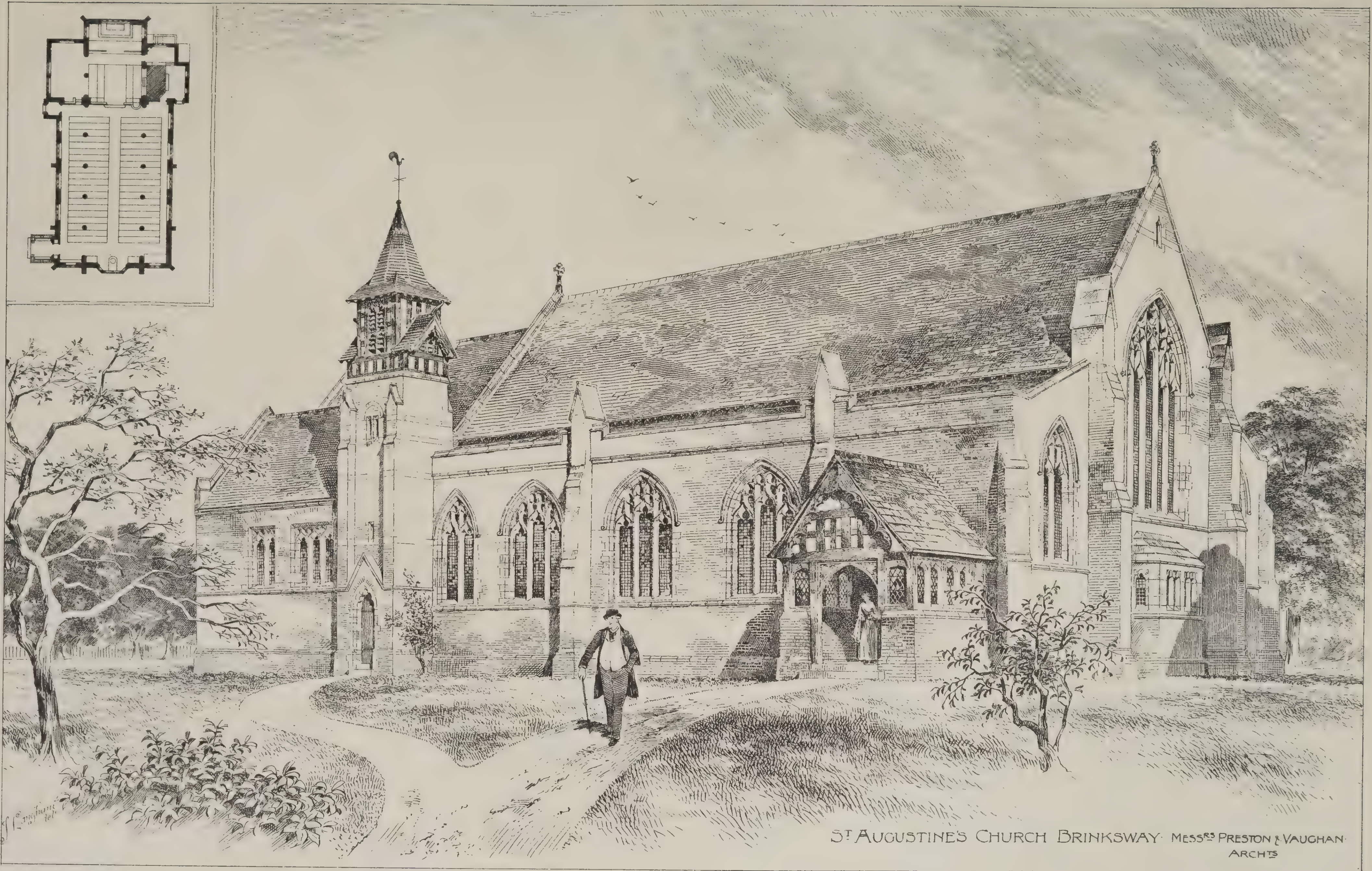


WALL · FOUNTAIN · IN · COPPER · BY · W · REYNOLDS-STEPHENS ·



FROM PHOTO BY MESSRS HENRY DIXON & SON

"PHOTO-TINT," by James Akerman 6 Queen Square London W C



S^T AUGUSTINE'S CHURCH BRINKSWAY. MESS^RS PRESTON & VAUGHAN. ARCH^TS

Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W^C

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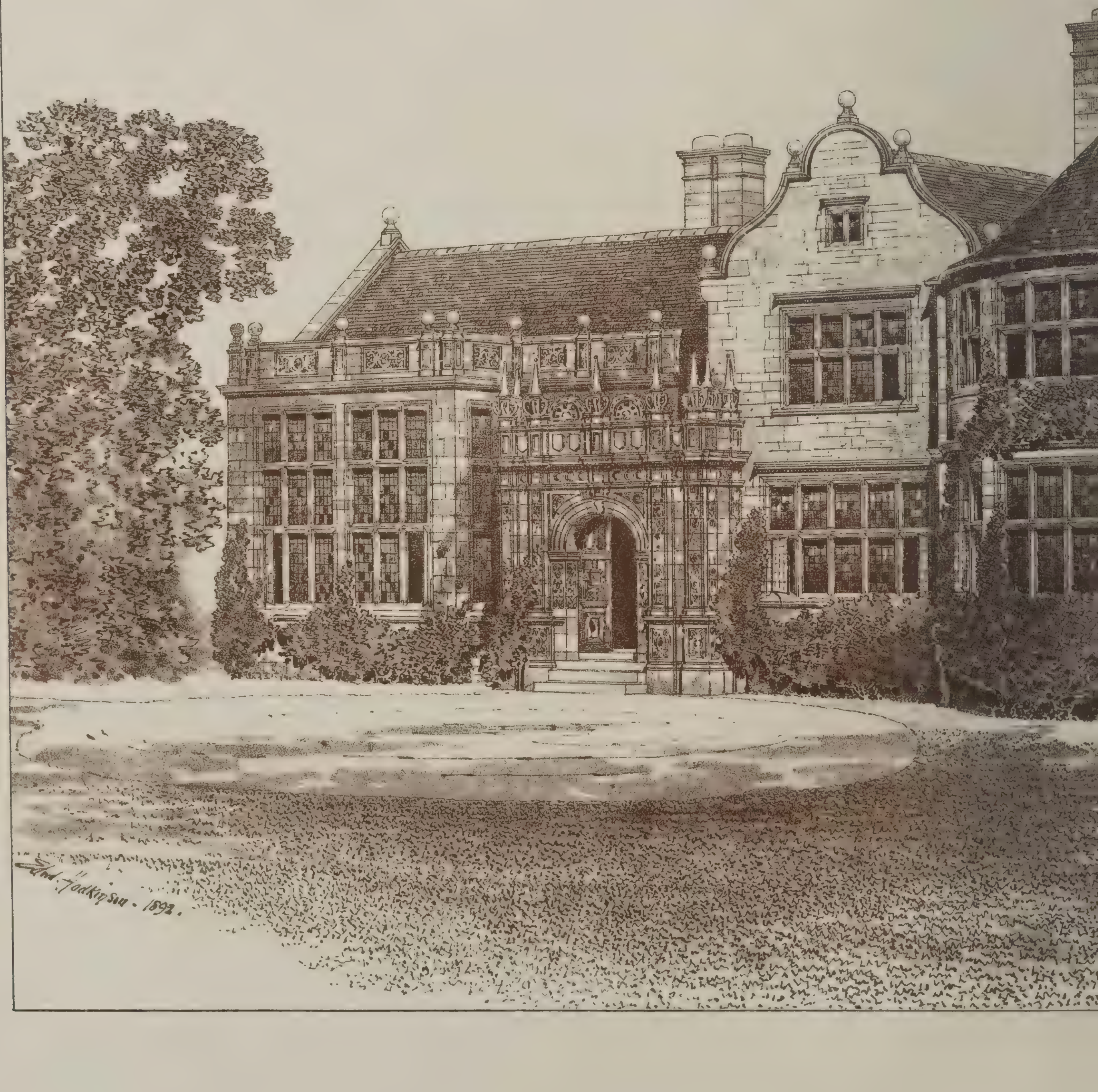
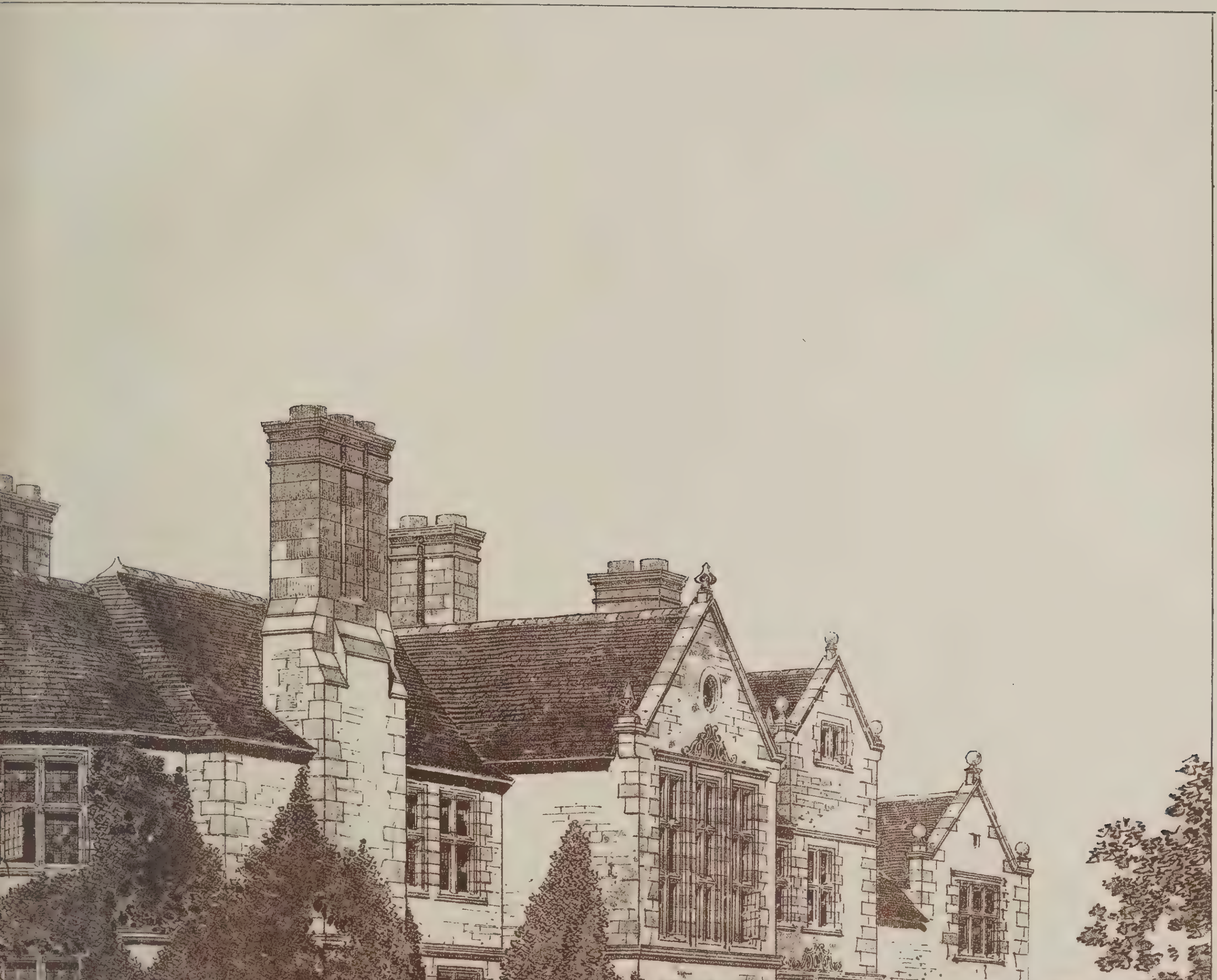
ADDITIONS · TO "WERN" · TREMADOC · N · WALES · MESSRS DOUGLAS & FORDHAM · ARCHTS


Edw. Hodkinson · 1893.

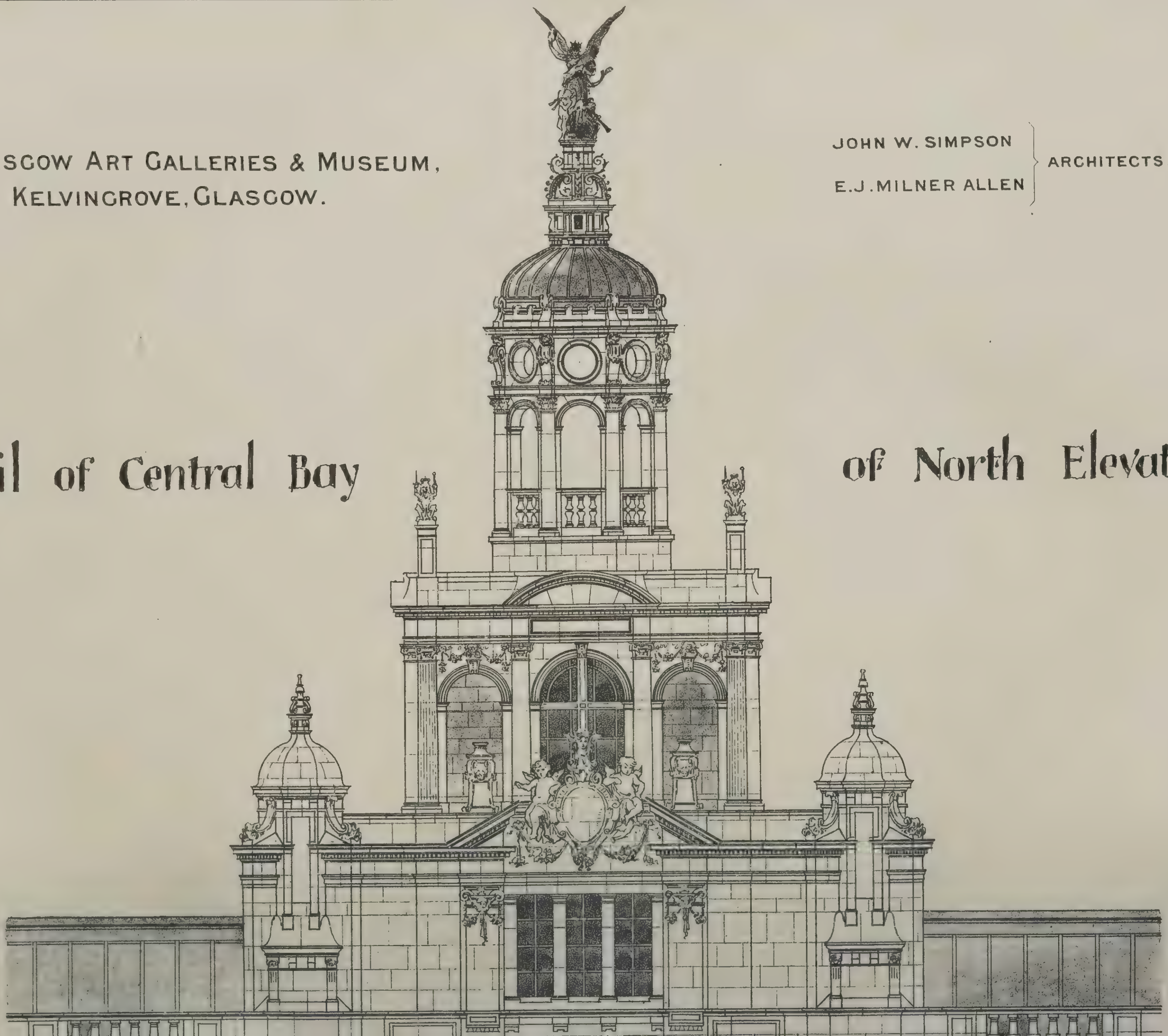


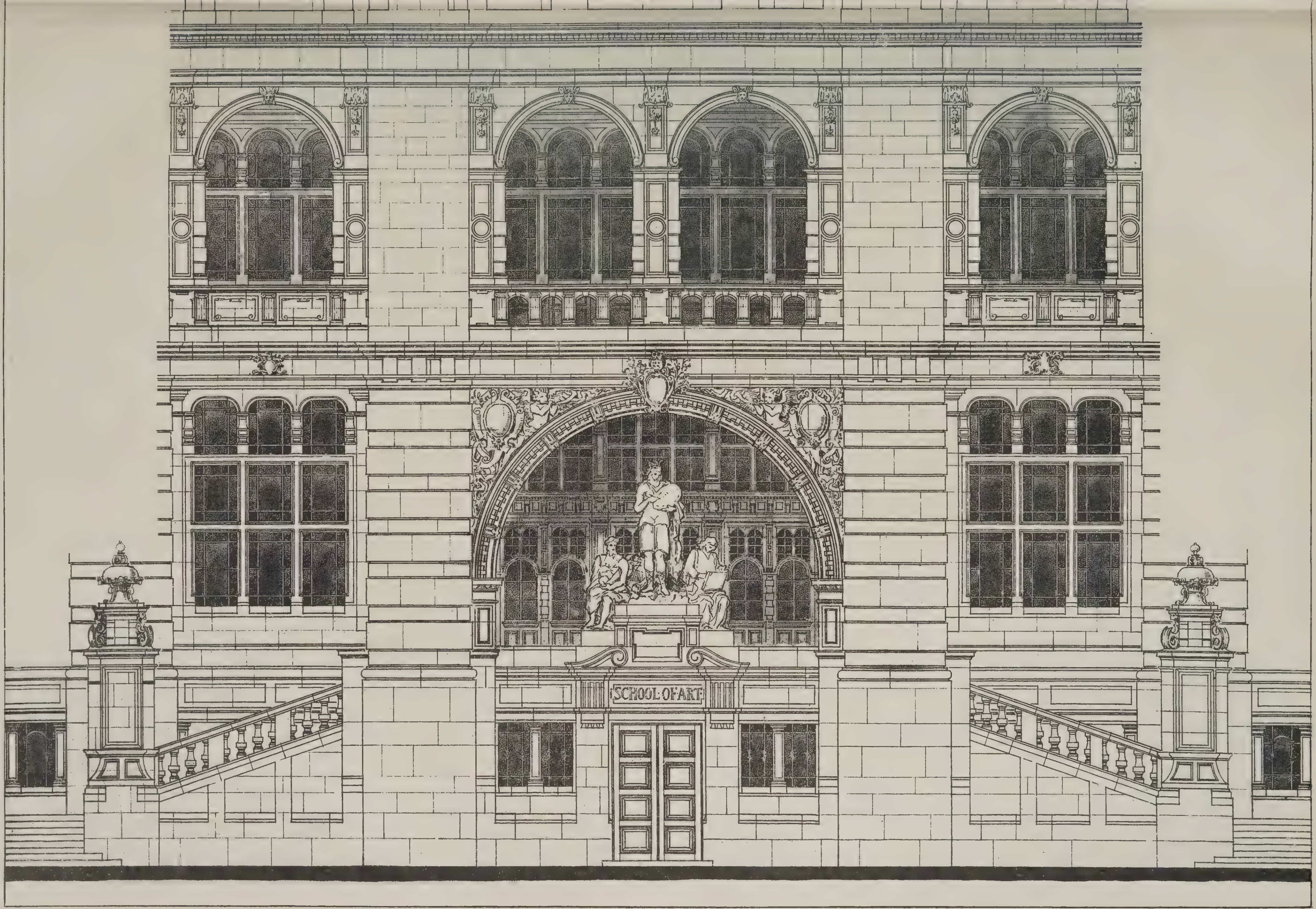
"PHOTO-TINT," by James Akerman, 6, Queen Square, London, W.C.

THE GLASGOW ART GALLERIES & MUSEUM,
KELVINGROVE, GLASGOW.

JOHN W. SIMPSON }
E.J. MILNER ALLEN } ARCHITECTS.

Detail of Central Bay of North Elevation





"PHOTO-TINT", by James Akerman. 6. Queen Square. London. W.C.

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXII.—No. 1951.
FRIDAY, MAY 27, 1892.

ERRORS IN DESIGN.

As it is often easier to point out faults than to create or construct—to show how *not* to do anything than to inculcate how to do it; so it may be often more useful to draw attention to some of the weaknesses and errors in designing, than to set about teaching principles. The fact is, there are so many people ready to instruct, and many of them differ so widely in their methods and principles, that students of design often get a little bewildered. The methods, in short, appear to differ; but the results produced are often similar, or may be explained on like principles. This will appear chiefly evident in ornamental design, or the more artistic developments of architecture, where the artists differ immensely as to the means to be employed, but will be found to agree in their admiration or criticism of the work. In our present observations we will confine ourselves to errors or faults of design which are commonly met with in domestic and public buildings. Errors in plan would be too large a subject to discuss, though we might fill a long article with them. Want of compactness, small and inconvenient entrances, narrow and crowded halls, the want of access and prominence to main apartments, ill-arranged and badly-lighted corridors and staircases, we have before drawn attention to. And it is apparently evident that if it were possible to lay down precise rules on planning—which it is not—errors on these matters would continue to be made, owing to the very varied circumstances which have to be met. It is easy to theorise; but anyone cognisant of building conditions knows how difficult it is to follow a rule rigidly.

There is less excuse in committing errors in the external design, as the architect is generally his own master. One very common weakness is due to not following up the plan—in other words, we see a building with no visible connection between its shape and its external design; even the roof does not follow from the ground plan. One of the successful competition designs for the Whitefield Tabernacle was an example of a building which did not in the least express the purpose of a great hall or chapel, but rather a large block of business premises. Even in an interior the same lack of continuity is frequently observable: the architect has not followed his plan above the ground floor; a different arrangement appears on the first and successive stories; the main walls are discontinued, the rooms do not bear any relation or shape to those beneath, and the whole disposition varies from floor to floor. The architect, in fact, has not studied his plan with any care, but has used girders freely, and a haphazard interior is the result, inimical to all architectural unity and treatment. A few recent municipal buildings sin against this law; in one a large police-court runs quite across another apartment below, its walls being largely carried on girders with nothing to suggest the shape or form of room either below or above; in another the town hall faces a side street instead of being placed in a central and commanding position, and made a feature in the main façade. The method of arranging successive stories by drawing the main apartments on a tracing of the ground-floor plan, or by the use of coloured pencils, would aid the designer in preserving as far as practicable the plan throughout the several stories. We know architects who invariably study plan on tracings.

Speaking of this subject leads us to another weakness in design—the want of expression. We frequently see a building which does not in the least give utterance to its internal plan; in other words, the architect has endeavoured to disguise his plan as much as possible. Take, for instance, a town-hall and offices; the hall is treated like the offices—no distinctive treatment or projection accents the large hall, the windows and roof-level are continuous, and the same as if the building comprised a number of similar apartments. This fault may become positively revolting when the disguise goes so far as to misrepresent one thing by another, as to put a large ornamental window in the centre of a front to a small room merely for the sake of ornament or symmetry of elevation.

Inconsistency is a common vice in modern architecture: here window openings have no reference to the room, either in size or design; there the handsomest part of the elevation adorns the least important room; or gables appear on a front merely for the decorative effect. Sometimes a considerable centre is emphasised by breaks and high gabled roofs, as in the long front of the Sheffield municipal buildings, the only object being to obtain a central block without marking any important division of the building, while the council-chamber is placed in the least important side, having no axis with either side. The irregularity of the site made it difficult to observe an axial arrangement; but we cannot fail to notice the lack of expression in thus arranging the façade centres, however clever the author has been in his details.

Heterogeneousness is a modern vice which has been nurtured by portfolios and sketch-books; we mean the habit of picking and choosing details. Old work has seldom this fault; the old artist had no photographs and book illustrations to go to, and his work was thoughtful and harmonious because he designed. We have now our art as well as our literary plagiarists, men who think nothing of appropriating features and details, and this priggishness has increased with the hurry of modern practice. One of the consequences is that the stories of a façade appear as if they did not belong to one another: we see windows and dressings in one totally out of harmony with those above or below; centres and wings are out of key. What should we think of a piece of music if the succession of sounds were not related to each other in pitch or tune? Now the copyist too often does not observe (still adopting a musical analogy) the intervals between the notes, or the pitch and key, and thus in copying he does not raise or lower the pitch when he transposes the design from one scale to another. The result is discordance: an ordinance from Venice is piled on one from Florence or Rome; one story is English, another Dutch. In an age of "crazes," when people furnish and decorate their houses at one time in Japanese, and another in Dutch or Louis Seize, this weakness is tolerated; but it is not art.

A larger class of errors in design may be grouped under the head of sensuous or optical defects, in which the eye at once perceives something wrong or painful. Notice the ugly break between one part of a building and another, when a hip-roofed building abuts against a taller flat-topped wing, where the angle of hip and vertical lines make a painful gap. A right angle is not so abrupt a junction as an acute angle. This sort of defect is common enough in side elevations where the front main structure is backed by a lower building in a plainer style. These sudden breaks make bad skylines. The hotels at Cannon-street and Charing-cross are tacked on to low terminus sheds, and many recent lofty street buildings make exceedingly abrupt and aggravating lines with the lower houses on either side. It is for the architect to see how these sudden jumps in level may be avoided or disguised. Sudden angular contrasts are disagreeable both in plan and elevation, but we may point to less obtrusive and more subtle kinds of defect, as in the concave and hollow appearance of straight beams and columns. A level line, as in the architrave of an entablature or ceiling, looks very deflected or bent if the ends are joined to a sudden curve, as the cove of a ceiling; or, again, flat-topped arch with circular springings. A slight convexity would remedy the weakness. We often see an arch of quick curve starting from a vertical impost, causing the latter to look crooked or bent at the springing. A few mouldings at the impost rectifies the impression. We know well enough the mistake of a Tudor arch with very flat upper curves; but there are certain niceties in joining and adjusting these details which are overlooked. We notice how adroitly and artistically the designers of the Somersetshire and East Anglian churches managed to impart a graceful taper to the angles of their towers by projecting the corner buttresses not at the angle of the outer square at the base, but at some distance within, so as to allow for the diminution of the tower walls. They also took care to pose their corner pinnacles in a graceful manner over the diminished upper story, not abruptly, as is done in the newly-completed tower of St. Mary's, Newington. Gradation of lines and features is daily transgressed from want of study. The mode in which capitals receive the entablature is sometimes wrong; the sides of the architrave, instead of being vertically in the same plane as the shaft, is made to project. In Gothic practice we know the rule is to allow the archivolt member to project over the abacus of capital; but in Classic the rule would lead to anomalies. Again, we often see the springing line of an arch level with the top of abacus instead of being slightly stilted, the effect of which is to make the arch look abrupt, especially if the capital is a very projecting one, or is placed above the eye. Other mistakes shock our perceptions of sense and scale. The end of a ceiling beam resting on an arch, or over a void, is flagrant. We frequently see a coffered ceiling with the dividing ribs too heavy for the apartment, producing a crushing effect. Not less objectionable is a deep coved ceiling over a room of small height, or heavy cornices and capitals, and a profusion of carving in the soffits and mouldings of arches where structural truth suggests simple members. Grievous sins are committed against scale. Large windows and details often considerably diminish the real size of buildings, and of this defect we lately spoke.

SPECIAL TRADES.

To be able to describe with sufficient clearness and accuracy the requirements of a building in the phraseology of the various trades, and to specify any novelty in construction, are necessary qualifications in the writing of a specification; but they are becoming less possible in these days of multifarious requirements. The applications of science are too numerous to be learned all at once. The trades connected with building increase and become split up into separate branches; materials, patented and otherwise, multiply; and the architect is supposed to have sufficient knowledge of each to decide for himself which system, or method, or material ought to be used. An overwhelming mass of data is at hand, but the means of applying them are not so easily grasped. For example, we have abundant data and formulæ with regard to drainage and ventilation, all kinds of patterns and types, but the difficulty is to make a selection for a particular purpose, to describe what size of pipe is necessary for a given discharge under certain conditions of gradient or the area of tubes for admission of fresh air or escape of vitiated air for a room of given capacity. At present, the architect is dependent on his own calculations, or on those of the contractor or engineer. The same thing applies to any form of iron roof or system of construction of a particular kind: the specification must be explicit, or he has to leave details to the contractor, with undesired consequences.

The how and what to specify in certain cases are questions that puzzle the most experienced architect in these days when sanitary constructive and electric specialities have to be thought of. The customary course is to leave these details very open; that is, to trust to the contractor or sub-contractor doing what is necessary subject to an "approval" that may amount, as it often does, to very little, except to getting all that can be got, and trusting to chance for the result. The approval of ignorance is an easy matter, and it may mean a sacrifice of all essential requirements, or the conditions of good work. To provide a certain sum is, with due precautions, a more desirable system, as it enables the architect to procure tenders from experienced tradesmen, and to make his specification more precise. At the present time the architect's attention is directed to several important branches quite outside the ordinary specification for the builder.

To consider for a moment what a proper sanitary specification amounts to for a large building. These are a few of the items: That the cement must be of certain tensile strength per inch after being allowed to set in air and immersed in water for seven days, and be of a certain fineness; that the concrete must be of certain proportions, and the bricks hard and vitrified; that the stoneware pipes be of certain diameter, and to be true in form, and to be vitrified and salt-glazed; to have proper socket-joints, and to be jointed in cement and sand, and the inside wiped clean; that the traps be of certain size and form; that the disconnection chambers are to be of certain dimensions and thickness of brick in cement, and have half-round, straight, and curved pipes of particular make; that grease and other gullies be provided of such and such a pattern, of Doulton's, Thos. Crapper and Co.'s, or other make; that an automatic siphon flushing cistern of certain capacity be fixed to discharge at every few hours; all this in addition to the usual provisions for soil, waste-pipes, overflows, ventilating pipes, apparatus, &c. Each of these details requires a practical knowledge and a specific description; thus in jointing, a particular description of the mode of making the stoneware pipe-joints with cement luting ought to be given if no patented self-adjusting joint be used. Again, a specification ought to be clear as to how the pipes are laid under the house; if cast-iron pipes with caulked lead and yarn joints are to be used; if to be coated with Argus Smith's or other paint; that no branch connection be allowed under the house. Equal care is necessary in specifying connections, and manholes and traps, of course referring to a plan showing every branch drain and manhole. Most specifications pass over the very points about which the utmost care is required, such as the connection of branch drains with house drains by means of an opercular or open glazed channel, so as to admit of inspection and cleaning, or that of soil-pipe foot with house drain—points which are constantly scamped by contractors. In large and important buildings, where a ramified and elaborate system of drainage is required—as for a large block of residential mansions, for hotels, and infirmaries—the safest course is for the architect, if not himself a specialist, to obtain a plan and specification from a sanitary engineer of known experience upon which a contract may be based. Indeed, a matter requiring such expert knowledge as to details can hardly be considered to be included within the architect's function. The details are so numerous and the supervision necessary so exacting that it would be next to impossible to expect the general designer, or even the clerk of works, to devote the time necessary for such a purpose. In the preparation of plans the scheme of drainage should be one of the first things. Hence, if an expert has to be consulted, much loss of time and labour would be saved if the work be arranged before the general specification is prepared.

Systems of heating, ventilation, and lighting are now no longer within the grasp of an architect in all their details. In either or all of these cases we have to consider, not only good workmanship, but correct principles and efficiency. An architect may specify a system of "low" or "high" pressure apparatus; but should it fail to answer expectations he would have to undertake a responsibility that would be undesirable. Practically, the engineering firm engaged not only supplies the apparatus, but suggests the mode of arrangement, so that an architect's specification is seldom followed in detail. This being the case, is it not better that the architect should consult with the firm, and make a special contract? The general system having been decided, the specification ought to contain a full and detailed description of the pipes and apparatus to be employed. For example, in a high-pressure system the pipes are generally $\frac{7}{8}$in. diameter inside and $1\frac{3}{16}$in. outside, with a thickness of metal of $\frac{1}{4}$in., screwed together with contrary threads, and the apparatus has to withstand a testing pressure before sealing of from 2,000lb. to 3,000lb. to the inch. The radiators can be placed in window recesses, behind curtains, and other confined spaces in coil cases. This system requires channels, which have to be provided in the walls, and it becomes necessary to describe these and other details like stop-cocks and coils.

Again, in electric lighting a specification for a complete incandescent electric-light plant can only be undertaken by one accustomed to the technicalities. The capacity of dynamo, the engine, the number and candle-power of the lamps are points which only the expert engineer can decide. In one specification we read, "The dynamo will be of such capacity that, when driven at its rated speed, will furnish sufficient current for so many 16c.p. incandescent lamps"—a rather too general statement that does not specify any particular kind of dynamo. Again, to say "the building is to be thoroughly equipped from the sources of supply to each outlet with an insulated conduit tube, in such manner as to provide channels for the wires," does not convey any definite information.

The "wiring" of a building is a branch that demands special workmen, as the fixing of an electrical installation, or the engine, dynamos, &c., is a work of a different kind. For this work the insulation of conductors, the number and size of the wires, and the casing are important details of which the architect should be cognisant. The need of protecting the wires and joints and connections from damp is all essential, or leakage will occur; the wires must also be of sufficient size to avoid overheating. The kinds of switches, wall attachments, safety fuses, lamp-holders, &c., are items which have to be specified with care. These are matters that cannot be disposed of in a general clause: they ought to be described, and their patent names given. It is, therefore, easily seen how important it becomes to prepare specifications for each of these trades, and to make special contracts with firms of known repute. The general specification and contract can no longer provide for these and other branches without detriment to the employer and the trades interested.

SHADOWS IN PERSPECTIVE.*—III.

We will still continue to study the shadow thrown by rays of light parallel to the picture plane. In articles I. and II. the direction of the rays of light was parallel to the picture plane and cast on front planes and right angles. In the present example the direction of the rays is the same, but the shadows are cast on *oblique planes and vertical lines.* Before finding the shadows, we will study the true reflection of the building in the water after the natural laws of reflection and perspective.

Referring to the last article, we remark that the reflection of an object is the inverse reproduction of this object; the horizontal lines go to the same vanishing points, the various heights are the same, taken from the water level. But we must not understand by this that the reflection of the building will be the exact reproduction of the lines of the building as drawn in perspective. The student will notice that this is not so on comparing the object and its reflection in the water. The reflection of the vertical lines is, of course, the continuation of these lines downwards. The horizontal lines go to the same vanishing points as those of the building; the heights are the same as regards the water levels, but these heights are in proportion as the respective points recede from the front plane of the picture, and also depend on the position of the horizontal line, thus changing in appearance the reflection of the object. For instance, the point *g* of the gable is in the drawing seen well above the wall *a;* in the reflection, however, this point *g* is found to be hidden behind the reflection of the wall *a a*. Again, the crest *k* of the dormer window appears in the reflection to be well above the crest of the large roof, whilst in the perspective this point is well below. The reason for this we shall understand further on whilst constructing the reflections.

We will first find the true reflection of the front of the house, which is contained in one plane, from the angle of the wall *a a* to the angle *o o* against the tower. One water line will therefore suffice to find the reflected heights of all lines in this plane. From the ground point of the wall angle *a* we draw a line from the vanishing point A, indicating the form of the bank from the wall to the surface of the water. From the point where the sloping bank meets the water, we draw a line to the vanishing point A. This line will therefore represent the surface of the water if continued beneath the wall. We produce the angle *a a* of the wall until it meets the water level at point 1 *a*, and from this point 1 *a* we draw the line 1 *a*, *s*, *b*, *f*, &c., to the vanishing point B. This line represents the angle of intersection of the surface of the water and the front wall of the house, if both these planes were continued. By means of this line, therefore, we can obtain the heights of the reflections of the front wall by projecting all the vertical lines to meet the water level, and producing them to the same distance beneath. We must not forget that the sloping bank will be reflected in the water to the distance *x z v* from the point *x z* on the water level; the reflection of the bank will hide to a certain degree the reflection of the lower portion of the building. From point 1 *a* we mark off the distance 1 *a*, *a* giving us the reflection of the point *a*, the crest of the wall. Similarly the doorway *s s* finds its reflection in *s s*. The soffit of the doorway will appear larger in the reflection than in the perspective, owing to the height of the horizontal line B A. The angle of the gable *b b* will be reflected in *b b*, *ff* at *ff*, *o o* at *o o*, *s* at *s*, &c. The angle *d d* of the open door is contained by a different plane, more advanced than that of *a a;* we must therefore, in order to obtain the reflection, draw the water-line of this plane. From the vanishing point B through *d* we draw a line to the ground-line at 2. Descending this point to the water-level, and drawing another line to vanishing point B, we obtain the water-line 2 *d;* from point *d* the projection of *d d* on the water-line *d d*, we mark off the point *d*, the reflection of the top of the open door. We may notice that the reflection of *d* appears to be well above the crest of the wall, whilst in the perspective it is shown nearly level with the crest.

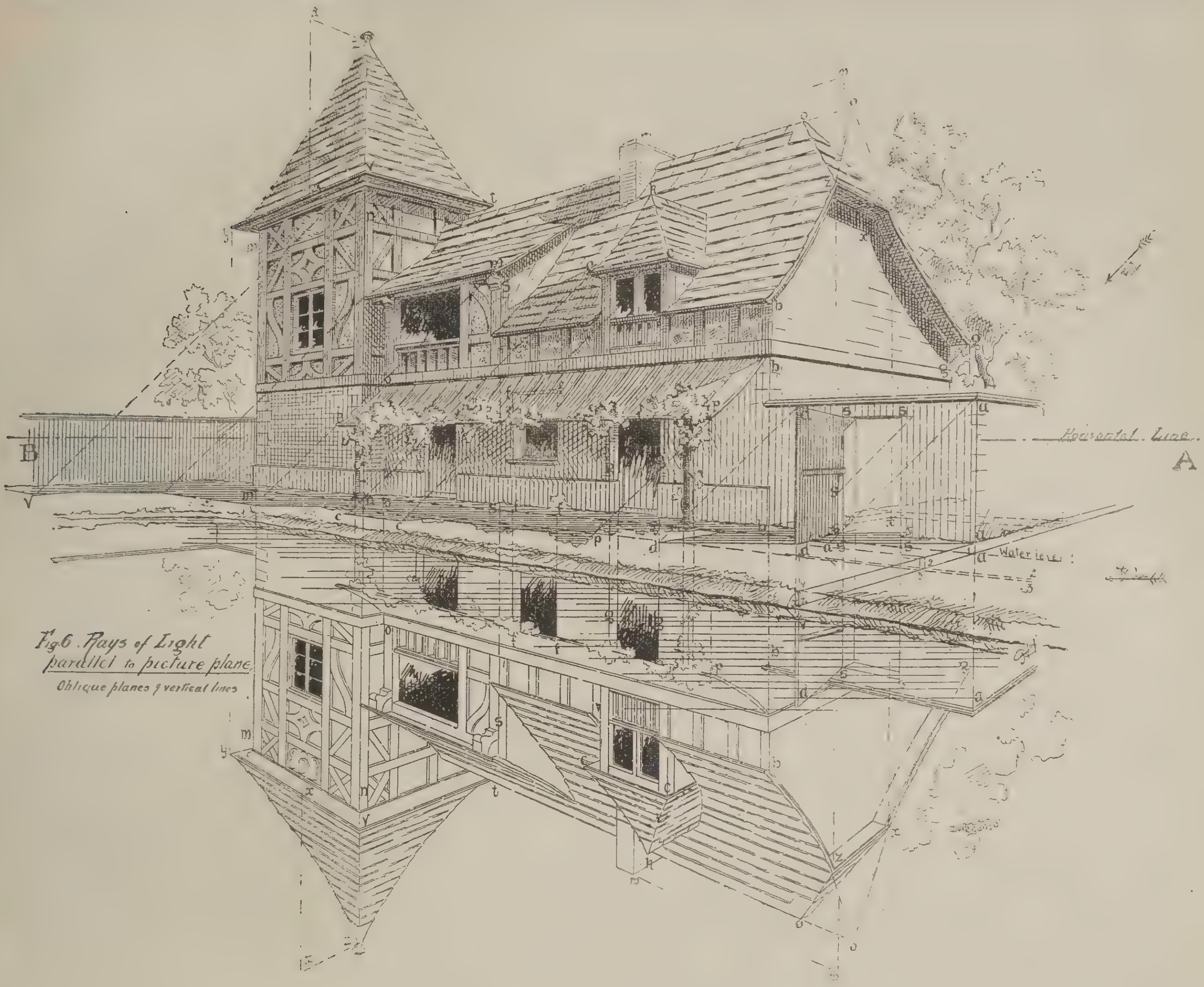


Fig 6. Rays of Light parallel to picture plane.
Oblique planes & vertical lines

The front wall *m, n* of the square tower is contained in a different plane, and will therefore require a new water level, which, proceeding as for the other planes, we find to be water-level 3, or line *m, n,* beneath the tower; and from these points we mark off the reflection *m, n*. By means of the two vanishing points, we can easily find the reflection of the eaves of the tower roof *y, v, t.* We must now obtain the reflection of the other planes of the building. This is easily done by means of lines to the vanishing points from the various points already obtained, and the intersection of the projection of the required points. Thus, point *t* of the tower is obtained by the intersection with the reflected line *v, t,* drawn to the vanishing point A. We will leave the student to carry out the reflection of the eaves of the gable *x, y, z,* found by means of a new water-level on the *y, x* at *x;* also the reflections of the columns of the verandah and roof, found by means of a water-line in the plane of the columns. The soffit *f f* of the window under the verandah will be found to be almost visible in the reflection, although in the building it is well hidden by the roof. For the crest of the large roof and the hip point *o*, we have first to find the trace *o* of of the roof produced; the line from the reflection to the vanishing point B; and the projection of the hip point *o* on this line gives us the true reflection of the crest of the roof, and obviates the necessity of finding another water-line for this plane. The reflection of the chimney is likewise obtained by means of its trace, *m*. In a similar manner we may obtain the reflection of the point *z* of the roof of the tower, by finding the reflection of its trace on the front wall plane by means of the water-line *m n*, and drawing *x z* to its vanishing point A.

We have now the general reflection of the building found by means of different water-levels for the different planes. Of course, having once well understood the rules, the student will find out for himself easy methods to construct, by means of the vanishing points and one or two water-levels, the reflections of complicated objects.

We have now to construct the lines for the natural and cast shadows of the building, thrown by rays of light in the direction R L, parallel to the picture-plane. We follow the same system of construction as for the preceding articles, the traces of the shadow thrown being always that of a triangle, having for one side the vertical line casting the shadow; for base, the horizontal line drawn from the ground point of this vertical line, and for hypothenuse, the line drawn in the direction of the rays of light, and intersecting the ground-line at a certain point, the point of shadow at the summit of the vertical angle. This may be noticed in the shadows of all the points of the object. For instance, the angle *a a* of the wall will cast its shadow on the ground-plane in the horizontal line *a a* intersecting the hypothenuse *a a* drawn in the direction of the rays of light from point *a*. From this point *a* obtained a line is drawn to the vanishing point B, and forming the shadow of the cresting of the wall. But this shadow is cut into by the shadow thrown from the open door *d d*; a horizontal from the ground-point *d* meets at *d* the shadow line drawn from the upper point *d*, forming thus the triangle *d d d*. The whole of the front surface of the building is in natural shadow. The shadow from the point *b* on the wall and the angle of the roof *p* of the verandah have their shadow at *p* on the horizontal line drawn from the base of the wall, and the projection of *p* on the ground-plane. From this point *p* obtained, a line to the vanishing point B will give the shadow of the eaves of the verandah on the ground. The shadow of the eaves of the large roof *b* falls on to the verandah, and is then stopped; but the shadow of the eaves *c c* we find overreach the verandah and fall to the ground at *c c* on the horizontal lines from *c c* projected to the ground-plane. The eave *m* has its shadow at *m*, that of *v y* at *v*, and then against the inclosing wall. The shadows against the walls at *g g, x x*, and the tower at *t* are easily obtained as already explained. The shadow against the opened door is found by means of the horizontal line C C, drawn from the interior ground angle of the doorway and meeting the open door at C. From this point a vertical line meeting the shadow point of *s* gives us C *s*, the shadow of the wall angle C *s*; the line joining this shadow point *s*, and the shadow of the soffit of the doorway completes the shadow against the open door. We will leave the shadows thrown on the roof by the chimney and the dormer for the present, until we treat of shadows on oblique planes and lines. The shadows in the reflection of the building will follow the same rules as for the reflection; we have not put them in order to avoid crowding the drawing.

Arthur J. Vye Parminter.

* * *

BUILDING STONES OF GREAT BRITAIN: THEIR CRUSHING STRENGTH AND OTHER PROPERTIES.*

(*Concluded from p.* 630.)

FREEZING.—The author had intended making a complete set of tests on this point during the severe frosts of last winter; but before he was able to carry out this idea, except to a very limited extent, the frost broke up, and the idea was for the time abandoned. A few specimens were subjected to the test; they were soaked in water all day, and then at night placed outside on the ground, or on a ledge about 7ft. above the ground, and thus exposed to a temperature varying from about 20° to 32° Fahrenheit; in the

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APPENDIX A.—List of Quarries, &c.

Name of Stone.	Locality of Quarry.	Remarks.	Owner of Quarry.
		SANDSTONES.	
Prudham	Fourstones, Hexham, Northumberland.	Fine yellow stone, used in Heriot Watt College, The University, Edinburgh, &c.	W. Benson and Co.
Corncockle	Lockerbie, Dumfriesshire.	Fine red sandstone, slightly marked with black	,,
Gunnerton.........	Barrasford, Hexham, Northumberland	Second class, yellow rock.	Steel & Turner.
Cragg	Woodburn, Bellingham, Northumberland.	Very hard, fine grain, yellow rock.	,,
Corsehill............	Annan, Dumfriesshire.	Fine red sandstone, very largely used.	Corsehill Quarry Company.
Polmaise	Bannockburn, Stirlingshire.	Very fine rock, white.	Baird and Stevenson.
White Pleam ..	Bannockburn, Stirlingshire.	Specimens were from hard beds, fine white rock.	Macmartin and Gowans
Arbroath	Carmyllie Quarries, Arbroath, Forfarshire.	Pavement rock, fine greenish rock.	Duncan, Falconer and Co.
Auchinlea	Cleland, Motherwell, Lanarkshire.	Poor stone, easily wrought, coarse white.	T. Gibb and Sons.
Craigleith	Edinburgh.	Very hard, grey white, extensively exported.	J. Pennycook and Son.
White Hailes ...	Slateford, Edinburgh.	White, dark bands, strong rubble stone, for foundations, &c.	R. Young, agent for proprietor.
Dean Forest	Drybrook, Gloucester shire.	Pavement beds fine yellowish green.	T. Williams.
Gatelawbridge ...	Thornhill, Dumfriesshire.	Fine red stone.	W. Thomson and Sons.
Blue Hailes	Slateford, Edinburgh.	Good for inside work, grey, with dark, clayey bands.	R. Young, agent for proprietor.
Binnie	Binnie Quarry, Linlithgowshire.	Formerly much used in Edinburgh, Scott monument, &c. Fine reddish grey.	M Knight.
Hermand	West Calder, Midlothian.	Hard grey rock, much used in Edinburgh Museum, Calton Prison, &c.	A. Colville.
Howley Park ..	Morley, Leeds.	Used for staircases, copings, &c., fine reddish grey.	Howley Park Quarry Co.
Grinshill	Grinshill, Shrewsbury.	Easy to work, fine grey white.	Bridge and Cureton Quarry Co.
Darley Top	Dacre Banks, Yorkshire.	Much used in Leeds, coarse red grey.	John Trickett and Co.
Hercules Ridge..	,, ,,	Bridge work, &c., coarse red brown.	,, ,,
Bramley Fall.....	,, ,,	Manchester ship canal works, &c., very coarse white.	,, ,,
Ackworth	Pontefract, Yorkshire.	Much used for sills and coping work, light grey, fine grains.	J. Smith.
Robin Hood	Wakefield, Yorkshire.	Steps and landings, fine reddish brown	G. Armitage and Sons.
Aspatria	Cumberland.	Fine red sandstone.	H. Graves.
Lightcliffe	Lightcliffe, Halifax, Yorkshire.	Paving, landings, steps, &c., very fine pale green.	W. H. Bentley.
		DOLOMITES, &c.	
White Mansfield	Lindley Quarries, Mansfield, Nottingham.	Fine white silicious dolomite.	F. D. Lindley.
Red Mansfield ..	,, ,,	Fine light red.	,,
Yellow Magnesian Limestone	Mansfield Woodhouse Quarry.	Fine, crystalline, yellow, true dolomite.	,,
Anston	Kiveton Park, Sheffield.	Stone used for Houses of Parliament, fine light yellow.	James Turner and Son.
		LIMESTONES.	
Ancaster Brown Weather Bed Ragstone	Ancaster Quarries, Grantham, Lincolnshire.	Coarse, crystalline, red brown.	F. D. Lindley.
Ketton	Stamford, Rutlandshire.	White oolitic.	G. Hibbins.
Limestone	Banchory, Aberdeenshire.	Causeway work; crystalline.	
Portland	Isle of Portland.	White oolitic.	F. J. Barnes.
Corsham Down Farleigh Down Monk's Park. . Box Ground .. Coombe Down Corngrit ...... Stoke Ground Winsley Ground ...... Westwood Ground	Somersetshire.	Oolitic rocks, white verging towards cream.	Bath Stone Firms, Limited, Bath.
Doulting	Doulting Quarries, Shepton Mallet, Somersetshire.	White, oolitic, and semi-crystalline.	Charles Trask and Sons.
Ham Hill	Norton, Stoke-under-ham, Somerset.	Reddish brown.	Ham Hill Stone Company.
Ancaster, Freestone	Ancaster Quarries, Grantham, Lincolnshire.	Cream.	F. D. Lindley.
		GRANITES.	
Penrhyn	Penrhyn, Cornwall.	Grey.	West of England Granite Co.
Cornish Grey ..	Cornwall.	Grey, coarsish.	Whitehead and Sons.
Corrennie	Aberdeenshire.	Close-grained pink.	John Fyfe, Aberdeen,
Cove	,,	Pavement work; fine dark grey.	,, ,,
Kemnay	,,	Forth Bridge; fine whitish grey.	,, ,,
Craigton...........	Banchory, Aberdeenshire.	Red, coarse.	J. Littlejohn, agent for Sir R Burnett.
Peterhead	Aberdeenshire.	,, ,,	Whitehead and Sons.
Dyce	,,	Fine dark grey.	,, ,,
Hill of Fare	,,	Red, fairly coarse.	,, ,,
Sclattie	,,	Fine grey-white.	,, ,,
Persley	,,	,, ,,	,, ,,
Rubislaw	Aberdeen, Aberdeenshire.	London Bridge; fine dark grey.	Rubislaw Granite Co.
Ben Cruachan ..	Argyleshire.	Coarsish dark grey.	Whitehead and Sons.

APPENDIX B.—Table Giving Crushing Strengths, Absorption, Density, Coefficients of Elasticity, &c., of Building-Stones.

Name of Stone or Quarry.	Crushing load per sq. ft. in Tons.		Density.	Weight of 1 Cubic Foot in Pounds.	Absorption of Water.	Coefficient of Elasticity for Pressure.		
	Actual.	Mean.			Per cent. of dry Weight Asorbed	First Time Load Applied.	Reapplication of Load.	Range of Stress.
						Tons per sq ft.	Tons per sq.ft.	Tons per sq.ft.
			SANDSTONES.					
Prudham. Fourstones Quarry ...	473·8 393·8 517·3 454·2 454·2 408·5 472·4 468·2	455·3	2·27 2·30 ... ... 2·31 2·25	... ... 142·5	4·00 ... 4·32 ...	78,200 91,960	125,300 109,200	32·1 to 128·6 32·1 to 192·8
Corncockle ...	264·7[1] 399·4 487·3[2]	383·8	2·13 2·12	132·6	4·57 ...	138,700	156,300	32·1 to 192·8
Gunnerton ...	460·0 315·8[3] 288·0	354·6	2·10 2·09	130·8	5·16 ...	109,400	111,950	32·1 to 192·8
Cragg	388·7[4] 710·5 622·2	573·8	2·19 2·17	136·1	4·18 ...	124,800	153,300	32·1 to 192·8
Corsehill	417·5 341·6[5] 579·6 552·3 454·2[6] 402·5 388·0 423·9[7]	444·9	2·24 ... 2·02 2·01	130·4	7·94 ...	101,600	121,000	32·1 to 192·8
Polmaise	572·8 571·9 517·2[8] 526·3 569·5	551·5	2·28 2·26	141·7	4·58 ...	119,600	138,100	32·1 to 192·8
White Plean .	631·0[9] 569·5 637·9	612·8	... 2·21 2·22	138·2 ...	4·25 ...	146,600	157,400	32·1 to 192·8
Arbroath	512·5 628·3 533·6	558·1	2·44 2·40	151·0	2·32 ...	134,600	164,800	32·1 to 192·8
Auchinlee ..	189·8 190·6 230·5	203·6	2·09 2·04	128·9	6·90 ...	62,900	84,080	32·1 to 128·4
Craigleith	870·0[10] 900·8 815·0[11]	861·9	2·23 2·21	138·6	3·61 ...			
White Hailes.	621·6 682·5 682·0	662·0	2·32 2·29	143·8	3·71 ...	78,780	105,100	32·1 to 192·8
Dean Forest .	475·4 520·4 594·1	530·0	2·43 2·42	151·4	2·71 ...	113,600	172,000	32·1 to 192·8
Gatelawbidge	497·5 519·7 469·9	495·7	2·09 2·06	129·5	5·84 ...	143,600	168,100	32·1 to 192·8
Blue Hailes ..	428·3 489·5 470·2	459·7	2·31 2·28	143·2	4·70 ...	54,290	86,960	32·1 to 128·4
Binnie	605·7 531·6 570·0	569·1	2·19 2·14	135·1	5·22 ..	124,200	152,3.0	32·1 to 192·8
Hermand......	496·8 445·0 430·5	457·4	2·30 2·27	142·6	4·7 ..	15[illegible],100	191,900	32·1 to 128·4
Howley Park.	451·3 467·3 481·6	466·7	2·27 2·24 2·23	140·8	4·90 ..	83,700	116,500	32·1 to 192·8
White Grinshill	171·5 210·5 245·9	209·3	1·96 1·96 1·97	122·5	7·80 ...	101,000	115,500	32·1 to 128·4
Darley Top ...	549·2 536·0 465·0	516·7	2·23 2·24 2·21	139·0	3·40 ...	120,200	160,200	32·1 to 192·8
Hercules Ridge	323·5 397·1 286·6	335·7	2.22 2·24 2·11	138·0	3·60 ...	154,200	171,200	32·1 to 192·8
Bramley Fall	218·9 246·6 249·6	238·4	2·11 2·11 2·13	132·2	3·70 ...	106,800	114,900	32·1 to 128·4
Ackworth....	392·5 383·5 394·4	389·1	2·25 2·25 2·26	140·7	5·00 ...	61,960	90,960	32·1 to 128·4

[1] Cracked at 227 tons per square foot [2] From flag end of quarry. [3] Cracked and then gave way. [4] Mill-board used on one side only. [5] Cracked at 288 tons per square foot. [6] Cracked at 388 tons per square foot. [7] Cracked at 380 tons per square foot. [8] Cracked at 454 tons per square foot. [9] Cracked at 558 tons per square foot. Specimens are from hard beds. [10] Carried this load for a few seconds. [11] Cracked at 710 tons per square foot.

APPENDIX B.—TABLE GIVING CRUSHING STRENGTHS, ABSORPTION, DENSITY, COEFFICIENTS OF ELASTICITY, &c., OF BUILDING-STONES—*continued.*

Name of Stone or Quarry.	Crushing Load per sq. ft. in Tons. Actual.	Crushing Load per sq. ft. in Tons. Mean.	Density.	Weight of 1 Cubic Foot in Pounds.	Absorption of Water. Per cent. of dry Weight Absorbed.	Coefficient of Elasticity for Pressure. First Time Load Applied.	Coefficient of Elasticity for Pressure. Reapplication of Load.	Coefficient of Elasticity for Pressure. Range of Stress.
			SANDSTONES—*continued.*			Tons per sq.ft.	Tons per sq.ft.	Tons per sq.ft.
Robin Hood...	574·3	...	2·32	144·6	3·90			
	571·6	...	2·32					
	576·0	...	2·31		...	127,200	132,200	32·1 to 192·8
		574·0						
Aspatria	223·0	...	1·97	123·2	8·50			
	203·6	...	1·98					
	275·0	...	1·98		...	64,990	80,100	32·1 to 128·4
		233·9						
Lightcliffe. Bed 3	1,090·0	...	2·39	149·6	2·33			
	960·2[1]	...	2·39					
		1,025·1						
Lightcliffe. Bed 4	996·8[2]	...	2·40				127,800	32·14 to 192·8
	1,035·0[3]	...	2·41		...	191,600	241,400	32·14 to 192·8
		1,015·9			..			
		1,020·5	DOLOMITES.					
White Mansfield	395·5	...	...	...	5·01			
	471·9	...	2·25	140·1	...	209,800	235,600[4]	32·1 to 256·8
	433·3	...	...					
	546·0	...	2·24					
		416·7						
Red Mansfield	537·8	...	...	...	4·58			
	642·8	...	2.30	143·2	...	127,100	198,700[5]	32·1 to 192·8
	573·5[6]	...	..					
	613·6	...	2·29					
		591·9						
Yellow Magnesian Limestone ..	383·7	...	...	...	4·62			
	570·2	...	...	145·4				
	557·7[7]	...	..					
	671·8	...	2·33					
	703·8	...	2·33	...	...	4[illegible]6,100	...	32·1 to 192·8
		577·4						
Anston	327·1	...	2·12	132·2	7·50			
	296·9	...	2·11			229,800	350,800	32·14 to 96·42
	281·7	...	2·12					
		301·9	LIMESTONE.					
Ancaster Brown Weather Bed	626·4	...	2.50	...	...	289,700	499,800	32·1 to 192·8
	510·1	...	...	...	2·42			
	492·8	...	...	156·3				
	581·3	...	2·51					
		552·6						
Portland Base Bed. P. Quarry. ...	296·0							
	240·6	...	2·21	137·6	6·84			
	324·4	...	2·20		...			
		287·0						
Portland Base Bed. R. Quarry. ...	133·4							
	147·6	...	2·02	124·5	11·10			
	159·5	...	1·97		..			
		146·8						
Portland Whit Bed. .	173·5							
	211·6	...	2·14	132·3	7·51			
	229·0	...	2·10		...	236,900	...	16·07 to 64·28
		204·7						
Ketton	70·5	...	1·97	127·9	8·10			
	128·4	...	2·14					
	106·1	...	2·04		...	141,300	156,900	16·07 to 64·28
		101·7						
Limestone (crystalline)	888·2	...	2·81	174·7				
	1,075·5	...	2·81					
	905·0	...	2·78					
		956·2						
Corsham Down.........	128·6	...	2·11	...	...	61,980	116,000	16·07 to 64·28
	106·3	...	...	129·0				
	93·5	(109·5)	...					
	70·1	...	2.05	...	11.18			
	74·2	...	2·04	...	11·06			
		94·5						
Farleigh Down	69·3	...	1·92	...	...	72,460	...	16·07 to 64·28
	63·9	...	...	120·5				
	61·3[9]	(64·8)	...					
	58·1	...	1·95	...	12·64			
	60·1	...	1·92	...	13·13			
		62·5						
Monk's Park .	172·0	...	2·18	...	...	147,000	166,100	16·07 to 96·92
	112·8	...	...	136·7				
	150·5	(145·1	...					
	118·3	...	2·17	...	8·31			
	144·4	...	2·22	...	7·34			
		139·6						
Box Ground. .	88·4	...	1·99	...	...	138,700	129,200	16·07 to 64·28
	95·9	...	...	127·9				
	81·9[9]	(88·7)	...					
	126·1	...	2·11	...	7·49			
	95·1	...	2·05	...	8·10			
		97·5						
Coombe Down	151·2							
	141·5[9]	...	...	128·6	...			
	93·3	(128·7)	..					
	94·9				5·80			
	107·5	...	2·06	...	6·19			
		117·7						
Corngrit	172·4	...	2·10	...	...	243,700	243,700	16·07 to 96·42
	136·0	...	...	133·6				
	112·8[9]	(140·4)	...					
	144·0	...	2·18		8·72			
	107·3	...	2·14	...	9·04			
		134·5		...				
Stoke Ground.	96·4	...	2·02		...	109,300	...	32·14 to 80·35
	93·4	...	...	126·3				
	106·7[10]	(98·8)	..					
	83·1	...	2·00	...	11·14			
	70·4	...	2·05	...	10·55			
		90·0						

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[1] Carried this load for a few seconds. [2] Cracked at 942 tons per square foot. [3] Cracked at 910 tons per square foot. [4] Third application of load. [5] Sixth application of load. [6] Cracked at 531 tons per square foot, millboard interposed. [7] Cracked at 508 tons per square foot. [8] Third application of load. [9] Cracked and then gave way. [10] Cracked at 100 tons per square foot.

Name of Stone or Quarry.	Crushing load per sq. ft. in Tons. Actual.	Crushing load per sq. ft. in Tons. Mean.	Density.	Weight of 1 Cubic Foot in Pounds.	Absorption of Water. Per cent. of dry Weight Absorbed.	Coefficient of Elasticity for Pressure. First Time Load Applied.	Coefficient of Elasticity for Pressure. Reapplication of Load.	Coefficient of Elasticity for Pressure. Range of Stress.
			LIMESTONES—*continued.*			Tns. per sq.ft.	Tns. per sq.ft.	Tons per sq.ft.
Winsley Ground ...	114·9	...	2·11	...	...	164,000	...	16·07 to 96·42
	104·9	...	...	132·9				
	100·7[1]	(106·8)	..					
	85·2	...	2·13		7·74			
	98·0	...	2·15	...	7·74			
		100·7						
Westwood Ground ...	118.5	...	2·08	...	...	62,300	128,900	16·07 to 64·28
	140·4	...	..	130·3				
	109·5	(122·8)	...					
	89·7	...	2·10	...	8·59			
	93·0	...	2·08	...	9·12			
		110·2						
Westwood Ground (fluated) ...	124·8							
	106·6[2]	...	...	132·3				
	103·1	(111·5)	...					
	82·1	...	...	...	8·46			
	118·2	...	2·12	...	7·61			
		106·9						
Doulting Fine Beds...	117·4							
	101·7							
	115·7	(111·6)	2·04	125·0	...	97,580	121,000	32·14 to 80·35
	103·5	...	1·98		10·70			
	81·3	...	1·99	...	11·05			
		103·9						
Doulting Chelynch Bed............	134·9							
	157·4	...	...	...	3·42			
	209·3	...	2·42	150·4	...			
	211·6	...	...		...	357,600[6]	379,000	32·14 to 112·49
	190·7	...	2·40	...	3·30			
		180·8						
Ham Hill	133·8[3]	...						
	157·7[4]	...	...	136·0	...			
	207·5[5]	...	2·28		...	140,600	164,500	32·14 to 112·49
		166·3						
Ancaster Freestone...	164·5	...	...	...	6·27			
	198·2	...	2·22	140·4	...	120,100[6]	130,500	16·07 to 96·42
	167·6[7]	...	...		...			
	205·8	...	2·28					
		184·0	GRANITES.					
West of England, Penrhyn	1,285.9	...						
	808·7[8]	...		...	0·12			
	1,010·9	...						
	1,087·2	...	...	...	0·12			
	1,108·3	...	2·65	165·4				
		1,060·2						
Cornish Grey.	911·6							
	628·2							
	1,028·0	...	2·59	161·7	...	463,500	538,300	64·3 to 514·3
		955·9						
Aberdeenshire .... Corenne ...	1,224·9[9]	...	2·61	162·9	0·38			
	1,243·6[10]	...						
		1,234·3						
	1,098·0							
	1,440·0[11]	...	...	...	0·42			
	1,417·0[12]	...	2·55	159·1	...	523,600	540,700	64·3 to 514·3
		1,318·3						
Aberdeenshire .... Cove	1,024·4	...	2·71	169·1	0·55			
	1,023·0	..						
	914·0	...						
		987·1						
Aberdeenshire .... Kemnay ...	961·9[13]	...	2·63	164·1	0·42			
	1,017·8	...						
	1,285·8[11]	..						
		1,088·5						
	1,183·0							
	1,173·3[14]	...	...	...	0·21			
	1,277·0	...	2·58	161·0				
		1,211·1						
Aberdeenshire .. .. Craigton ...	1,182·0							
	1,348·0							
	1,316·0							
		1,282·0						
Aberdeenshire .... Peterhead ..	973·0							
	1,345·0	...	...	...	0.29			
	1,305·0	...	2·54	158·5	...	644,000	657,000	64·3 to 514·3
		1,207·7						
Aberdeenshire .... Dyce	908·4	...						
	1,156·0	...	...	...	0·19			
	1,253·0		2·65	165·4	...	587,600	621,400	64·3 to 514·3
		1,105·8						
Aberdeenshire. Hill of Fare	1,278·0							
	1,402·9[15]	...	2·57	163·4	0·40			
	1,400·0[16]	...	2·53	157·9	...	381,000	460,400	64·3 to 385·7
		1,360·3						
Aberdeenshire. Sclattie	651·2							
	978·0	...	...	...	0·10			
	922·2	...	2·58	161·0	...	266,000	321,700	64·3 to 257·1
		850·5						
Aberdeenshire. Persley grey......	826·6							
	1,027·4	...	...	...	0·19			
	974·4	...	2·60	162·3	...	522,300	...	64·3 to 514·3
		942·8						
Aberdeenshire. Rubislaw	1,148·0							
	915·0	...	...	...	0·09			
	1,233·5	...	2·64	163·7	...	445,000	525,200	64·3 to 385·7
		1,098·8						
	1,303·0[17]	...	2·62					
	1,334·0[17]	...	2·61					
	1,232·0[17]	..	2·62					
		1,298·7						
Ben Cruachan	1,008·0							
	855·8	...	...	...	0·29			
	776·8	...	2·75	171·6				
		876·9						

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[1] Cracked and then gave way. [2] Cracked at 99·8 tons per square foot. [3] Yellow bed. [4] and [5] White bed. [6] Second application of load. [7] Millboard used. [8] Cracked at 713 tons per square foot, not well bedded. [9] Removed from machine unbroken, but cracked. [10] Removed from machine unbroken, but badly cracked, put in again and crushed up. [11] Carried load for a few seconds, and then crushed. [12] Cracked at this load, and one side broke off only. [13] Millboard interposed on one side. [14] Cracked slowly, and then gave way. [15] Removed from machine unbroken. [16] Carried this for a few seconds, and then crushed. [17] Obtained from rock 177ft. beneath the surface.

morning they were brought inside, and thawed by gently warming. This process was repeated some ten or twelve times, and then the cubes were left exposed to the atmosphere and rain for some two or three weeks after the thaw had set in. The stones used were white and red Mansfield, magnesian limestone, Ancaster freestone, Brown Weather bed, and the granites Corrennie, Cove, Kemnay. The loss of weight of the granites was not perceptible, and in the case of the others did not exceed 0·002lb. (the cubes all weighing about a pound)—that is, practically there was none. Similarly compared with their fellow cubes, there was no loss of strength. These few results are, perhaps, inconclusive; but they seem to point to very small loss of strength due to freezing. It is, however, the author's intention to pursue the question further.

Coefficients of Elasticity.—It is a matter of extreme difficulty to obtain these coefficients for stone. The specimens operated on are necessarily small, and the quantities to be measured very minute. It is a difficult enough matter to obtain thoroughly trustworthy results when dealing with iron and steel, the specimens of which can be made in lengths of 10in. and upwards; when dealing with only 2¼in. cubes, it becomes impossible to use any ordinary strain-measuring apparatus. The author, therefore, requested his assistant, Mr. A. G. Ashcroft, Assoc.M.I.C.E., to undertake the devising of a new measuring gear for use with these small cubes, capable of magnifying about 2,500 times. The essentials were, the gear must be very sensitive and free from all inertia and resultant backlash. After several trials, an apparatus was elaborated, and was finally used in all these tests. The principle on which the gear is arranged is to obtain the needful magnification by a system of levers—that is, by mechanical exaggeration, and not by optical means. A brass frame embraces the cube, and is attached to it at the top and bottom by two pairs of set screws; the centres of these pairs are exactly 1½in. apart; this forms the length on which the compressions are measured. The brass frame is made in two pieces, each piece being a square with two uprights at opposite ends of one diagonal, thus the two pieces when placed together form a hollow prismatic frame; the two parts are secured together and united, with freedom to move relatively to one another, by eight spring pieces. One of the two sides of the frame supports on one side an arm, and on the other a long arm with a scale attached to it; the arm carries at its end at right-angles to itself a small piece of steel, the attachment being a spring one; on the end of this is a centre dot. Surrounding the brass frame is a cross-frame, which is made double for balancing purposes; this cross-frame is attached by spring pieces of the "Emery" type (which take the place of knife-edges) to each of the two halves of the frame; on the end of this cross-frame, close to the steel, is another centre dot. Any compression of the stone cube will cause the cross frame to move relatively to the arm, and the distance apart of the two "Emery" springs being 0·3in., while the horizontal length of the arm is 7in., there is a resultant exaggeration of the cube's compression, at the centre dots, of about twenty-three fold. Resting by means of needles on the two centre dots is a pointer, whose length is 100 times the distance between the two needles; the end of the pointer as it moves over the scale has, therefore, a motion 100 times as great as that of the centre dots relatively to one another, or magnifies between 2,300 and 2,400 times the compression of the cube. By the system of springs used throughout in the construction, and the lightness of all the parts, the author believes that all backlash has been eliminated, and the gear is extremely sensitive; it also accommodates itself to any inequalities in the pressure. The actual magnification was determined by testing it against the laboratory standard gear on a piece of cast iron prepared for the purpose. It proved to be 2,358 times. This calibration gave also an opportunity of testing its delicacy and accuracy before using it with the stone cubes. The method of carrying out the tests was as follows: A load was applied sufficient to keep the specimen with the gear attached in its position in the machine between the dies, and the corresponding scale reading was taken as zero; this load varied from 250lb. to 1,000lb. per square inch. This plan was adopted to prevent any possibility of derangements of the gear by shocks, in putting on and off the load, such as might occur if the pressure had been entirely removed, and it was easy to let back the load to these amounts when taking sets. The loads were then increased gradually by 250lb., 500lb., or 1,000lb. per square inch at a time according to the strength of the stone, and each time readings of the position of the pointer on the scale taken, till the highest load it was desired to apply was reached; the load was then let back to the starting load, and the permanent set measured. A fresh set of observations was then made with this new zero, the same method of procedure being followed. In a few cases still further series of readings were made; but as, in most cases, the additional permanent set produced by the second application of the load was extremely small, these additional series were not made unless something anomalous had occurred. The results are given in columns 8, 9, and 10. The coefficient of elasticity was calculated for both series of readings from the definition that the coefficient $= \frac{\text{stress}}{\text{proportional strain}}$. Column 8 gives the result in all cases for the first set of readings—that is, when the compression for each increase of load consisted of two parts, an elastic and a permanent compression, the latter often forming a very considerable proportion of the observed strain; the coefficients are, therefore, those of the stone in its natural condition. Column 9 gives the result of the other set of readings, after the stone had been reduced, so to speak, to a state of ease; practically nearly all the strain for each increase of load being elastic, the coefficients are therefore for the state of ease. The tenth column gives the range of loading within which the specimens were tested, and, therefore, within which the coefficients apply, all the results being given in tons per square foot to correspond with the units used for the crushing tests. The stress-strain curves for some typical sandstones are given in Figs. 2, 3, and 4. For the first application of the load, the additional strain for each increment of load diminishes as stress increases, the curve is distinctly convex upwards, and on removal of load there is a large permanent set; on reloading, the curve still in general retains its upward convexity, but much diminished, and in some cases the stone becomes almost perfectly elastic, stress and strain being strictly proportional. The figures given below as an example are the scale readings for 1198$_3$ Darley Top stone.

Stress.	Scale Readings and Sets.			
	First Loading.	Differences.	Second Loading.	Differences.
Lbs. per sq. in. 500	0·0		0·0	
		0·94		0·64
1,000	0·94		0·64	
		0·93		0·67
1,500	1·87		1 31	
		0·81		0·59
2,000	2·68		1·90	
		0·72		0·58
2,500	3·40		2 48	
		0·56		0·50
3,000	3 96		2 93	
	Set 0 93 Elastic 3·03		Set 0·0 Elastic 2·98	

Note.—Unity = 0·0005in.

Some of the specimens have at first strain-increments gradually increasing up to a maximum, and then diminishing with further increase of loading, so that the curve is at first convex downwards, and then convex upwards; this is seen in some of the curves given in the figures. Fig. 4 illustrates the different behaviour of two specimens of the same stone when tested in the one case with the plane of pressure parallel to, and in the other case at, right angles to bedding; the compression in the latter case is distinctly smaller, there being a marked difference of the two coefficients. The mean value of the coefficient for all the sandstones[1] is for the first test 108,040 tons per square foot, and for the second test 132,280 tons; expressed in lbs. per square inch, these figures are 1,680,600 and 2,057,700 respectively—that is, the stone is from 15 to 20 times as compressible as steel. Fig. 5 gives the curves for the magnesian limestones; they are of the same general character. Number 1061$_{2c}$ shows very clearly the change of curvature at a load of 2,000lb. per square inch. The mean coefficients[2] are 254,500 and 321,000 tons per square foot respectively, showing the much denser character of these crystalline rocks. Figs. 6 and 7 are curves of typical oolites, again of the same general character. The marked difference between the softer Doulting bed and the harder Chelynch one, shown in Fig. 6, again illustrates the effect of the more compact arrangement due to the natural crystalline character. The mean values for the limestones (omitting 1059) are 133,530 and 150,750 tons per square foot; they are thus for the first test of nearly the same value as those for the sandstones in the state of ease. The granites are illustrated by Fig. 8. The range of stress is of course much greater, but they also exhibit the above characteristics. Much less set was produced by the first loading; this is seen by the closer approximation of the two values of the coefficient of elasticity. The value of the coefficient is for the first test 479,000, and for the other test 522,100 tons per square foot, or in pounds per square inch, 7,450,000 and 8,121,000 respectively, about a quarter of the corresponding values for steel. The author believes these figures will be of considerable interest and importance when the design of structures is being dealt with, where great weights have to be carried on foundations or by piers and columns, and as also affording data for calculating the stresses thrown upon masses of masonry by expansion and contraction due to changes of temperature. It had originally been intended to also deal with these constants by means of transverse tests, and to extend the inquiry into the transverse strength of some of the leading stones. Pressure of work has necessitated the postponement of this and a few other points, but it is proposed to undertake the inquiry very shortly. Enough has been done to show the value, necessity, and importance of systematic tests of stone when being used in large works. Engineers, who would never dream of employing iron and steel without careful tests, accept large quantities of stone without any form of test, trusting merely to a casual examination. Although stone is not subject to the imperfections and carelessness of manufacturing processes, still, like all natural substances, it varies greatly in quality, and hence the need of tests is just as great as in the case of manufactured articles.

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[1] Except No. 1202$_4$ Lightcliffe.

[2] Including Ancaster Brown Weather Bed.

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UNIFORM LOADS FOR BRIDGES.

MR. J. A. L. WADDELL, M.Am.Soc.C.E., in his valuable paper on "Railway Bridge Designing" in the last *Transactions* of the Am.Soc.C.E., shows the laborious, and at the best imperfect, task of trying to find the maximum stresses on a bridge, when they can be found more expeditiously for an equivalent uniformly distributed live load by the graphic method. Practically exact stresses can be found by assuming equivalent uniform loads, and the mathematical proof given is convincing. The writer truly says, "If one considers that the proper intensities of working stresses are to a great extent a matter of opinion, and that engineers often differ thereon as much as 20 per cent., he ought to be convinced that an endeavour to obtain stresses with extreme accuracy is nothing more nor less than hair splitting." Against the use of engine diagrams in computing stresses, the author cites Professor Eddy's paper on "A New Graphical Solution of the Problem: what position a train of concentrated loads must have in order to cause the greatest stresses in any given part of a bridge truss or girder." This paper, says Mr. Waddell, may prove to the profession "that in computing stresses by engine diagrams and proportioning parts by assumed intensities which do not provide for the effect of impact, they have been 'straining at a gnat and swallowing a camel.'" The tabular results given of equivalent distributed live loads for plate girder spans, computed for greatest bending moment at any point of span, are of value. By such tables of equivalent uniform loads for certain standard locomotive and car loads, much would be done to save unnecessary labour, and in simplifying specification requirements. At present there is a great diversity in load specifications, every railway has its own standard of loading, and this diversity is bewildering and tiresome to the computer. The special loading may be a concentrated one of peculiar arrangement, and the computer makes his calculations from the concentrated loads; but it would no doubt be easier to take tables of equivalent uniform loads for certain standards.

PRICES.* — XXXVII.

(All Prices Include Profit.)

IRONMONGER, INCLUDING SCREWS (*continued*).

Pressed Butts—

	Per pair. s.	d.		Per pair. s.	d.
1in. No. 601	0	3	1⅜in. No. 602	0	3½
1¼in. ditto	0	3½	1¾in. ditto	0	4
1½in. ditto	0	3½	2in. ditto	0	4
2in. ditto	0	4	2¼in. ditto	0	4½
2½in. ditto	0	4	2½in. ditto	0	5
3in. ditto	0	4½	3in. ditto	0	5½

Pressed Steel Butts—

1½in. light	0	3	1½in. ditto strong	0	3½
2in. ditto	0	3	2in. ditto ditto	0	4
2½in. ditto	0	3½	2½in. ditto ditto	0	4½
3in. ditto	0	4	3in. ditto ditto	0	5½
3½in. ditto	0	4½	3½in. ditto ditto	0	6
4in. ditto	0	5	4in. ditto ditto	0	6½
4½in. ditto	0	6½	4½in. ditto ditto	0	7
5in. ditto	0	7	5in. ditto ditto	0	9½
6in. ditto	0	8	6in. ditto ditto	1	0

Wrought Broad Butts—

3in. by 3½in.	1	2	4in. by 4½in.	2	0
3½in. by 4in.	1	6	4in. by 5in.	2	4

Wrought Lifting Butts—

2½in.	0	9	3½in.	1	1
3in.	0	11	4in.	1	4

Skew or Rising Butts—

3in.	3	6	4½in.	6	0
3½in.	4	0	5in.	7	0
4in.	5	0			

Table Hinges—

⅞in. pressed	0	2½	⅞in. welded	0	3½
1in. ditto	0	3	1in. ditto	0	4
1¼in. ditto	0	3	1¼in. ditto	0	4½
1½in. ditto	0	3½	1½in. ditto	0	5
1¾in. ditto	0	4	1¾in. ditto	0	6½
2in. ditto	0	5	2in. ditto	0	8

Back-flap Hinges—

1in. pressed	0	3	1in. wrought welded	0	4
1¼in. ditto	0	3	1¼in. ditto ditto	0	4½
1½in. ditto	0	3½	1½in. ditto ditto	0	5½
1¾in. ditto	0	4	1¾in. ditto ditto	0	7
2in. ditto	0	4½	2in. ditto ditto	0	9½
2¼in. ditto	0	5	2¼in. ditto ditto	1	1
2½in. ditto	0	6	2½in. ditto ditto	1	4

Wrought Parliamentary Hinges—

4in.	1	4	5in.	1	8
4½in.	1	6	6in.	1	10

Machine-made Brass Butts—

½in. light	0	2	3in. ditto	0	9
⅝in. ditto	0	2	¾in. strong	0	3
¾in. ditto	0	2¼	⅞in. ditto	0	3
⅞in. ditto	0	2⅓	1in. ditto	0	3½
1in. ditto	0	2½	1¼in. ditto	0	3½
1¼in. ditto	0	2¾	1½in. ditto	0	4½
1½in. ditto	0	3	1¾in. ditto	0	5
1¾in. ditto	0	3¾	2in. ditto	0	5½
2in. ditto	0	4½	2½in. ditto	0	9
2½in. ditto	0	6	3in. ditto	0	11

Cast Brass Butts—

1¼in. light narrow	0	4	2¼in. ditto ditto	0	6½
1½in. ditto ditto	0	4½	2½in. ditto ditto	0	7
1¾in. ditto ditto	0	5	2¾in. ditto ditto	0	8
2in. ditto ditto	0	5½	3in. ditto ditto	0	10
1¼in. medium	0	4½	2¼in. ditto	0	7
1½in. ditto	0	5	2½in. ditto	0	8
1¾in. ditto	0	5½	2¾in. ditto	0	10
2in. ditto	0	6½	3in. ditto	0	11
1½in. broad	0	5	2½in. broad	0	9
1¾in. ditto	0	5½	2¾in. ditto	0	10
2in. ditto	0	6½	3in. ditto	0	11
2¼in. ditto	0	7½			

Strong Cast-brass Butts—

1½in.	0	6½	4in.	3	3
2in.	0	11	4½in.	4	6
2½in.	1	1	5in.	6	0
3in.	1	6	5½in.	6	9
3½in.	2	6	6in.	7	6

Solid Machine-made Brass Butts—

1½in.	0	4½	2¼in.	0	6½
1¾in.	0	5	2½in.	0	7½
2in.	0	5½	3in.	0	11

Brass Back Flap Hinges—

½in. No. 735	0	3½	1¾in. No. 735	0	11
¾in. ditto	0	4	2in. ditto	1	4
1in. ditto	0	4½	2½in. ditto	2	0
1¼in. ditto	0	6½	3in. ditto	3	0
1½in. ditto	0	9			
1in. No. 3745	0	7	2in. No. 3745	1	6
1¼in. ditto	0	9½	2½in. ditto	2	10
1½in. ditto	0	11	3in. ditto	5	3
1¾in. ditto	1	3			

Brass Folding Screw Hinges—

¾in. sanded	3	6	1¼in. sanded	5	6
⅞in. ditto	4	0	1⅜in. ditto	6	6
1in. ditto	4	8	1½in. ditto	7	6
1⅛in. ditto	5	3			
¾in. polished	5	3	1¼in. polished	7	6
⅞in. ditto	5	6	1⅜in. ditto	8	6
1in. ditto	6	3	1½in. ditto	9	0
1⅛in. ditto	6	6			

Brass Counter Hinges—

3½ by 1⅞ No. 2645...	2	0	4¾ by 2⅜ No. 2645...	3	9
4½ by 1⅞ ditto	3	0	5 by 2¼ ditto	5	3
4½ by 2 ditto	3	6	6 by 2¾ ditto	5	9

Projecting Brass Butts—

2½in. sanded fronts, polished backs ...	1	2	4in. sanded fronts, polished backs ...	4	0
2¾in. ditto ditto ...	2	0	4½in. ditto ditto ...	4	11
3in. ditto ditto ...	2	2	5in. ditto ditto ...	5	10
3½in. ditto ditto ...	3	0			

	Per pair. s.	d.		Per pair. s.	d.
2¼in. all polished ...	1	5	4in. all polished ...	4	6
2½in. ditto ditto ...	1	10	4½in. ditto ditto ...	5	9
3in. ditto ditto ...	2	6	5in. ditto ditto ...	7	6
3½in. ditto ditto ...	3	6			
2¼in. extra wide, all polished	2	3	4in. extra wide, all polished	6	0
2½in. ditto ditto	2	9	4½in. ditto ditto	7	10
3in. ditto ditto	3	9	5in. ditto ditto	11	0
3½in. ditto ditto	5	0			

Best Polished Single-Steel Washered Brass Butts—

3in. No. 38 polished fronts	2	6	5in. No. 38 polished fronts	7	6
3½in. ditto ditto	3	6	5½in. ditto ditto	9	0
4in. ditto ditto	4	3	6in. ditto ditto	10	6
4½in. ditto ditto	5	9			
3in. No. 39 stronger	3	9	5in. No. 39 stronger	8	0
3½in. ditto ditto	4	3	5½in. ditto ditto	10	0
4in. ditto ditto	5	3	6in. ditto ditto	12	6
4½in. ditto ditto	6	3			

Best Polished Double-Steel Washered Ditto—

3 by 2⅛ strong, narrow polished fronts (size when open) ...	3	0	4½ by 2⅞ strong, narrow polished fronts (size when open) ...	6	3
3½ by 2⅜ ditto ditto	3	6	5 by 3⅛ ditto ditto	8	0
4 by 2⅝ ditto ditto	4	4	6 by 4 ditto ditto	12	0
2 by 1⅞ strong medium	2	0	4 by 3⅛ strong medium	5	0
2½ by 2 ditto ditto	2	9	4½ by 3¼ ditto ditto	6	6
3 by 2¼ ditto ditto	3	4	5 by 3¾ ditto ditto	8	6
3½ by 2¾ ditto ditto	4	0			
2½ by 2⅛ projecting	2	9	4½ by 3½ projecting	7	6
3 by 2¼ ditto ditto	3	6	5 by 4 ditto ditto	9	6
3½ by 2½ ditto ditto	4	0	6 by 4½ ditto ditto	14	0
4 by 3 ditto ditto	5	6			
3 by 2⅞ ditto stronger	5	6	5 by 4¾ ditto stronger	15	9
3½ by 3 ditto ditto	6	6	6 by 5 ditto ditto	24	0
4 by 3½ ditto ditto	9	0	6 by 7 ditto ditto	36	0
4½ by 4 ditto ditto	12	0			

Best Steel Joint, Rising Brass Butts—

3in. light	7	0	4½in. light	12	0
3½in. ditto	9	0	5in. ditto	13	6
4in. ditto	10	0			
3in. strong	9	0	4½in. strong	15	0
3½in. ditto	11	0	5in. ditto	18	6
4in. ditto	13	6			

Brass Lifting Butts—

1in. light	0	4	2¼in. light	0	7½
1¼in. ditto	0	4½	2½in. ditto	0	9
1½in. ditto	0	4½	3in. ditto	0	11½
2in. ditto	0	5½			
2in. strong	1	4	3in. strong	1	11
2½in. ditto	1	5			

Brass Stop Butts—

1½in. cast	0	11	3in. cast	1	9
2in. ditto	1	1	3¼in. ditto	1	11
2½in. ditto	1	4	3½in. ditto	2	3

Ditto, pressed—

1½in.	0	4½	3in.	1	0
2in.	0	5	3½in.	1	3
2½in.	0	9			

Brass Desk Hinges—

2in. medium	0	5	3in. medium	0	9
2¼in. ditto	0	6	4¼in. ditto	1	2
2½in. ditto	0	7	5in. ditto	1	6
2in. strong	0	5½	3in. strong	0	11
2¼in. ditto	0	7	4¼in. ditto	1	4
2½in. ditto	0	8½	5in. ditto	1	9

Cross Garnets, japanned iron—

6in. light	0	4	16in. light	0	7½
8in. ditto	0	4½	18in. ditto	0	10
10in. ditto	0	4½	20in. ditto	1	0
12in. ditto	0	5	22in. ditto	1	1
14in. ditto	0	6	24in. ditto	1	4
6in. strong, double-washered ..	0	5	16in. strong, double-washered ...	0	9½
8in. ditto ditto ..	0	6	18in. ditto ditto...	1	0
10in. ditto ditto...	0	6½	20in. ditto ditto...	1	3
12in. ditto ditto...	0	7	22in. ditto ditto ..	1	4
14in. ditto ditto...	0	7½	24in. ditto ditto...	1	8

Water Joints—

6in. japanned patent	0	4	16in. japanned patent	1	2
8in. ditto ditto ..	0	4½	18in. ditto ditto...	1	5
10in. ditto ditto...	0	6	20in. ditto ditto...	1	8
12in. ditto ditto...	0	8½	22in. ditto ditto...	1	10
14in. ditto ditto...	0	10	24in. ditto ditto...	2	3
8in. light welded...	0	5	18in. light welded...	1	1
10in. ditto ditto...	0	5½	20in. ditto ditto ..	1	5
12in. ditto ditto...	0	6	22in. ditto ditto...	1	9
14in. ditto ditto ..	0	7½	24in. ditto ditto...	1	11
16in. ditto ditto...	0	10			

Wrought Lancashire T Hinge—

6in. best quality...	0	5	14in. best quality...	1	5
8in. ditto ditto...	0	7	16in. ditto ditto...	1	8
10in. ditto ditto...	0	10	18in. ditto ditto...	2	3
12in. ditto ditto ..	1	1	20in. ditto ditto...	2	6

H Hinges—

3in.	0	4	8in.	0	7
4in.	0	4½	9in.	0	9½
5in.	0	5	10in.	0	10½
6in.	0	5½	12in.	1	1
7in.	0	6			

HL Hinges—

4in.	0	5	8in.	0	9
5in.	0	6	9in.	0	10½
6in.	0	7	10in.	0	11½
7in.	0	7½	12in.	1	4

Bent Box Hinges and Chest Hinges—

	Per pair. s.	d.		Per pair. s.	d.
4in. bent box hinges	0	3½	8in. bent box hinges	0	6
5in. ditto	0	4	9in. ditto	0	7
6in. ditto	0	4½	10in. ditto	0	8½
7in. ditto	0	5			
4in. chest	0	3	8in. chest	0	5
5in. ditto	0	3½	9in. ditto	0	5½
6in. ditto	0	4	10in. ditto	0	6
7in. ditto	0	4½			

Counter Tumbler Hinge—

1¼in. welded and polished	1	2	2in. welded and polished	2	9
1½in. ditto	1	6	2¼in. ditto	3	2
1¾in. ditto	2	2			

Trestle Joints—

6in. malleable iron.	2	2	12in. malleable iron	3	10
8in. ditto	2	6	14in. ditto	4	9
10in. ditto	3	0			

Hooks and Hinges, with plain or Gothic strap—

12in. wrought and welded	1	6	22in. wrought and welded	4	0
14in. ditto	1	11	24in. ditto	4	3
16in. ditto	2	6	30in. ditto	5	0
18in. ditto	3	0	36in. ditto	6	0
20in. ditto	3	9			

(These prices include the lug, with hook and plate-screw, or driving hooks are the same prices.)

Ditto, extra strong, No. 582—
Any size from 18in. up to 36in., 3½d. per lb.

Coach-house Hinges (no fixing is included with any hinges)—

		£	s.	d.
18in. Collinge's, with cup and lug and bolts	per pair	0	12	0
21in. ditto ditto	ditto	0	14	0
24in. ditto ditto	ditto	0	16	0
27in. ditto ditto	ditto	0	17	0
30in. ditto ditto	ditto	0	19	6
33in. ditto ditto	ditto	1	0	6
36in. ditto ditto	ditto	1	2	0
42in. ditto ditto	ditto	1	7	0
48in. ditto ditto	ditto	1	10	6
54in. ditto ditto	ditto	1	14	0
60in. ditto ditto	ditto	1	16	6
72in. ditto ditto	ditto	2	5	0

Add for stone, 1s. 3d. per pair extra.

18in. Imray's cup and ball	per pair	0	11	6
24in. ditto ditto	ditto	0	14	0
30in. ditto ditto	ditto	0	16	0
36in. ditto ditto	ditto	0	18	6
42in. ditto ditto	ditto	1	2	0
48in. ditto ditto	ditto	1	5	6
54in. ditto ditto	ditto	1	9	0
60in. ditto ditto	ditto	1	12	6
72in. ditto ditto	ditto	2	2	0
Extra for stone ditto	ditto	0	1	0

18in. Redmund's gate-hinges, with oil screw	per pair	0	13	0
21in. ditto ditto	ditto	0	14	0
24in. ditto ditto	ditto	0	15	3
27in. ditto ditto	ditto	0	17	0
30in. ditto ditto	ditto	0	19	3
33in. ditto ditto	ditto	1	0	6
36in. ditto ditto	ditto	1	2	3
42in. ditto ditto	ditto	1	6	0
48in. ditto ditto	ditto	1	11	0
54in. ditto ditto	ditto	1	17	0
60in. ditto ditto	ditto	2	3	0

18in. extra for stone steps	per pair	0	1	3
21in. ditto ditto	ditto	0	1	5
24in. ditto ditto	ditto	0	1	8
27in. ditto ditto	ditto	0	1	10
30in. ditto ditto	ditto	0	2	3
33in. ditto ditto	ditto	0	2	8
36in. ditto ditto	ditto	0	3	0
42in. ditto ditto	ditto	0	3	6
48in. ditto ditto	ditto	0	4	3
54in. ditto ditto	ditto	0	4	10
60in. ditto ditto	ditto	0	5	6

21in. Cottam's improved spherical hinges	per pair	0	12	6
24in. ditto ditto	ditto	0	13	9
30in. ditto ditto	ditto	0	16	6
36in. ditto ditto	ditto	0	19	6
42in. ditto ditto	ditto	1	1	9
48in. ditto ditto	ditto	1	11	6

Extra for stone steps.

21in.	per pair	2	0	36in.	per pair	3	6
24in.	ditto	2	3	42in.	ditto	3	9
30in.	ditto	2	8	48in.	ditto	4	3

18in. Gerish's, for gates opening one or both ways, and for self-closing, single	per pair	0	10	9
Ditto ditto double	ditto	1	8	0
24in. single	ditto	0	12	6
Ditto ditto	ditto	1	12	0
30in. ditto	ditto	0	15	0
Ditto ditto	ditto	1	17	6
36in. ditto	ditto	0	16	6
Ditto ditto	ditto	2	2	0
42in. ditto	ditto	1	0	0
Ditto ditto	ditto	2	10	0
48in. ditto	ditto	1	4	0
Ditto ditto	ditto	3	3	0
54in. ditto	ditto	1	9	0
Ditto ditto	ditto	4	0	0
60in. ditto	ditto	1	13	6
Ditto ditto	ditto	5	0	0

No extra for self-closing.

18in. prongs for piers.	1	6	42in. prongs for piers.	3	0
24in. ditto ...	1	8	48in. ditto ...	3	3
30in. ditto ...	2	6	54in. ditto ...	3	6
36in. ditto ...	2	9	60in. ditto ...	3	9

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UNDERPINNING BY BORE-HOLES.

A VERY ingenious system of securing foundations of quay walls, bridge piers, reservoir embankments, and other structures from further yielding or sinking is proposed by Mr. Walter R. Kinipple, M.Inst.C.E., in an article in *Engineering*. It consists of underpinning by means of grouting and stock-ramming, introduced through bore-holes or tubes, by which means the foundations are strengthened and widened, and the underlying strata made firmer. Mr. Kinipple says: "Should the wall be founded on sand or gravel, all that would be necessary would be to put down a series of bore-holes of, say, 3in. to 6in. in diameter at intervals along the line of wall, and several in the width of wall." These bores are made through the vertical section, and on each side of the wall, and will reach below the footings into the strata beneath. Pipes are then placed in the bore-holes and thick neat Portland cement grout is then passed through the pipes, or forced down, and this will fill up the crevices, rendering the foundation compact, and will cement the wall to the stratum of sand or gravel on which it is founded, and the stratum will also be cemented together or rendered firm for several inches, thus adding a new foundation course below the wall. A second solidified stratum can be added below the first if necessary. The bore-holes may in some cases be bored in oblique directions through the wall, so that the foundations could be widened by this means. If the underlying stratum is of clay, or of a clayey nature, the author proposes, instead of forcing down cement grout, to force down the tubes "clay worked up with hydraulic lime, sand mixed with iron filings and salammoniac, partly-set neat Portland or Medina cement concrete," such materials to be made up into convenient sized balls or rolls, put into the tubes, and rammed down with a heavy ram or monkey worked by a hand, or steam-ringing, or pile-driving machine, so as to force the balls into the soft stratum, and consolidate it. By this means the foundations can be widened beyond the base of wall. After one layer has been deposited, the bore-holes can be sunk deeper and another layer added. This plan is called "stock ramming," and is applicable to many purposes, such as stopping leaks under reservoir embankments. Mr. Kinipple has used these methods with successful results. Other details are given in the author's article, to which we refer our readers. The method appears to us to be applicable also to the foundations of buildings which have settled, in which case the bore-holes would be made in an oblique direction on each side of the wall. As a mode of underpinning, the plan has advantages over the ordinary laborious methods, as it can be done expeditiously and without disturbing or removing the soil on either side of the wall. It may also with advantage be used, as suggested, for raising walls and factory chimneys, or for bringing them back to the perpendicular.

OBITUARY.

THE death is announced, from Battle, Sussex, of Mr. Henry J. Hammon, the district surveyor for St. Luke, Old-street, and the liberty of Glasshouse-yard, E.C. Mr. Hammon, who was 81 years of age, was one of the three senior district surveyors in the metropolis, having been appointed in 1853.

A new public park at Powderhall, Edinburgh, provided at a cost of £12,000, was formally opened on Saturday.

The chairman of the Slaithwaite local board laid on Friday the corner-stone of new offices intended for the use of the local board. The buildings will form a block at the corner of Lewisham-road and Station-road, the site of the old almshouses. The building is being erected from plans prepared by Mr. J. B. Eagland, architect, Slaithwaite, at a cost of £2,000.

The Mayoress of Birmingham on Saturday opened the Alfred Stokes Memorial Convalescent Home, which has been established near Llandudno, in connection with the Birmingham hospitals. The property acquired is Tynycoed, situated about midway between Llandudno and Conway, and was the residence of the late Mr. D. P. Davies, timber merchant, Liverpool. The approximate cost of the purchase was £10,000. The reconstruction of the house for hospital purposes was executed under the direction of Mr. G. F. Felton, architect.

Building Intelligence.

Bristol.—Extensive additions are now in course of erection for Messrs. J. S. Fry and Sons, the well known cocoa and chocolate makers. The new building has three frontages, that to Union-street being 55ft., Nelson-street 125ft., ahd Little St. James-back 66ft. A portion of the ground and first floors will be used as offices, the remainder of the building as a factory. In addition to a well lit cellar lined with white glazed bricks, there are five floors constructed with cast iron girders and columns. The fronts up to the second floor are built with granite, the remaining portion being built of Cattybrook buff bricks, with red Mansfield frieze, strings, &c. The whole is carried out from the designs and under the superintendence of Mr. Rd. Milverton Drake, architect, of 24, College-green, Bristol.

Exeter.—New headquarters of the 1st Devon Rifle Volunteers at Exeter are just completed, and were opened on Monday. The buildings consist of a drill-hall 108ft. long, and 51ft. wide, and 17ft. high from floor to plate, having armoury stores and a shooting gallery below it. Gallery at one end and offices block. The elevations are carried out in red brick facings, with moulded and red rubble brick dressings. The roof of the hall is slated and sky-lighted, and other roofs are red tiled. Mr. R. Stark Wilkinson, A.R.I.B.A., 14, Furnival's Inn, E.C., is the architect; Messrs. Tree and Bolley, of Exeter, were the contractors, and Mr. Glanfield acted as clerk of the works. The buildings cost £3,100.

Falstone, North Tyne.—The small church of Falstone, on the borders of Scotland, was almost entirely destroyed by fire in December, 1890, only the walls of the tower and 3ft. or 4ft. from the ground of the main walls escaping destruction. It has now been rebuilt with the addition of a small chancel, from plans by Messrs. Plummer and Burrell, of Newcastle. The tender of Messrs. Martinson and Welton was accepted in April, 1891. The choir seats and reading-desk, and the external doors are all of oak. The church is internally ceiled with a waggon-vaulted boarded roof, divided into panels. The whole of the door hinges, vestry, and other fittings are made from the architect's design, and the style is Late 13th century.

Herringworth.—The Bishop of Peterborough reopened on Friday the parish church of Herringworth, which has undergone restoration under the superintendence of Mr. H. M. Townshead, architect, of Peterborough. The work has been executed by Mr. S. Halliday, of Stamford. The chancel has been restored at the cost of Mrs. Tryon, as a memorial of her late husband Lieut.-Col. Tryon. There is a new pitch-pine roof over the chancel. In the nave the greater part of the roof is new, and is mainly of oak. The roofs have been releaded. The nave seats are of pitch-pine. The old Jacobean pulpit has been restored. The nave has been refloored with wooden blocks. The screen has been restored, and the galleries in the church removed. The upper part of the steeple has been rebuilt. During the progress of the work part of an old Norman font was found in the wall of the chancel, and the relic is to be inserted in some conspicuous place in the building. The total amount expended on the church during the last five years, including the cost of the organ, is about £1,700.

Linlithgow Palace.—The estimates are about to be submitted to Parliament for Scottish parks and pleasure grounds, and it is understood the case of Linlithgow Palace will be brought up by the member for the Falkirk Burghs, Mr. W. P. Sinclair. In view of the discussion which will then probably take place, a report on the palace, prepared by a committee of the Council of the Edinburgh Architectural Association, has just been circulated among Scottish members of Parliament by the Corporation of Linlithgow. The report describes the present condition of the palace, and narrates the steps required to restore the buildings to their condition prior to the fire of 1st February, 1746. Looking to the extent of the buildings, the report says the sum of £500, which the committee understood is proposed to be included for repairs, by two instalments in the estimates of this year and next, is quite insufficient to insure the safety of the buildings.

Rochester Cathedral.—The following resolution was passed at the last meeting of the Society of Antiquaries:—"That the Society of Antiquaries of London hears with much regret that a 15th-century pinnacle on the north-west angle of the nave of Rochester Cathedral church is in danger of destruction in order that a modern pinnacle, professing to represent that which stood in the place in the 12th century, may be set up in its stead. The society is informed that Mr. J. L. Pearson, the architect who has recommended the destruction, has, nevertheless, reported that such destruction is not necessary, and the Society therefore desires to intercede as strongly as it can for so interesting a feature in the past history of the fabric. The Society also hopes that it may be possible to retain unaltered the curious 18th-century north-west tower, the destruction of which, it is informed, Mr. Pearson has also advised."

CHIPS.

A new Constitutional Club is about to be built at Crediton, from plans by Mr. Dobell.

The W. H. Smith Memorial Committee have adopted a second design submitted by Mr. J. P. Seddon, F.R.I.B.A., for the stained-glass window to be placed in St. Margaret's Church, Westminster. The selection of a bust for the House of Commons from the models sent in has been left to Sir M. Hicks Beach and Sir J. Puleston.

New works for the improvement of the water supply of the Salop and Montgomery Lunatic Asylum has just been completed at a cost of £3,800. The works have been carried out under the direction of Mr. Thos. S. Stooke, St. John's-hill, Shrewsbury, and Messrs. Crossley Bros. of Manchester, were the contractors for the machinery. The well was sunk by Messrs. Timmins, of Runcorn.

Mr. Walton, Local Government Board inspector, opened an inquiry at Nelson, Lancs, on Tuesday week, into an application by the corporation for sanction to borrow £10,000 for electric lighting purposes, £10,000 for purchasing a cemetery, £7,500 for the erection of a public library and technical school, and for the appropriation of land now possessed by the corporation as a site for the technical school.

Mr. John Grundy, of 30, Duncan-terrace, London, N., has just received an order to supply his popular warm air ventilating fire-grates to the new board school at Great Yarmouth, this being the fourth board school he has warmed by his patent fire-grates for the same architects—viz., Messrs. Bottle and Olley, of Great Yarmouth.

The new church schools, Horbury Bridge, are being warmed and ventilated throughout by means of Shorland's patent Manchester grates, the same being supplied by Mr. E. H. Shorland, of Manchester.

In an article on 25 years' changes in Newcastle, the *Daily Chronicle* of that city mentions that since 1867 the population has nearly doubled, and the number of houses has increased from nearly 14,000 to 26,000. The number of builders has risen from 68 to 113, while there are now 53 architects instead of 18 as in 1867, but the number of civil engineers has diminished from 21 to 10.

A cenotaph to the late Mrs. Mayne has been placed in the north chancel aisle of Teffont church, Wilts. It is of white alabaster and Devonshire marble, and has been executed by Messrs. Hems and Sons, of Exeter.

The following gentlemen having satisfied the examiners at the examination held in London on the 1st and 2nd ult. of the Incorporated Association of Municipal and County Engineers, certificates have been granted them by the council of the association: H. J. Hills (Clapham), C. Lloyd (Chatham), C. P. Andres (Highgate), J. B. Bradshaw (Gateshead), F. W. Cross (Walsall), G. Fitton (Reading), C. W. Shacleton (Coseley), L. J. Veit (Ipswich), F. S. Yates (York), J. R. Anderson (Norwood), J. B. Ball (King's Cross). The next examination will be held in Leeds on Friday and Saturday, Sep. 29 and Oct. 1.

Messrs. Lockerbie and Wilkinson, Birmingham, who have the order to make the electric light fittings in wrought brass for the new municipal buildings, Bombay, have just completed the three large electroliers for the central hall. They are magnificent specimens of wrought metal work of the value of upwards of £100 each, exclusive of glass and fitting. The designs for them, and for another one for a lesser hall, are the architect's, and have been made specially to order, but the rest have been selected from Messrs. Lockerbie and Wilkinson's catalogue of wrought metal-work, which we think architects should have a copy of, and they certainly need not fear for the execution if these are a fair specimen of Messrs. Lockerbie and Wilkinson's capability of dealing with wrought metal work.

CONTENTS.

Errors in Design 723
Special Trades 723
Shadows in Perspective.—III. 724
Building Stones of Great Britain: their Crushing Strength and other Properties 725
Uniform Loads for Bridges 728
Prices.—XXXVII. 729
Underpinning by Bore-Holes 730
Obituary 730
Building Intelligence 730
Our Illustrations 731
The BUILDING NEWS Directory XIII
Wayside Notes 750
Competitions 751
Correspondence 751
Intercommunication 752
Legal 753
Legal Intelligence 753
Parliamentary Notes 753
Water Supply and Sanitary Matters 753
Our Office Table 754
Trade News 754
Meetings for the Ensuing Week 754
Tenders 754

ILLUSTRATIONS.

TWO DESIGNS FOR THE NEW CATHEDRAL OF VICTORIA, BRITISH COLUMBIA.—FERGUSLIE PARK, PAISLEY.—CHRIST CHURCH, WOKING. — GLASGOW ART GALLERIES AND MUSEUM. — SKETCHES OF DECORATIVE FURNITURE. — PATENTED PLANS FOR ARTISANS' DWELLINGS.

Our Illustrations.

CHRIST CHURCH NEW CATHEDRAL COMPETITION, VICTORIA, B.C.

WE last week reviewed all the competition designs for this building, and to-day we publish some illustrations of the design marked by the motto "New and Old." We described this plan so fully that nothing remains to be added here in reference to it. Sir Arthur Blomfield, A.R.A., asks us to explain that no one was associated with him in making his award in this competition. Mr. B. Edmund Ferrey, F.S.A., as we were officially informed, was appointed to select ten of the best designs out of all that were submitted, and these ten were to be laid before Sir A. Blomfield, who in turn has chosen three. From these three the building committee out in Vancouver will settle which design shall be determined upon. We first printed this information in the BUILDING NEWS for April 8th last, and we now understand that the programme, so far as the professional assessors are concerned, has been carried out. The terms were somewhat unusual, which may account for the circumstance that, although about eighty forms of conditions of competition were applied for, only fourteen designs were received, and Sir Arthur Blomfield, as a matter of fact, saw them all.

FERGUSLIE PARK, PAISLEY.

THE illustration shows the new building recently erected. It occupies the site of several pre-existing dwellings, the date of the oldest part of these being about 1680. Such portions of the older portions as could be incorporated in the new work, are appropriated as entrance vestibule, library, and one or two minor apartments. To accommodate the remaining parts of probably the oldest house, which stands detached at a little distance, the new buildings have been extended laterally, producing a long stretch, comparatively unbroken, to the south, an arrangement which does not lend itself readily to effective treatment in the style adopted, which is a phase of Scottish Baronial. The details are prompted by the examples of Scottish domestic work of the 16th and 17th centuries, in which greater freedom and artistic effect are found. Internally the rooms are treated effectively with wainscot-panelling on the walls of the chief apartments and halls, and the ceilings are relieved with plaster rib mouldings, the intermediate spaces in which are filled with low-relief ornament. The kitchen, scullery, and relative offices are built entirely with specially coloured small-sized bricks in the interior, and throughout fitted and finished with the latest improvements for their respective requirements. Special arrangements have been introduced for ventilating the whole ground-floor, and in respect of drainage special attention has been paid to it so as to secure thorough efficiency. The structure is built of Polmaise freestone, the slating being from Elterwater. The cost of the building is £18,000. The builders are Messrs. John Mitchell and Son, Edinburgh, the whole having been designed and carried out by Mr. Hippolyte J. Blanc, A.R.S.A. The illustration is from a drawing now on view at the Royal Academy.

CHRIST CHURCH, WOKING.

THE foundation stone of this church was laid in 1887 by the Duchess of Albany, the nave alone being then built at a cost of £3,900. The chancel and flèche are now being completed at a further cost of £2,600. The church, when finished, will hold about 800 people. The building is purposely kept very simple externally, but the interior is more imposing from the effect of length and spaciousness. The chancel and sanctuary are well elevated above the nave, and unbroken by a chancel arch, it being eventually intended to place a screen at the division of nave and chancel. The waggon roof has massive principals which rest on wall shafts running down to the nave floor. The flèche is entirely of timber, and is covered with oak shingles, part of the construction being visible inside the church. This feature will form a landmark in Woking, as it is over 100ft. high, and rises 54ft. above the ridge. The materials externally are red brick, and the roofs are covered with tiles. Internally the church is also faced with red brick, the pier arches, &c., being of stone. The font was executed at a cost of £200, and is of marble and alabaster, with a canopy over; the carving was by M. Nicholls. The church is heated by Mr. Grundy's hot-air system. The architect is Mr. W. F. Unsworth, F.R.I.B.A., and the builders are Messrs. J. Harris and Son, of Woking. The drawing from which the illustration is taken is in this year's Academy Exhibition.

GLASGOW ART GALLERIES, KELVINGROVE.

WE illustrated Messrs. Malcolm Stark and Rowntree's design in the final competition for these buildings by giving their elevations and plans in our issue for April 29th last. To-day the perspective which is herewith printed completes the drawings of their design. Shortly we intend to illustrate Messrs. Honeyman and Keppie's design.

SKETCHES OF DECORATIVE FURNITURE.

THE XV. Century Cabinet of Moorish design was recently sketched at Christie's. It is similar to one at the Escurial, and we have seen another almost identical to that now illustrated, at No. 18, Carlton House-terrace, recently the property of Messrs. Murrietta. The front is made to fall, and rests, when open, on two bearers, which slide out to receive it. The ornamental plates, of which we give larger scale sketches, are of gilt metal, on a background of red velvet. The stand is modern, the shell and foliage of same being of ormolu. The XVI. century "draw-out" table, though from the Cologne Museum of Industrial Art, is most probably of Italian workmanship. It has been illustrated by "Le Moniteur des Architectes." On the same sheet will be found sketches of the brass lock-plate and hinges from the travelling-chest of Katharine of Arragon, queen of our Henry VIII., and are evidently of Spanish origin. There was nothing unusual in the chest, the decorations being chiefly in brass-nail studding, the Tudor crown, and monogram K.R. being wrought in this manner. From this fact, it would appear to have formed part of that unfortunate lady's bridal outfit.

HUGHES'S SYSTEM OF ARTISANS' DWELLINGS OR WORKMEN'S COTTAGES.

THE difficulties, discomforts, and unhealthy arrangements of the present existing small cottage property built upon the principle of double houses have for some time been engaging the attention of practical men. Mr. Thos. Hughes has endeavoured to overcome the objection to these small dwellings in a manner sufficiently simple in detail to admit of its being adopted by reason of economy of building material with a maximum of room area and minimum of cost. The provisions of the Public Health Act have rendered necessary some more perfect system of building artisans' dwellings for the purpose of insuring ventilation by a through current of air in the dwellings than formerly used to be the case. The previous system of building houses back to back precludes any efficient system of ventilation, seeing that the entrances and windows are on one side of the house only. Mr. Thos. Hughes has invented and patented a system of building small cottages and artisans' dwellings, which is intended to remove the grave objections urged against existing back-to-back houses, and provides a double dwelling with windows back and front, with a back and front house arrangement, so far as having two classes of houses are concerned for tenants of different rentals. His plan of building can be modified to suit any particular plot of land, or to suit any number of dwellings that may be required to be built upon any one block; but in all cases it is contrived to maintain the essential features of through ventilation of back and front rooms to each tenement or each house. The accompanying drawings show on the ground floor a living-room 14ft. 4½in. by 14ft., wash-up and pantry 8ft. 3in. by 5ft. 6in., outer passage 3ft. wide, with a staircase therefrom to the upper floors. On the chamber floor is a bedroom 14ft. 4½in. by 14ft., and a smaller one 9ft. by 8ft. 3in., and on the attic floor there is one room 14ft. by 12ft., and a smaller room 9ft. by 6ft., thus giving four upper rooms. Where it is not desirable to have dwellings three stories in height, and yet to have three sleeping rooms, this may be obtained by enlarging the living-room 15ft. in length, and dividing the chamber over, which would give two bedrooms, one 14ft. by 8ft. 9in., and the other 11ft. by 6ft., also another bedroom 9ft. by 8ft. 3in. In cost, the smallest class of dwellings, without cellar, may be erected for about £60 each and upwards, according to the locality and facility for obtaining materials and labour.

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CHIPS.

When the new clock for St. Paul's Cathedral was ordered, the time was only to be shown on the two old south and west dials, which were to be improved and illuminated at night. The makers of the clock, Messrs. John Smith and Sons, of Derby, have received instructions to put up a third dial facing down Cannon-street. Each of the dials is 17ft. across.

The York Architectural Association will make an excursion to Leeds to-morrow (Saturday) afternoon, and by permission of Mr. George Corson, F.R.I.B.A., will visit the new infirmary.

The first meeting of the Archæological and Architectural Society of Durham and Northumberland for 1892 will be held to-day (Friday), at Widdrington, Chibburn, Woodhorn, and Newbiggin-by-the-Sea.

The foundation-stone of St. Cuthbert's new parish church, Edinburgh, was laid on Friday with considerable ceremony, in which the Marquis of Tweeddale, Her Majesty's Lord High Commissioner to the General Assembly, took a conspicuous part. Mr. Hippolyte J. Blanc, A.R.S.A., of Edinburgh, is the architect for the reconstruction, Mr. White the builder, and Mr. Thomson the clerk of works.

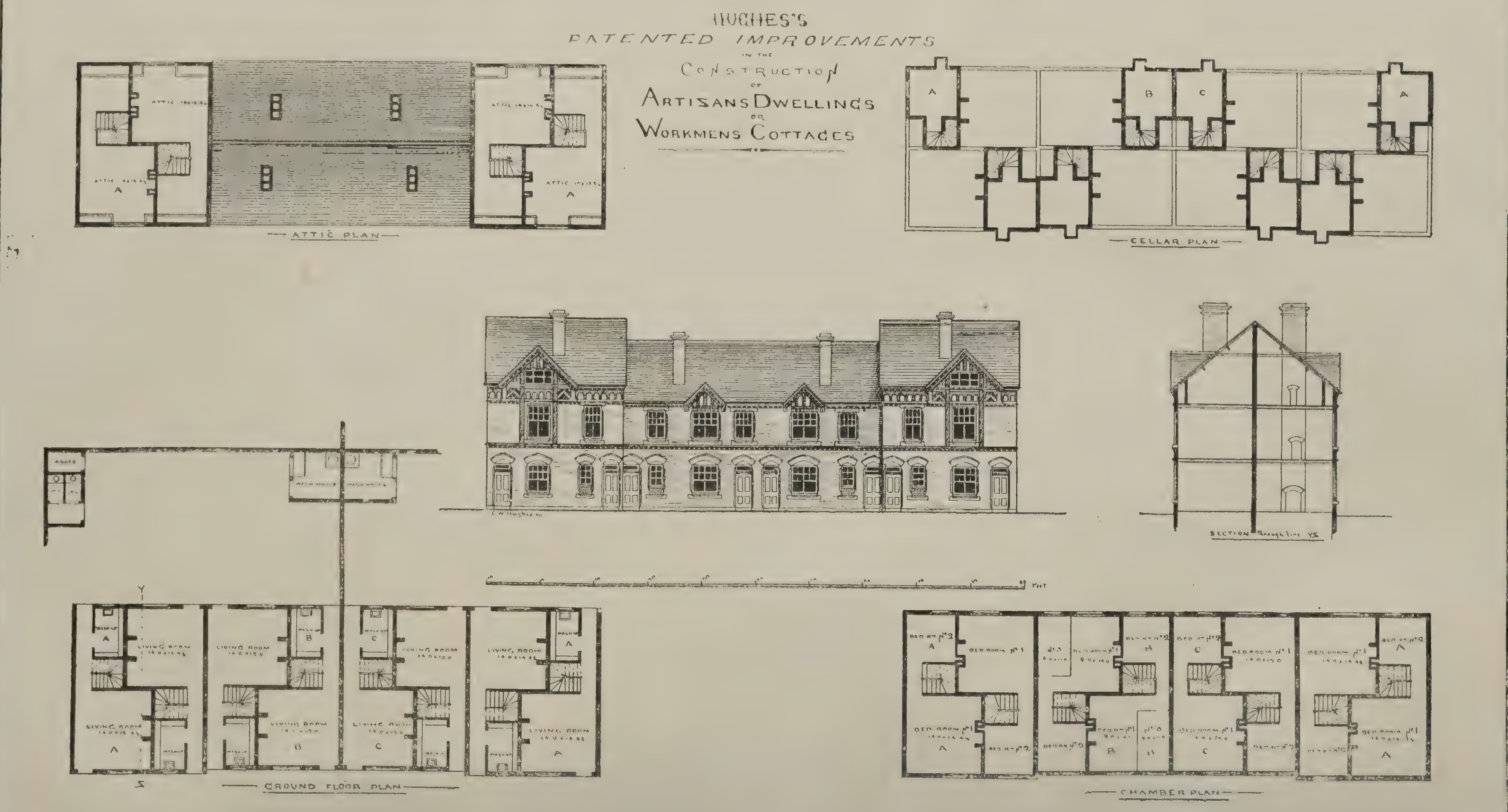
The first batch of 1,000 photographs which have been taken by members of the Birmingham Photographic Society in prosecution of the scheme for a photographic survey of Warwickshire, have been formally presented to the Mayor, on behalf of the citizens of Birmingham, at the Art Gallery in that city.

The foundation-stone of the new chancel of All Saints' Church, Steelhouse-lane, Wolverhampton, was laid last week. The addition of the chancel will increase the accommodation to 700 seats.

On a motion by the Lord Provost as to the application of the equivalent grant for the purpose of widening Bristo-street, the burgh engineer has submitted to the Lord Provost's Committee of the Edinbugh Town Council plans which he had prepared, showing the area proposed to be dealt with. The burgh assessor's return of the rental was reported, and the committee resolved that the plans should be submitted to the Magistrates and Council for their consideration. The cost is estimated at from £20,000 to £30,000.

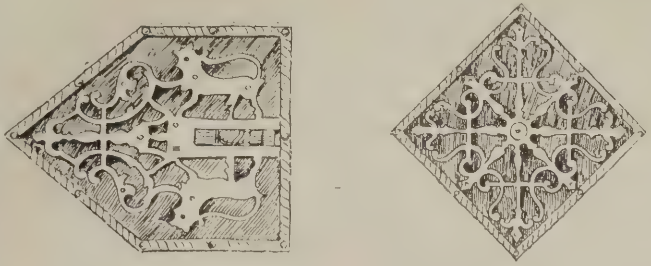
Subject to the approval of the Board of Trade, the new loop line between Nunhead Junction and Bickley, on the London, Chatham, and Dover Railway, will be open for traffic on Wednesday next, June 1. A new service of about 35 trains each way has been arranged, but some of these will not proceed farther than Catford, the principal station on the new section. Peckham Rye and other much-used stations will benefit by the trains, which will run through from Bickley and Catford to St. Paul's.

The Leicester Art Gallery, which has been enlarged at a cost of £5,000, while £5,000 has been spent in the purchase of additional pictures, was reopened on Friday.

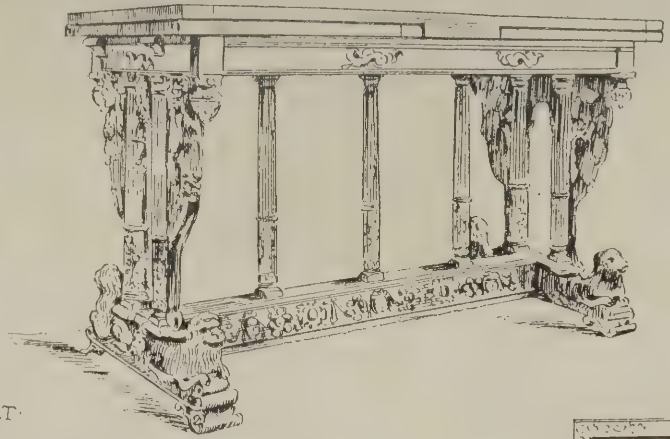


HUGHES'S
PATENTED IMPROVEMENTS
IN THE
CONSTRUCTION
OF
ARTISANS DWELLINGS
OR
WORKMENS COTTAGES

SKETCHES OF DECORATIVE · FURNITURE

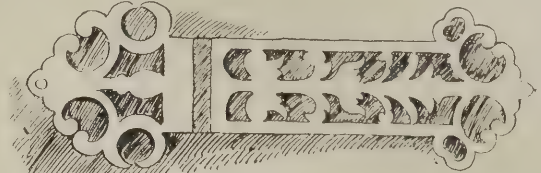


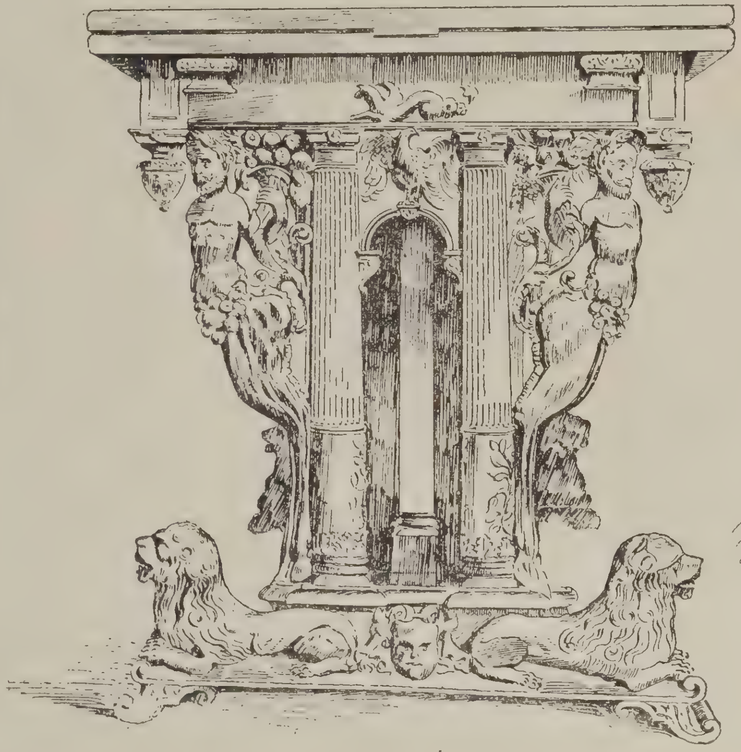
DETAILS · OF ORNAMENTATION · TO · MOORISH CABINET ·



VIEW · OF · TABLE

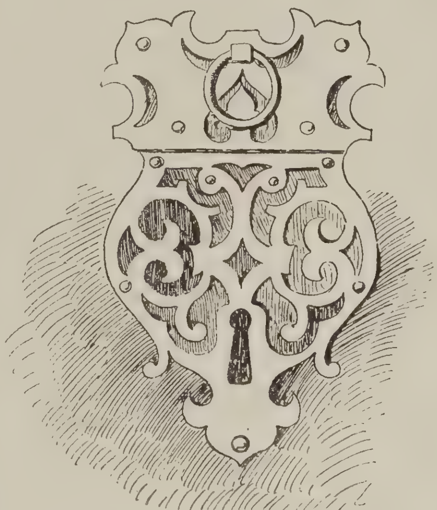
DETAIL · OF · BRASS BINDING · TO TRAVELLING · CHEST · OF · KATHERINE · OF ARRAGON

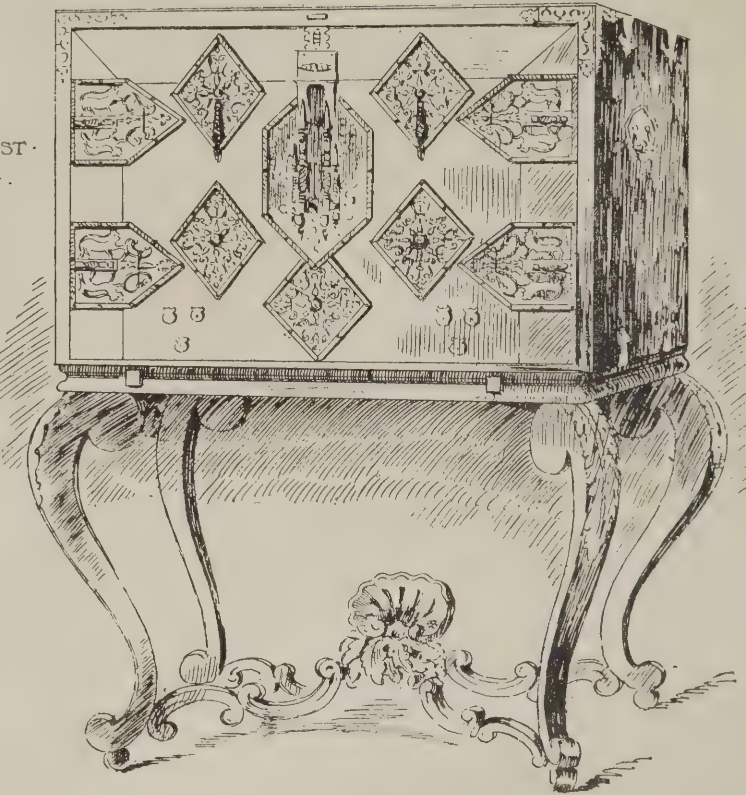




XVI · CENTURY "DRAW-OUT" TABLE ·

LOCK · PLATE · TO · TRAVELLING CHEST · OF KATHERINE · OF · ARRAGON ·





XV · CENTURY · MOORISH · CABINET · ON · STAND ·

E Chancellor · del.

Dellagana Sc.

WAYSIDE NOTES.

THERE has been some little correspondence in the *Standard* as to the nature of a "profession." "What is a profession?" asked "Lex," promulgating a theory that there were only three professions—the Church, Medicine, and Law. Whereupon, as may be imagined, protests were made from all sides. The Engineers protested, and the Army and Navy found champions to put forward their claims to be entitled to be termed professions. Had "Lex" communicated his opinions to the *Times* instead of the *Standard*, one might have had reasonable suspicion of his being an old friend endeavouring craftily to beguile the unwary architect into fruitless discussion. Anyhow, in so much of the correspondence as came under my own observation, architects refrained from putting forward any plea to recognition as professional men. It might have been all the same in any case, for the public—knowing that architects cannot agree as to whether they should look upon their calling as a profession or an art—are not likely to trouble to decide the point themselves.

All will look hopefully to the result of the new effort to produce coins of the realm of a design worthy of the age. The Chancellor of the Exchequer has announced that he has received the report of the committee on the proposed change, has adopted their decision, and thinks the coins will be immediately issued. It will be something to have a coin worth looking at—from an artistic point of view. It is impossible to glance through the most trumpery collection of old coins without wishing for a modern coinage at least up to the level of past efforts in this class of designing. One need not look further than comparatively recent English coins.

The outlook of things generally should be improving. I noticed a few evenings ago an advertisement of a "unique detached villa." Among the advantages named was that it was "architect built." This seems promising, and a good one "up against" Mr. Buggins.

On Saturday afternoon I visited (temporarily) the new Claybury Lunatic Asylum at Woodford Bridge. Thanks to the courtesy of Mr. Wise, the clerk of the works, I was enabled to make a tour of this extensive building in company with some friends. It is a very creditable work to all concerned. So large an area of ground does the building cover, and so numerous are the apartments, corridors, &c., that the first glance at the ground plan is town-like. The arrangements made for the care of the unfortunate men and women destined to occupy the various blocks of day-rooms and dormitories seem to be most complete. The church provided is quite a fine building. Throughout the asylum the work is excellent, and that there are few points where one can say that there is a want of grasp of the subject is greatly to the credit of Mr. Hine, the architect who has had to deal with so extensive an undertaking.

From the station at Woodford the building has the appearance of a new town suddenly arisen on the summit of the Woodford Bridge hill. I see that the present contractor has laid down a railway from the station to the works, which should be the making of success. I understand that the building is to be opened in a few months' time, although there seems a good deal of work yet to be done, everything being on so large a scale. The general appearance of Woodford Bridge is perhaps not improved by the asylum crowning the summit of the hill, which has always appeared to me to afford a most pleasant Essex prospect when viewed from the railway between Woodford and George-lane stations. It is surprising how little the village has altered during the dozen odd years that have elapsed since I resided therein. The fine old houses, with their unusually large and pleasant gardens, remain as heretofore, and the simple old plaster cottages are much as they were. A modern "pub" or two and a coffee-house have intruded, and some abortions in the shape of small houses now spoil the aspect of the lower green on the hillside rising from the bridge over the Roding; but with these exceptions the place remains the pleasant Essex village it has ever been.

The bruised worm will turn, even when it is a competition committee. I see that the baths committee of the Shrewsbury town council have curled up like a hedgehog over the matter of the tenders for the proposed baths. It is time that some committee or another did so. Tenders in excess of stipulated amounts are now common objects of competitive life, and it is unfair to the unsuccessful competitors.

When is the competition for a municipal hall for London going to appear? I see that, in moving the adoption of the report of the Special Committee of the London County Council on Organisation, Mr. Hutton spoke in favour of the recommendation that the Establishment Committee should have authority to make inquiries, and to report to the Council with reference to obtaining a site for the erection of a new county hall and municipal offices. As there is an idea that many of the present offices are unhealthy, and as the present Council, though averse to improvements—in concrete things—in a general way, might, and probably would, be only too willing to see money expended in new offices, the "hall" may yet be built. Architects would not complain. It would, in all probability, mean a competition, which, if not actually epoch-making, as the cant phrase goes, would involve a building of considerable magnitude.

Respecting the attempt to adopt the "betterment" principle, to which I referred last week, Parliament has, as I anticipated, refused to sanction the County Council's proposal, while passing the bridge scheme itself. Evidence before the Select Committee showed that there was objection, if not annoyance, at the proposal to make certain residents near the proposed Cromwell-road Bridge pay a portion of the cost of the work. It did seem an exceptionally ill-fitted occasion to try and push through a principle evidently obnoxious to Londoners generally. A bridge, of all things, is to the benefit of the public. Some few tradesmen might profit by the increased facilities for extending their businesses afforded by the new bridge; but they would comprise a very insignificant minory of the whole number proposed to be "bettermented"—to still further improve this beautiful, new English slang. There is more reason for making special charges of this kind in the case of street widening where some few shopkeepers might be actually benefited. But here again is a difficulty, as is proved by the result of the Council's move in the matter of the Strand improvements. It would be much better to make improvements here and there, and all share the expense. One might reasonably wonder when the Council intends doing any true municipal work of this kind. Less "betterment," and more improvement, is what is wanted.

Here really *is* a chance for competing architects! I wish the Reformed Episcopalians of Liscard a little common-sense and fairness, and I hope you will illustrate the *magnum opus* they are likely to get in return for their liberal patronage of architecture:

> Christ Church (Reformed Episcopal), Martin's-lane, Liscard.—Building Fund. — 21, Clarendon-road, Seacombe, 23rd May, 1892. Dear Sir,—I have been instructed by my committee to invite plans from local architects for a brick church with stone facings, to be erected on the site of the present iron building, which it is intended to remove further back on the ground inside the railings. The cost of the church not to exceed £1,700, exclusive of sitting accommodation, and to seat not less than 5 0 persons. The committee have decided to give £5 for the design which they may consider best. If you are willing to send in a design, I shall be pleased to receive same on or before Wednesday, 1st proximo, and shall further be glad to know whether, in the event of your being chosen as architect, you would tender for the removal and re-erection of the present iron building, and if so, what you would remove it for, and how long would the removal take? The committee do not bind themselves to accept the lowest or any tender or design. Should you require any further information, I shall be pleased to afford you same on hearing from you.—Yours faithfully, JAMES L. DUGUID, hon. sec.

The result of the A.A. election of officers will be a matter of considerable interest. I do not say that it will either temporarily or permanently solve the problem "Architecture—a Profession or an Art?" but it will show whether the art-ists are going to be taken seriously in earnest or left to continue their agitations unheeded—for all practical purposes. The average A.A. member—the "elector" in this architectural election—is rather an excitable individual, and, like the British workman, liable to be led away by the promises of agitators or "candidates." It is just possible, therefore, that the outcome of Wednesday's voting, which will be announced at this evening's general meeting, may be a little revolutionary. I trust it may be otherwise.

Promises of high art and the handicrafts may be said to be the attraction held out to the young men of the Architectural Association by those who would see a split in a body that heretofore has worked harmoniously through good and ill report. This is all very alluring to the student who as yet knows little or nothing of the particular world he will have to face. Whilst one is in the pupilage and probationary stage, and has not launched on the troublesome sea of independent practice, it is but natural to take a high-flown view of the "art or profession." Later experiences then come rather heavy. Possibly many of the apostles of the new cult and exponents of the new architecture have forgotten their early difficulties, or, perchance, reclined upon a bed of roses all their lives. Whichever may the case, they are ill-occupied in putting impractical ideas into the heads of young students. GOTH.

CHIPS.

Mr. F. W. Bowden, of the Liverpool city engineer's office, has been appointed surveyor to the local board of Garston, in succession to Mr. H. Titus Wakelam, M.S.A., now county surveyor of Herefordshire.

A new rosary altar and reredos, the work of Mr. Wall, of Cheltenham, were inaugurated at the Dominican Priory Church at Woodchester last week. The additions are executed in white Painswick stone.

The council of the Manchester Whitworth Institute have now completed the arrangements for the transfer of the Technical School and the School of Art to the corporation, and have further paid over to the corporation the sum of £23,629 9s. 9d., being the amount, with interest, assigned to the schools by the guarantors of the Royal Jubilee Exhibition of 1887 out of the profits of that undertaking.

In order to celebrate the completion of a residence at Munstead for Mr. C. D. Heatley, the workmen of Mr. E. Mitchell, of Shalford and Godalming, the contractor, were entertained at supper at the Little George Inn last week. Mr. Lutvens, the architect, presided, and Mr. W. Waller, the foreman, represented the firm.

The death is announced of Mr. T. J. N. Hayman, retired builder, of Teignmouth, whose demise took place on Wednesday week. Deceased, who was forty-seven years of age, erected some of the principal business and other premises in the town and neighbourhood.

The sale of the Egremont pictures, which took place on Saturday at Christie's, realised £11,474. The prices, especially for portraits, ranged high. An unfinished "Blue Boy," by Gainsborough, fetched 1,240 guineas, while two portraits by Reynolds of the Hon. Mrs. W. F. Wyndham and Mrs. Blake went for 1,200 and 1,000 guineas respectively.

The premises and workshops of Mr. H. Brigden, builder and contractor, Tooting Graveney, were destroyed by fire on Sunday morning.

For new elementary schools about to be built at Highcliffe, Winchester, the plans of Messrs. Pink, Farrow, and Nisbett, architects, of that city, have been adopted. The buildings are to be faced with native flints.

Out of 45 applications, Mr. Isaac Wood, of Pudsey, has been appointed surveyor and inspector of nuisances to the Yeadon local board. The salary is £90.

The medical staff of the Edinburgh City Hospital for the treatment of infectious diseases have supplied a report to the Public Health Committee of the Edinburgh town council, in which an enlargement and partial reconstruction of the hospital is recommended.

The opening of the "Jubilee" bridge across the London, Chatham, and Dover Railway Company's line near New Brompton Station took place on Wednesday week. The bridge is built of brick, replaces a level crossing, and cost £1,400, raised by subscription. Messrs. Ball and Gammon, of Rochester, were the contractors.

The Southport Spring Exhibition of Pictures closed on the 14th inst., with the result that 95 pictures have been sold for £2,272 18s. The Mayor has purchased the picture entitled "Happy is the Bride that the Sun shines upon," by James Hayller, and presented to the corporation for their permanent collection.

COMPETITIONS.

BANGOR. — Messrs. Baker and Hughes, F.R.I.B.A. and A.R.I.B.A., of Lower Phillamore-street, London, and Avonia Buildings, Bangor, have just been awarded a prize of four guineas, which was offered by the committee of the St. Mary's Church (Bangor) Musical Festival for the best set of drawings for public hall and suite of committee-rooms to cost £4,000. The selected plans to become the absolute property of the committee. There were only two sets of drawings sent in; the other set, by Mr. D. J. Roberts, were considered to be nearly equal in merit to those sent in by Messrs. Baker and Hughes, and a special prize of one guinea was accordingly awarded to him.

BURSLEM.—In a recent competition for two blocks of schools for the Burslem School Board, the plans of Mr. A. R. Wood, of Tunstall, were adopted. One school at Longport is for 400 boys and girls, and the other is at Hill Top, for 390 boys, with alterations to the board-room, &c.

HOLYHEAD.—The county council of Anglesey have, subject to the approval of the Home Office, adopted plans submitted in competition by Mr. Lloyd Williams, of Denbigh, for the proposed new police-station at Holyhead. A premium of £40 was offered, and an assessor was appointed.

RINGSEND.—A technical and fishery school is about to be erected at Ringsend, near Dublin. The plans of Mr. W. Kaye Parry, M.A., architect, of Dublin, have been selected in open competition for the proposed buildings, which will be commenced forthwith. A correspondent's letter with regard to this competition will be found in another column.

WILLESDEN.—The designs of Messrs. Newman and Newman, of 31, Tooley-street, London Bridge, have been selected in competition for the new free library to be built at Willesden Green.

CHIPS.

Mr. H. L. Hinnell, Assoc.Mem.Inst.C.E. (Proctor and Hinnel, C.E., Bolton), has been elected a Fellow of the Chemical Society. Mr. Hinnell's proposers were Professor Campbell Brown, D.Sc. University College, Liverpool; Professor H. B. Dixon, F.R.S., Owens College, Manchester; Dr. Sergeant, county medical officer of health; Dr. Adams, medical officer of health, Bolton.

Mr. H. Adye, M.S.A., of Bradford-on-Avon, has been elected surveyor to the improvement commissioners of that town, in succession to Mr. Stansfield Brun, resigned. There were 21 candidates.

The Mersey Docks and Harbour Board have had in consideration a scheme for the relaying of the dock lines of railway, and the widening of the dock entrances and passages, in connection with the scheme adopted by the board for the improvement of the Canada, Huskisson, and adjoining docks. The proposed additional outlay over that originally contemplated is £180,000.

At a meeting of subscribers to the Bishop Harvey Goodwin memorial, held at Carlisle on Monday, it was resolved that Mr. Hamo Thornycroft, R.A., be employed to furnish a recumbent effigy of the late prelate, to be placed in Carlisle Cathedral upon a site to be selected either in the north transept or in the north wall of the sacrarium.

New public baths have been erected at Aston Manor, Birmingham, and special attention has been paid to the ventilation, which is carried out on the Boyle system, the latest improved form of the self-acting air-pump ventilator being adopted for the extraction of the vitiated air.

The Duke of Connaught will lay the memorial stone of the new parish church of St. John, Forton, Gosport, on Monday, June 27th. The church is being built from designs by Sir A. Blomfield and Sons.

On the hill top of Ranfurley, Bridge of Weir, N.B., another feu has been utilised by Mr. F. D. Alexander, by the erection of a villa and stables in Old English style, from designs by Mr. Davidson, of Paisley.

The Select Committee of the House of Commons on the General Powers Bill of the London County Council arrived at a decision on Wednesday which authorised the construction of the Cromwell-road Bridge, but on the chairman's casting vote refused the imposition of a "special improvement rate" to be levied upon all property within a radius of half a mile.

Beaumont Park, in the eastern part of Plymouth, purchased by the town council at a cost of £24,000, was opened on Wednesday. The grounds are nine acres in extent, and beautifully wooded.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

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One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 0d. (or 6dols. 30c. gold). To France or Belgium, £1 6s. 0d. (or 33fr. 30c.) To India, £1 6s. 0d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two the minimum charge being 5s. for four lines.

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SITUATIONS.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is ONE SHILLING for TWENTY-FOUR WORDS, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., L., LI., LIII., LIV., LVIII., LIX., and LX. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

STAMFORD STUDENT. (We published a drawing of combined table and desk for an architect, designed by J. H. Goodman, in our issue of August 22, 1884—p. 297 Vol. XLVII.)

RECEIVED.—J. Melville.—F.R.G.S.—A.S. and Co.—R. M. (Wolverhampton).—T. S. and W. Co.

"BUILDING NEWS" DESIGNING CLUB.

EIGHTH LIST OF SUBJECTS.

J.—A gentleman's small shooting-box, for site on a Scotch Moor, to be built of stone and roofed with slate. The ground line of the land is presumed to fall one in ten from the N.E. to S.E., the latter being the aspect for the front of the house. The accommodation to provide a good porch and entrance hall (12ft. wide), one living room 24ft. by 18ft., or of that area, and adapted for billiards. A small smoking-room and a gun-room, kitchen and offices, five best bedrooms, and two servant's rooms. No half timber to be used, and an exposed position is contemplated. Scale, 8ft. to the inch. Two plans, two elevations, section and view. Plans, if desired, may be of 16ft. to the inch. The game larder to be detached from the house.

DRAWINGS RECEIVED.—"Black Prince," "Peterborough," "Old Postage Stamp," "Sector," "Ivanhoe," "Nil Nisi Bonum," "Graham," "Umbopa," "Unitate Fortior."

Correspondence.

THE SHELLEY MEMORIAL.

To the Editor of the BUILDING NEWS.

SIR,—In your last issue, referring to Mr. Onslow Ford's Shelley Memorial, you say, in speaking of the general composition and grouping, "in the arrangement of which we believe Mr. Basil Champneys, the architect, assisted Mr. Ford."

The grouping and composition were settled before I even saw the Memorial, and owe nothing whatever to any suggestion of mine.—I am, &c., BASIL CHAMPNEYS.

Athenæum Club, Pall Mall, S.W., May 23.

THE LINCOLN RESTORATIONS.

SIR,—It would be interesting to hear from those who say they object to all restoration where they consider the inevitable line should be drawn. If Wren's library must be preserved, no matter how incongruous with its surroundings, as an historical landmark, why should it be permissible to pull down the old Law Courts at Westminster, or even the dismal row of shapeless houses in Abingdon-street, although these are now the only inharmonious features in the finest group of Gothic buildings in the world? Indeed, the Egyptian porch which until last year formed the entrance to St. Margaret's church ought, on this principle, to have been preserved as exemplifying the architectural taste of the English people in the 18th century.

Certainly Wren's buildings are not to be mentioned with the creations of most so-called Classic architects, since he infused into them an originality and picturesqueness rarely or never met with elsewhere. Still, his style is after all exotic and totally irreconcilable with purely English architecture. Consequently, unless real damage would be involved, it is well not to be too exacting as to leaving his work untouched, especially as it was merely by accident that there happened to be any of it at Lincoln.

The thing most to be regretted is the absolute destruction of the Mediæval buildings which so greatly added to the charm of the cathedral, and were of entirely consonant style; yet much less is said about that than the mere removal to a more favourable position of Wren's structure.

EVACUSTES A. PHIPSON.

Selly Oak, 19th May.

COMPETITION: PEMBROKE TECHNICAL SCHOOL, RINGSEND, DUBLIN.

SIR,—Last month competitive "plans were invited for the erection of the Pembroke Technical Schools" at Ringsend, near Dublin. The time for submitting the designs was not stated, but "the committee were to meet on the 3rd of May to consider such plans." A premium of £40 was to be paid, but to form part of the fees if the architect was employed to superintend the erection of the buildings.

Presumably designs were submitted. I sent in one on the 3rd inst., which elicited the following prompt response:—

"Pembroke Technical School,
"2, Kildare-place, Dublin, May 4th, 1892.

"DEAR SIR,—I regret to say that the designs which you were so good as to send in with reference to the above proposed school have not been selected by the committee, others of a more suitable nature having been under consideration.

"Will you be so good as to send, at your convenience, for your designs, which are to be had at the Pembroke Estate Office, Wilton-place.—Believe me, very faithfully yours, "ARNOLD GRAVES, Hon. Sec."

I think it is not only unprofessional, but unmanly to whine over the result of competitions, and in this case I have no personal feeling whatever in the matter; but as this technical school seems to have made a vigorous start by an object lesson in *jobbery*—one of the few profitable (if not honourable) branches of industry remaining to us at this side of the Channel, which attained gigantic expansion at the time of the Union, and continues to flourish still within well-defined limits—it may be permissible to notice a few peculiarities on this occasion. First, "the committee" is somewhat a misty body, no doubt known to, and knowing, friends, but as far as I know unknown to the public. If it represents the Pembroke Township Commissioners, they are rather a heterogeneous body with a considerable admixture of builders attached and unattached, and a tincture of C.E., whatever these indefinite and undefinable hieroglyphics imply. The chairman is an ex-builder, indeed an XX, for he is an ex-Lord Mayor, having a handle at each end of his name, the prefix being a little away, as if it was "shook out of a sack" in a scramble, and he also took double-first honours and profits, with extras, in both our universities.

A select private (self-appointed) committee of one or more of the commissioners lately got designs for artisans' dwellings from an architect who graduated and rusticated near the slopes of Sleivenamon and the Comeraghs, in acquiring technical knowledge of the cubic contents of wheel-barrows and broken stones in road-side depots, and that water tables were properly laid, and gullets not choked so that a good flush would not clear them. Although some of the "trade" and other commissioners objected to the unauthorised plans being adopted, they ultimately received an *ex post facto* sanction.

There is a mysterious vagueness in the "Hon. Sec.'s" communication as to "others of a more suitable *nature* having been *under consideration*."

No mention was made of whose design was selected, if any, at a public meeting relative to the Pembroke Technical School on the 16th inst., nor was it referred to at all in the local professional publication since issued; but I have seen a local evening paper giving a meagre perspective of the "Ringsend Technical School," without the architect's name. The authors of successful competitive designs seldom hide their blushing honours; but putative parents are not so ready to proclaim the children of adoption or abduction.—I am, &c., Competitor.

CONSTRUCTIONAL DRAWING, No. 3.

Sir,—Admitting that the introduction of a hinged joint, as suggested by Mr. Gilbert, would be more scientific construction, his argument that in the simpler form adopted the strain in the diagonal tie-rods would be practically nil is not conclusive. It is difficult to see how, with the beam loaded as shown, the least tendency to deflection can do otherwise than produce a strain in one of them simultaneously with that in the 2¼in. rod, the rigidity of the strut being taken into consideration.

From Mr. Gilbert's remarks on the gallery, he has evidently failed to see its purpose. It is erected merely for the occasional use of the crane attendant; hence its light construction. In actual practice it has been found to meet the requirements admirably, and no difficulty has been experienced in obtaining the planks of the required lengths.

I gather from the remarks on the specification that your correspondent is better acquainted with those of an architectural than an engineering character. It is not usual in the latter, in specifying for structures in timber or stone, to go into the same amount of detail as in the former, the stipulation being that the material should be sound and suitable for the purpose. In the case in question, the general term "Baltic red fir" fully answers the purpose, as it is obvious that timber from either port, fulfilling the requirements specified, would be suitable.

The vagueness referred to in speaking of the cast iron is, I think, rather imaginary than real, as metal capable of sustaining the test proposed would in every way meet the requirements.

Mr. Gilbert is perfectly correct in suggesting the substitution of the term "Baltic fir" for "Baltic pine."—I am, &c.,

Stuart H. Davies.

TERRACOTTA SCUM.

Sir,—I am as much disinclined for controversy as Messrs. Edwards Bros. and Co. are, and, like them, I do not intend to write to you again on this subject after my present letter.

Am I to understand that Messrs. Edwards Bros. and Co., by their few-weeks-old patent, have power to stop myself and others from using scum mixtures on damp goods—a thing which we have been doing for many years? I think not.

I cannot say how long it is since coal-tar was first used for the purpose; but I myself saw it used 25 years ago. The faces of the damp goods were dipped in it. Tar, however, has its drawbacks: it makes a mess of everything it comes in contact with, and unless the goods are burnt to a high pitch of fire, the colour underneath the tar is not a good red.

My mixture is clean, and the colour of the goods underneath it is first class, even if they are only burnt to a moderate pitch of fire. It is this mixture that I intend patenting, and not any special method of applying it. The goods in a damp state are dipped in it, just as in the case of coal-tar.—I am, &c, R. A. R.

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The old parish church of St. Lawrence, Jersey, was reopened on the 18th inst., after having undergone extensive restoration works, at a cost of nearly £4,000. The work, which was begun in 1889, is just completed under the direction of Mr. John E. Trollope, of Messrs. Giles, Gough, and Trollope, 28, Craven-street, Charing-cross, London. The lectern, sanctuary chairs, and other works of carving have been executed in oak by Mr. Harry Hems, of Exeter.

The Lancashire and Yorkshire Railway (Various Powers) Bill has passed through Committee of the House of Commons. The total length of new lines authorised is about three miles, and the amount of new capital sanctioned is £396,000, with borrowing powers for a further sum of £132,000.

Intercommunication.

QUESTIONS.

[10779.]—**Government Exams.**—I should be glad if any of your readers could oblige me with the following information respecting Government examinations of Architect and Surveyor's department, for which I should like to enter:—The subjects examined in? How often they take place, and where at? Fees, if any? If there is a medical exam. to pass? Salary received? How often appointments are made, or any other information in reference to same?—Examinate.

REPLIES.

[10775.]—**Hydraulics.**—To find the velocity and discharge in a sewer running at any depth, and laid to any fall, use is made of the formula—

$V = 55 \times (\sqrt{D \times 2F}$ where
V = velocity in feet per minute,
D = hydraulic mean depth,
F = fall in feet per mile.

The discharge per minute is—

$V \times$ sectional area of sewage flow.

For example: Required (*a*) the velocity of flow, (*b*) the discharge of a 24in. circular-pipe sewer, running 8in. deep at a fall of 1 in 800 (6·6ft. per mile). Find (1) sectional area of flow in feet; (2) Hydraulic mean depth—

$$(1)\quad \frac{(Ch \times H \times \frac{2}{3}) + \frac{H^3}{2\,Ch}}{144} = \frac{(22 \times 8 \times \frac{2}{3}) + \frac{512}{44}}{144}$$

$$= \frac{117{\cdot}3 + 11{\cdot}7}{144} = \frac{129}{144} = {\cdot}89.$$

Where—
Ch = chord,
H = height of flow.

$$(2)\quad \frac{Sa}{Wp} = \frac{{\cdot}89}{2{\cdot}5} = {\cdot}356.$$

Where—
Sa = sectional area,
Wp = wetted perimeter.

$$(a)\quad 55 \times (\sqrt{D \times 2F} = (55\sqrt{{\cdot}356 \times 13{\cdot}2})$$
$$= 55 \times \sqrt{4{\cdot}6992} = 55 \times 2{\cdot}16$$
$$= 118{\cdot}8\text{ft. per minute velocity.}$$

(*b*) $118{\cdot}8 \times {\cdot}89 = 105{\cdot}732$ discharged in cubic feet per minute. The hydraulic mean depth of a circular pipe running half-full is ·125 of the diameter.—F. W. Nagle, Assistant Borough Surveyor, Tiverton.

[10776.]—**Damp.**—If "Moseley" will try two coats of "carbolineum avenarius," laid on in the ordinary form of painting, I think he will find this will prevent the damp he speaks of.—J. Nuttall.

[10777.]—**Heraldry.**—Cussans' "Handbook of Heraldry" (1869), a (I think) 7s. 6d. volume, containing 350 illustrations, is a handy work I have had within arms' length these twenty years past. At least a quarter of a century ago, Mr. John Norton, the architect, gave me a wee book (4½in. by 3½in., and containing about sixty pages and a lot of plates) called "The Handbook of Heraldry, or Accidence of Armorie," in the simplest terms and the shortest possible space. It was published anonymously in 1844, and is an exceedingly useful little work. "Practical Heraldry," by Worthy (1889), is another comprehensive book on the same topic I have on my shelves. It contains 124 illustrations, and much condensed matter. Ordinaries are such figures which, by their ordinary and common use, have become peculiar to the science of heraldry. Charges are divided into two classes, ordinaries and common charges. Some writers divided the former into honourable ordinaries and sub-ordinaries; but Cussans does not make this difference. The chief, pale, bend, bend-sinister, fess, bar, chevron, saltire and cross, are ordinaries, and they all have their diminutives. Of crosses, besides the cross proper produced by two perpendicular lines meeting two horizontal ones near the fesspoint, and the saltire, which is but a variation of the cross formed by a combination of the bend and bend-sinister, there is the Latin cross, Tau cross, cross couped, cross potent, cross paté, Maltese cross, cross fleurie, cross botenné, cross pommé, cross patonce, cross moline, cross fourché, cross recerclé, cross nowy, cross quadrate, cross rayonnant, pointed cross, cross crosslet, &c. The half of the shield which appears on the left side is called the dexter, and that on the right the sinister; but in blazoning, the words "right" and "left" are never used.—Harry Hems, Exeter.

[10777.]—**Heraldry.**—An excellent work on the subject is John E. Cussans' "Handbook of Heraldry" (Chatto and Windus), price 7s. 6d. 1. The nine honourable ordinaries are the chief, the pale, the bend, the bend-sinister, the fess, the bar, the chevron, the saltire, and the cross. A full definition of these would take up too much space for this column, but they will be found in any work on heraldry. 2. The "dexter" side of the shield is the right hand when held in front of the body, not when looking at the face. A bend-sinister is an honourable ordinary—a band of colour or metal drawn from the sinister chief to dexter base of the shield—i.e., from left to right; when charged it occupies one-third of the shield, when uncharged one-fifth. The bar-sinister or scarpe is a diminutive of the bend-sinister—considered a mark of illegitimacy.—Clarke Ashworth.

[10777.]—**Heraldry.**—The "nine ordinaries" in heraldry are those simple yet important and highly-esteemed charges which had their origin like so many ornamental features in contemporary Gothic—viz, in construction—the idea being given most probably by strengthening pieces which were secured to the shields in these and various other forms. The fitness of them to take a place and become generally incorporated in various combinations in arranging the charges on shields must, therefore, naturally have suggested itself. The names are as follows:—(1) The chief, (2) the fesse, (3) the bar, (4) the pale, (5) the cross, (6) the bend, (7) the saltire, (8) the chevron, and (9) the pile. They may any of them be bounded by straight lines, or by either of the various border lines used in heraldry. The chief occupies rather less than the upper third of the shield horizontally, the fesse about the middle third, or rather less; the bar is a little less than a fifth the area of the shield, and may be placed anywhere except in chief or fesse. There are usually two or more bars. The pale is placed vertically in the middle third of the shield; the cross, of course, speaks for itself, being, as it were, a pale and a fesse combined—namely, having vertical and horizontal arms. There is, however, a great variety of crosses. The bend is of about the same area as the pale or fesse, but inclines from the dexter chief to the sinister base; the sinister bend, when it does occur, crosses the field in the opposite direction. The saltire is a combination of the two latter, taking the form of a St. Andrew's cross. The chevron will be recognised by the resemblance to a portion of an ordinary Norman moulding, or may be described as what remains when the two upper arms of a St. Andrew's cross are removed, and, lastly, the pile is in the form of an isosceles triangle, either singly or in groups, usually issuing from the chief towards the base, like wedges. Several of these charges have diminutives, but to give all conditions attaching to these would extend this reply beyond reasonable limits. If, however, "T. M." is the same querist as "X.," to whom I replied the other week, I shall be glad to give him any further information in my power if he will communicate with me as under. The dexter and sinister sides of the shield are those to the right and left-hand respectively, when held in front of a person as in use, not when looking at the front of it. For works on the subject, I would advise "T. M." to inquire of Mr. Batsford, 52, High Holborn, whom I have always found to be very obliging in such matters. But if "T. M." is in the neighbourhood of London, he will have abundant facilities for pursuing the study of heraldry which a provincial man does not possess.—W. Dreybeller Watson, Bentley-road, Doncaster.

[10777.]—**Heraldry.**—In reply to your correspondent "T. M.," I have the pleasure to send the following information:—The ordinaries are: the fesse, the bar, the pale, the bend, the chevron, the chief, the cross, the saltire, and the pile. The bend, which is always assumed to be dexter unless otherwise described, is drawn from the dexter chief (*i.e.*, the right top corner of the shield regarded as held in front of the body) to the opposite lower corner, viz, the sinister base. The bend-sinister is drawn in the reverse direction. A bar being an ordinary drawn across the shield horizontally, the use of the term bar-sinister is as incorrect as the also common error that it is a mark of illegitimacy. The error may possibly arise from the bend being termed a "barre" in French heraldry. Although it would be dangerous to assume that any book on the subject is absolutely correct, Clarke's "Introduction to Heraldry" is an excellent work which may be studied to advantage.—Geo. W. Eve.

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CHIPS.

The Bishop of Gloucester and Bristol has reopened Moreton-in-the-Marsh parish church after considerable improvement and enlargement from the plans of Mr. E. H. Lingen Barker, of Hereford. Three galleries have been pulled down, the chancel has been extended 10ft. eastward, the south aisle 7ft. southward, and a chancel aisle added on the south side.

The ventilation of Yardley Board Schools has been intrusted to Messrs. Baird, Thompson, and Co., ventilating engineers, London and Glasgow.

It has been resolved by the London County Council that whenever it is proposed to build a railway bridge across the river Thames within the council's jurisdiction, a footway or footways for the convenience of the public shall form part of the structure, or their sanction to that proposal will not be granted.

The Middlesex County Council decided on Wednesday to enter into a provisional agreement for the purchase of the Alexandra Palace and Park for £275,000, on the condition that the option of purchase remain open till March 31st, 1893.

Captain Simonds, chief officer of the Metropolitan Fire Brigade, gave evidence on Tuesday before the Select Committee which is inquiring into the regulations of theatres. He thought it most desirable that the firemen employed at places of amusement should belong to the brigade, and believed the lessees of theatres and music-halls would be willing to recoup the County Council the sum that would be required for the payment of the additional men.

In the case of the application for discharge from bankruptcy, William Francis Swan and John Charles Clay, trading as Swan and Clay, Lower Edmonton and Tottenham, builders, the discharge has been suspended for four years.

Dean Bradley has granted permission for the erection of a memorial to Dr. Arnold, of Rugby, in Westminster Abbey, the site offered being the vacant arch of the wall arcading in the baptistery, next to that in which is placed the bust of John Keble, and in the immediate vicinity of Wordsworth's seated statue. The memorial will face the bust of the son, Thomas Arnold.

The mining and engineering section of the Labour Commission sat again on Friday. Mr. F. Chandler, general secretary of the Amalgamated Society of Carpenters and Ship Joiners, and Mr. W. Mosses, general secretary of the United Pattern Makers' Association (both organisations having their headquarters in Manchester), gave evidence. Reference was made by them to the value of arbitration in the settlement of disputes, and they urged that there should be more efficient inspection of workshops.

Legal.

THE RATING OF OWNERS.

THE first principle of rating law is that rating shall be be levied and be chargeable upon the occupier of each house assessed. This is the broad and simple rule, and so occupiers or tenants are always primarily and directly liable for the poor and other local rates, whatever arrangement they may make as to payment with their own landlord. But in regard to small occupiers up to a certain limit, which in the Metropolis is £8 per annum rateable value, the Act 32 and 33 Vict. c. 41 provides that the owners shall be rated instead of the occupiers. In carrying out this plan it is declared that the Overseers of the Poor may agree with such an owner as to the rating, and may allow him a commission or deduction not exceeding 25 per cent. in the rates. In the recent case of "Overseers of Norwood *v.* Salter" (*Times*, 15th May), the owner of a house not then rated at more than £8 per annum had in 1889 made an agreement with the local authorities that he would pay the rates for three years on being allowed a deduction of 25 per cent. This agreement was acted upon down to September, 1890; but at that time the rateable value of the house in question was raised to £11 5s., though it had not been altered. The overseers therefore regarded the agreement with the owner as being at an end, and they rated the occupier in the usual way. The Justices of Middlesex having refused to issue a distress warrant under the circumstances, the case came before a Divisional Court by way of appeal.

The judges have now decided this very important question in favour of the overseers, and, indeed, it is not easy to see how they could have done otherwise. The statute making the owner chargeable with the rates, and giving him the benefit of this large commission, can only apply within the rental limit there stated, for unless brought in as an exception, the ordinary law of rating must take effect. When, therefore, this statutory limit is exceeded, the agreement fails and ceases to be operative. If under such circumstances an agreement made when a house was upon a low assessment could be enforced after it had been raised, the effect would be that other ratepayers would be unjustly treated in having to contribute more than their proper share to the parish funds. Owners of small tenements must, therefore, remember that any agreement they may make as to rates can only continue in force as long as the rateable value of the premises is within the limit fixed by statute, and when that is passed, their agreement falls to pieces. Then the occupiers will be rated, and this in turn may affect the rentals received by the owners. FRED WETHERFIELD, Solicitor.

1, Gresham Buildings, Guildhall, E.C.

NOTE.—All questions for reply in this column must be headed "BUILDING NEWS," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

J. C.—LIGHT AND AIR.—SHRUB.—I do not think the planting a shrub as stated against the window would be any breach of the covenant not to build within the limit mentioned. There is apparently no ancient light to the window, and as the covenant only can be relied upon, it must be construed strictly. Nor would the shrub so seriously reduce the light as to be a cause of action of itself.

F.W.C.—BUILDING.—VIEW.—There is no right of view recognised by the English law, and unless you can show that the proposed building will reduce your light or air, there would be no ground for an action for damages against anyone. In regard to the question of the line of building, you might write to the Local Government Board, giving grounds of complaint.

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Bishop Westcott has laid the foundation-stone of the new church of St. Hilda, at Wallfield, Sunderland, which is to be erected as a memorial of Bishop Lightfoot. The estimated cost of the church is £5,072. The architects are Messrs. Hicks and Charlewood, of Newcastle-on-Tyne, whose plan was selected in a competition in 1888.

A new Roman Catholic school-chapel in Comet-road, Barry Dock, has been formally opened by the Bishop of Newport. The architects of the building, which is Domestic Gothic in style, and provides accommodation for 240 children, were Messrs. Seward and Thomas, of Cardiff and Barry Dock, and the builders were Messrs. E. R. Evans and Brothers, of Holton-road, Barry Dock, the amount of the contract being nearly £1,700.

LEGAL INTELLIGENCE.

ALLEGED LIBELS BY A TIMBER MERCHANT.—In the Queen's Bench Division on Monday, the Lord Chief Justice and a Special Jury heard two actions for libel brought against Mr. Herrick Dalby, timber merchant, of Banbury, by Lord North and his lordship's estate agent, Mr. G. F. North, F.S.I. The libel consisted of reflections on Lord North and his agent, it having been erroneously asserted by defendant that Lord North and his agent were in the habit of neglecting the duty which landowners owed towards tradesmen in their neighbourhood of spending money amongst them, but went elsewhere for the purpose of procuring what was required. The plaintiffs offered to accept an apology, but this the defendant was reluctant to give. After hearing the evidence of Mr. G. F. North, however, the defendant admitted he was not justified in what he did, and his counsel observed that not the slightest imputation could rest upon either Lord North or his agent. A verdict for the plaintiff for 40s. in each case was then taken.

IN RE MARK GENTRY.—The bankrupt was a builder, contractor, brickmaker, and farmer, carrying on business in London-wall, also at Langthorne Works, West Ham-lane, and Sible Hedingham, Essex. He filed his petition in January last, and application was made to Mr. Registrar Hope on the 19th inst. for the approval of an arrangement which has been agreed to by the creditors for the payment of a composition of 7s. 6d. in the pound, and the withdrawal of certain claims amounting to about £4,000. The liabilities amounted to £38,454, of which £14,659 were expected to rank, and the assets were returned at £6,124. It appeared from the Official Receiver's report that the bankrupt, in 1884, lost £2,500 in the London Impermeable Collar and Cuff Company, and he had also incurred a loss of £3,000 in connection with the *West Ham Guardian*. It was reported that the debtor had contributed to his bankruptcy by rash and hazardous speculation. His Honour made an order approving the scheme, and annulling the bankruptcy.

PARLIAMENTARY NOTES.

ELECTRIC AND CABLE RAILWAY SCHEMES FOR LONDON.—The joint committee of the Lords and Commons have reported on the six electric and cable railway schemes purposed to be sanctioned within the metropolis by Bills before the House. They state that, in their opinion, electricity is a most valuable motive power, and that cables are very useful on steep gradients. They, therefore, recommend that the different Electric and Cable Bills should be allowed to go forward. They suggest that, as the companies acquire the sub-soil without consideration, they should be required to provide an adequate service of cheap and convenient trains for the working classes. They see no reason why the Great Northern and City Railway could not be considered by select committees in the ordinary count. The other projected new lines—the Central London Railway, the Waterloo and City Railway, the Baker-street and Waterloo Railway, and the Hampstead, St. Pancras, and Charing Cross Railways—are dealt with separately in the report. As it does not appear that the construction of these railways would prevent that of other lines which the necessities of London might from time to time require, the committee hold that no reason has been adduced for advising the postponement of the consideration of any of the Bills. The capital proposed to be authorised in connection with the six schemes is nearly six millions.

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Albert Walters, builder, has been committed for trial by the stipendiary magistrate at Chatham on charges of having stolen building materials value £25, a further charge of having obtained sums of money by false pretences having been dismissed.

The experiment which is being made in Jersey-street, Ancoats, Manchester, in the housing of the working classes, is meeting with a large measure of success. Of the 147 dwellings provided in the large block of buildings once used as a mill, and recently reconstructed from plans by Mr. J. C. Maycock, of Manchester, 96 are now occupied. The building, which we described in our issue of the 29th ult., p. 618, is to be formally opened by the Mayoress a few days hence.

The Jewel Room in the British Museum has just been enriched by the addition of the enamelled gold cup, set in pearls, which was given to Charles VI. of France by his uncle, Jean, Duc de Berry. It was afterwards in the possession of the Kings of England from Henry VI. to James I., who presented it in 1604 to Don Juan Velasco, Constable of Castile. The cup has been recently purchased by private subscription, in addition to a grant from the Treasury of £2,000, making a total of £6,600. The Duke of Northumberland, the Earl of Crawford and Balcarres, Lord Saville, and the Goldsmiths' Company were each donors of £500 towards the purchase fund.

WATER SUPPLY AND SANITARY MATTERS.

BERKHAMSTEAD.—An inquiry was held at Berkhamstead, Herts, on the 11th and 24th inst. by Major General Crozier, one of the inspectors of the Local Government Board, in the matter of an application by the Berkhamstead rural sanitary authority for sanction to a loan of £16,000 for works of sewerage and sewage disposal designed by Mr. A. M. Fowler, of Stockport. The scheme was opposed by Mr. Barnard Lailey (instructed by Messrs. Bullock and Penny) on behalf of an influential body of ratepayers, whose consulting engineer, Mr. Urban Smith, gave evidence against the scheme. The inquiry was closed, and the inspector's report will follow in due course.

HENDON.—On Saturday the Chairman of the Local Board (Mr. John Warburton), with the members of the board, opened the new pumping station which has been erected near Cool Oak-lane to deal with the sewage from what is known as the Station district, forming part of the low level area. The latter comprises about 1,100 acres. The board instructed their engineer (Mr. S. S. Grimley, A.M.I.C.E.) to prepare the necessary drawings, and in June, 1891, the tender of Mr. James Dickson, of St. Alban's, was accepted for the sewer, which was constructed with double-lined pipes, 18in. diameter, surrounded with Portland cement concrete. The tender of Mr. Joseph Meston, of Westminster, was accepted for sewering and making up three roads leading to the outfall sewer, and the tender of Messrs. Crossley Bros., of London and Manchester, was accepted for the machinery. The total cost of the works has been £6,358, being well within the engineer's estimate. Although the outfall sewer had to be laid about 8ft. below the high-water mark in the Canal Company's reservoir and closely adjacent thereto, and during the wet year of 1891, the leakages from all sources is not more than 1-14,000th part of the capacity of the sewer.

KING'S NORTON RURAL SANITARY AUTHORITY.—On Friday, May 20, Mr. Rienzi Walton, M.I.C.E., held an inquiry at King's Heath as to an application by this authority to borrow £10,500 for works of sewerage and sewage disposal for the village of King's Norton and the surrounding district. The scheme, which was prepared by Mr. Robert Godfrey, A.M.I.C.E., the engineer and surveyor to the authority, was fully set forth and explained by him to the inspector, after which he was subjected to a severe cross-examination by Messrs. Hugo Young, barrister-at-law on behalf of several landowners, and J. S. Pritchett, barrister-at-law on behalf of Messrs. Baldwin, the owners of Sherborne Mills. The scheme, which provided for deposition, filtration, and irrigation, was supported very fully by Mr. E. Pritchard, M.I.C.E., Westminster and Birmingham, and much of the opposition to it was based on the fear that it was the intention of the authority to establish a destructor on part of the site. After a protracted inquiry the inspector was driven round the district to be dealt with and to the land proposed to be utilised as a sewage farm. The inspector will make his report to the Local Government Board in due course.

THE METROPOLITAN WATER SUPPLY.—The Select Committee of the House of Commons has decided to grant the London County Council, *quâ* Council, all the powers for which they ask in their Water Supply Bill—viz., powers to raise money for inquiries; to negotiate with the Water Companies; and to promote Bills in Parliament. They will not, however, sanction at the present time a new water authority for London, such as would be involved in a joint committee of the Corporation and County Council, as proposed in the Bill. The sum authorised to be expended by the County Council on inquiries has been limited to £10,000.

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On Saturday the foundation stones of a new chapel, under the auspices of the United Free Gospel Church, were laid at Bell-hill, St. George's, Bristol. The new chapel, which will cost £700, will be constructed of Pennant stone, with freestone dressings and Gothic windows. The contractor is Mr. G. Bryant, of Queen-street, St. George's.

St. Wilfrid's Church, Preston, the mother Roman Catholic church of the most ancient Lancashire borough, has just been reopened, after costly external decoration. The style of the new exterior —for the old walls have been cased—is that of the Early Italian Renaissance, and the plans were prepared by Mr. S. J. Nicholson.

A large clock, with Westminster quarter-chimes, has just been erected in the parish church of Sandy, Bedfordshire. It has two large dials, and has all the latest improvements to insure perfect accuracy of time being kept. The designs of Lord Grimthorpe have been followed in the construction of this clock by the makers, John Smith and Sons, of Derby, and the same firm are now making the great clock for St. Paul's Cathedral, under Lord Grimthorpe's instructions.

Our Office Table.

We shall soon have the new coinage selected in the recent competition, for Mr. Goschen has announced his adoption of the committee's report. It will be remembered that Messrs. Armstead, Birch, Brock, Ford, Gilbert, Poynter, Thorneycroft, and Woolner were invited to send in designs for two gold and four silver coins—viz., for a sovereign, half-sovereign, crown, half-crown, florin, and shilling. Messrs. Gilbert and Woolner declined to compete, but the other six artists sent in designs in October, 1891, on which the committee only made their decision on March 11 of this year. The award was, as we then announced, in the nature of a compromise, Mr. Thomas Brock's delineation of the Queen's head being chosen for all the coins, and also two of his designs for reverses—St. George and the Dragon, and an heraldic shield inclosed in a Gothic ornament. For the other four reverses, Mr. E. J. Poynter's designs have been selected.

The annual exhibition of the Home Arts and Industries Association will be held at the Albert Hall from June 16 to 20, and a feature of the show will consist of practical demonstrations of spinning, leather embossing, iron work, and basket-making. The yearly report of the association has this week been issued. Thirty-five classes have received grants from the central council, varying from £10 to £80, for the purchase of tools or "plant." Besides the exhibition held last summer at Kensington, others have been held at Oxford, Sutton, Leeds, and Hitchin, with several minor local shows in various parts of the United Kingdom. Thirteen new classes have been formed in London, and five are named in Scotland, with a goodly number in Ireland.

The twenty-fourth annual meeting of the South London Free Fine Art Gallery was held on Friday afternoon, at the new premises in Peckham-road, the Bishop of Rochester presiding. This gallery, which is open daily, Saturdays excepted, from three till five, and from seven till half-past nine, contains the only collection of art works in London on view on Sundays. During the six months since it was opened more than 80,000 visitors have inspected the collection, which includes works by Mr. G. F. Watts, Mr. Burne Jones, Mr. Walter Crane, Lord Monkswell, Miss Clara Montalba, Mrs. Jopling, Mr. B. W. Leader, Mr. H. Moore, Mr. Val Prinsep, Mr. E. Waterlow, and many other eminent painters of the day; and there are besides a considerable number of works by old masters. In the report it was announced that the institution is now cramped by want of accommodation, and that it is desired to erect on vacant land at the rear, a library, which is estimated to cost £2,000. Mr. Passmore Edwards, from whom a donation of 1,000 volumes had already been announced, inquired the names of the trustees, and on being told that they were Sir F. Leighton, Sir John Lubbock, and Mr. Rossiter, he undertook to build the library.

According to an article in the *American Architect*, considerable diversity of practice exists respecting the width of exits and corridors to theatres. The London County Council has decided that all doorways used by the public shall be at least 4ft. 6in. wide in the clear, with doors hung in two folds, opening outwards, and the same width is the minimum to be allowed for corridors, which is deemed sufficient for 400 persons; 6in. required for every additional 100 persons using the exit over and above the stipulated 400. In Brussels, 3ft. 3in. is required for every 100 persons; in Hamburg and Austria the width is specified to be 4ft. 10in. in the former, and for every 200 persons at least one exit has to be provided. In New York each exit is to be at least 5ft. in the clear, and every theatre holding 300 persons must have at least two exits, and when accommodating 500 persons at least three exits must be provided; and for every additional 100 persons or portion thereof, there must be an additional width of 20in. The latter is a liberal allowance; but not more than it should be.

The erection of a large engine-house and chimney on Streatham-hill in connection with the newly-laid cable tram-line is progressing, much, we opine, to the dislike of many of the residents of this favourite suburb. To such a calamitous extent have we to pay for public conveniences! Why could not the machinery required for traction have been placed underground? Already many of the residents are quitting, owing to this and other changes—we cannot say improvements, except to holiday strollers; but even they, we suspect, will discard the neighbourhood as soon as the tramway has done its best to bring them out so far;—the rural beauty then vanishes.

Corrugated-iron box doors are largely used in America. The Berlin Iron Bridge Co. recommend them as the best fire-proof door for fire-walls and vaults. The corrugated-iron plates, fixed to a wrought-iron frame, inclose a non-conducting material which enables the box door to resist as much heat as a brick wall. The frame can, of course, be made of any thickness, and really consists of a strong angle-iron and outer flange, the corrugated sheets being riveted to the angle and stiffened by cross rails of iron.

Trade News.

WAGES MOVEMENTS.

Edinburgh and Leith.—At a mass meeting held on Friday night, under the presidency of Mr. Munro, of the Leith branch of the Amalgamated Joiners' Society, it was decided to apply for an advance from 7½d. to 8d. per hour.

Gloucester.—A deputation from the council has waited on the Builders' Association in reference to the demand of the builders' labourers for an advance in wages of 1d. per hour, and the adoption of a suggested code of working rules. The masters declined to discuss the question with the deputation, while expressing their willingness to talk to the labourers themselves.

Newport, Mon.—The skilled artisans, who came out in sympathy with the labourers who have not received strike pay, resumed work on Monday with any labourers obtainable. This will, it is expected, practically end the strike, which was for an advance of ½d. per hour.

Nelson.—On Wednesday week a meeting was held of the builders and contractors of Nelson and district, when it was decided to resist a demand made by the masons and stone-wallers, under seven days' notice, tendered last Saturday, for an advance of wages from 8d. to 8½d. an hour. The masters contend that the rules of the masons' union provide six months' notice in matters affecting wages, and that existing contracts have been made on the present wages rate. They will accept a three months' notice.

Pontefract.—The master bricklayers have increased their men's wages, upon demand, from 7¼d. to 8d. per hour. Trade is very brisk at present.

CHIPS.

The death occurred on the 18th inst. of Mr. William Smith, B.A., C.E., late superintending engineer, Indian Public Works Department. He was 68 years of age.

An estate of about four acres, known as The Terrace, Kensington High-road, has just been sold by auction for the sum of £170,000.

Mr. George Culley, the Commissioner of Woods and Forests, has been made a C.B.

The Earl of Rosebery will formally open Brockwell Park on Whit-Monday.

Henry Staines, a member of the Bethnal Green Vestry, was summoned to the Worship-street Police-court on Friday, to show cause why four houses in Abingdon-court, E., over which he had control, should not be closed, the same being ill-ventilated and not fit for human habitation. An order was made accordingly.

The Lord Mayor opened, on Saturday, some newly-completed baths and washhouses in the Caledonian-road, from designs by Mr. A. Hessell Tiltman. The new establishment comprises two swimming-baths, 42 private baths for men, and 16 for women, 26 washers, wringers, and drying closets, and one laundry. The cost, including £7,500 for the site, will be £24,000.

Electricity, History, and Progress are well emblematised in a tastefully-designed show-card being circulated by Messrs. Sharp and Kent, of Westminster. The illustrations combine views of the Houses of Parliament and the Thames, with police-boat with search-light. The Geneva Lake, modern Rome, a set of working machinery, and a foreign station with Persians and Arabs standing near the engine, form in all a very good picture. We understand that Mr. E. Brownlow, of 5, Wine Office-court, is the author.

MEETINGS FOR THE ENSUING WEEK.

Monday. — Surveyors' Institution. Annual Dinner, Holborn Restaurant. 6.30 p.m.
Royal Institute of British Architects. Papers on "Castings in Metal," by Alex. Graham, F.S.A., C. Krall, H. Longden, and Herbert Singer. 8 p.m.
Tuesday.—Architectural Association Dinner.
Society of Arts. "Lustre Ware," by William de Morgan. 8 p.m.
Institution of Civil Engineers. Annual Meeting. 8 p.m.
Friday.—Guild and School of Handicraft, Essex House, Mile End-road, E. "Relation of the Skilled Handicraftsman to Physical Discoveries," by John Gamgee. 8 p.m.
Saturday. — Edinburgh Architectural Association. Annual Excursion to Drumlanrig Castle.

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TENDERS.

⁎ Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

Audley, Staffs.—For the supply of an engine and pump, for the local board:—

Cameron, J., Manchester (accepted)...	£480	0	0

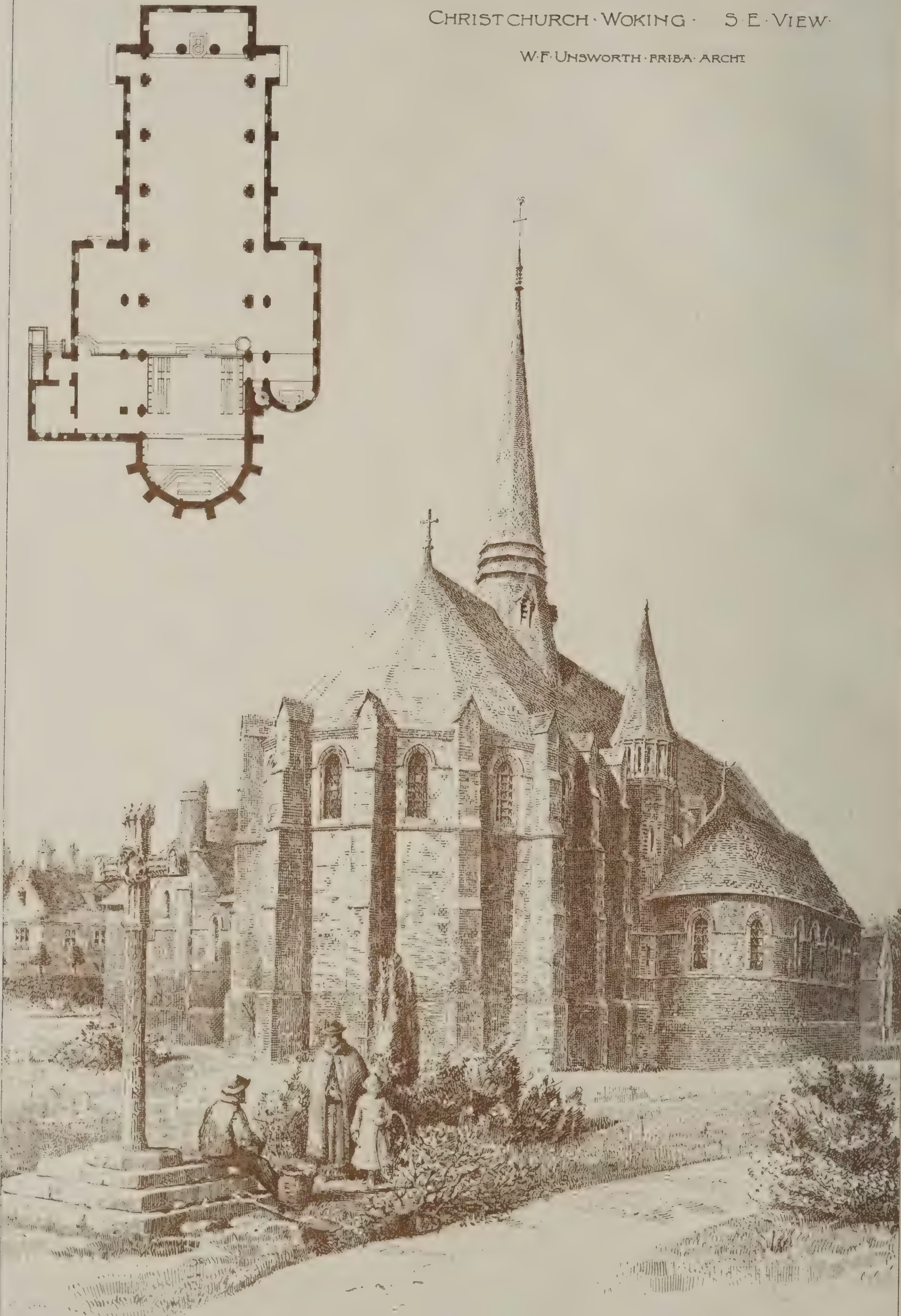
Audley, Staffs.—For the supply of a small cast-iron tank. for the local board:—

Dean and Lowe (accepted)	£176	0	0

Bermondsey, S.E. — For sanitary requirements at Neckinger-road School, Bermondsey, for the London School Board:—

Garrett, J., and Son	£406	0	0
Derry, J.	340	0	0
Leeks and Hooker	3 5	0	0
Higgs, F. and H. F.	283	0	0
Mallett, H., Clapham-road* ...	266	0	0

* Accepted.



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KELVINGROVE, GLASGOW.

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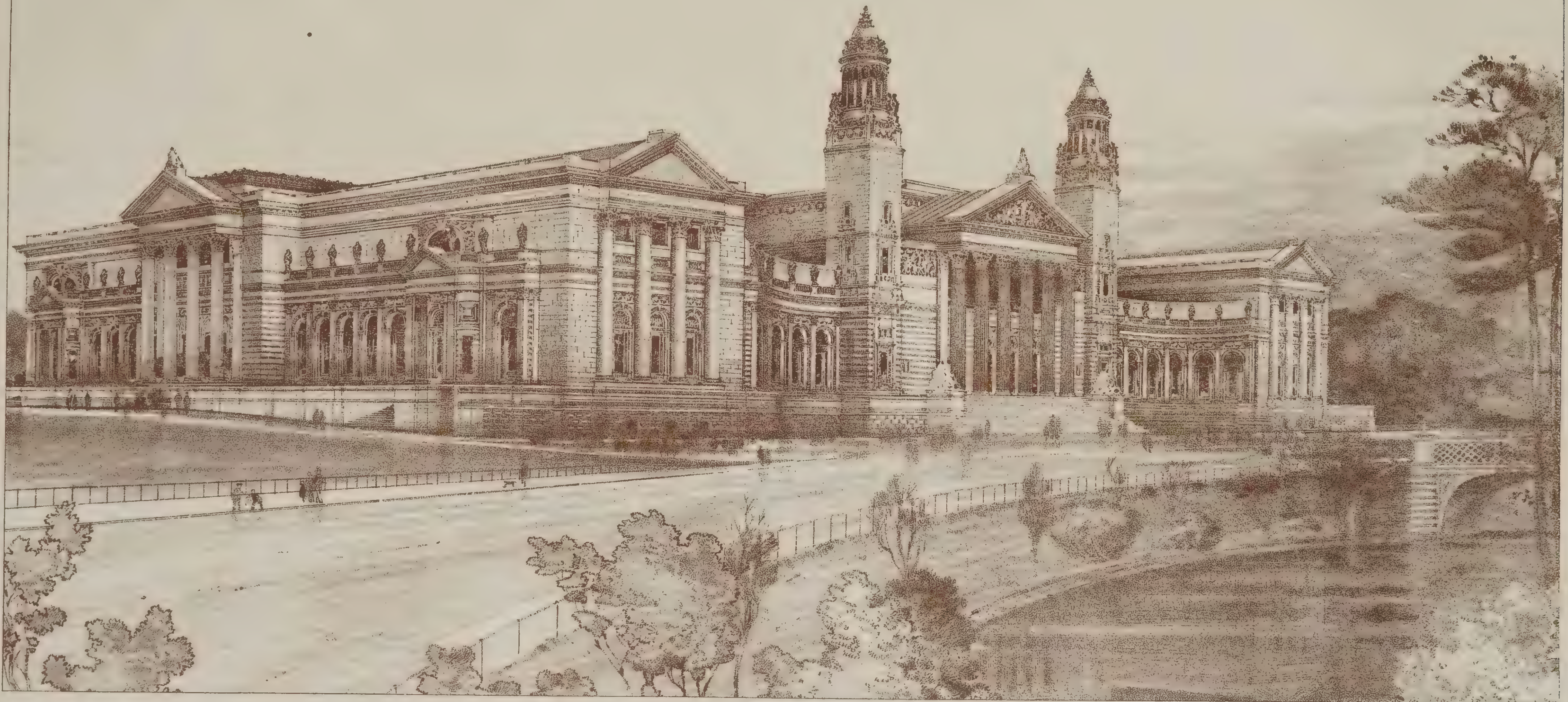

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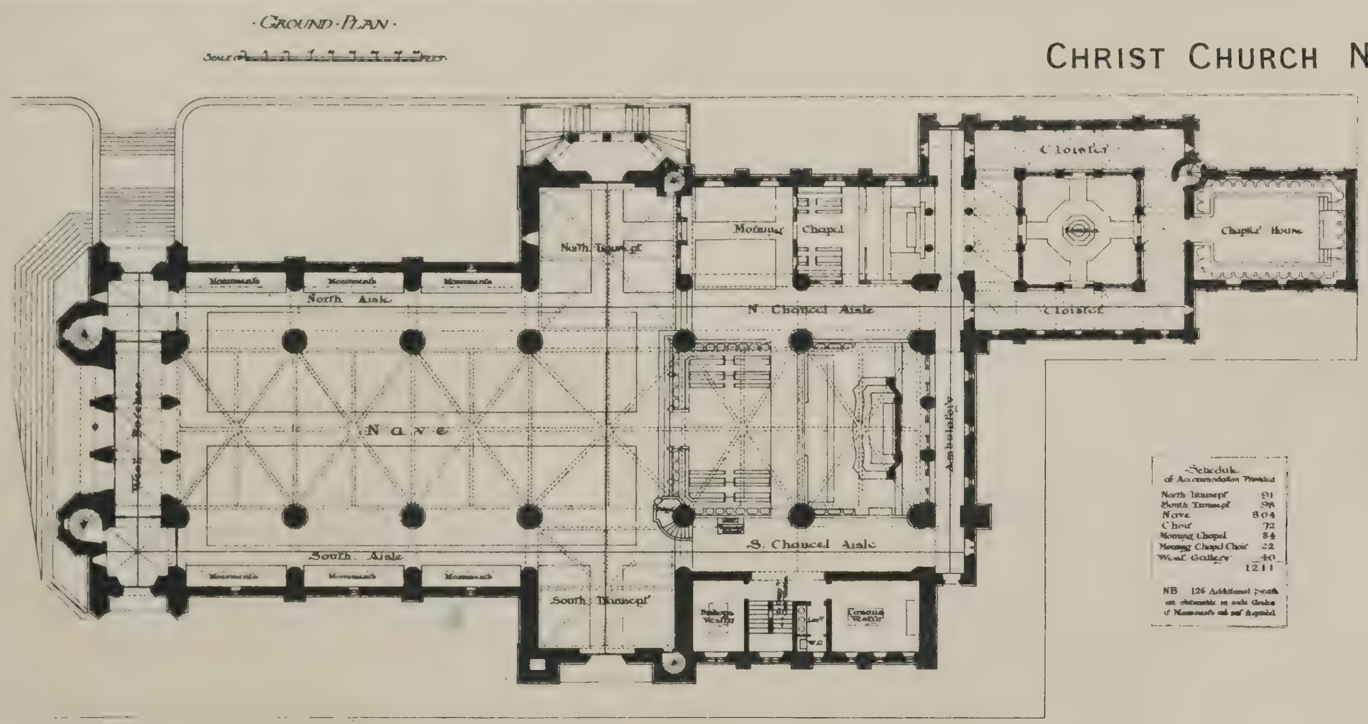
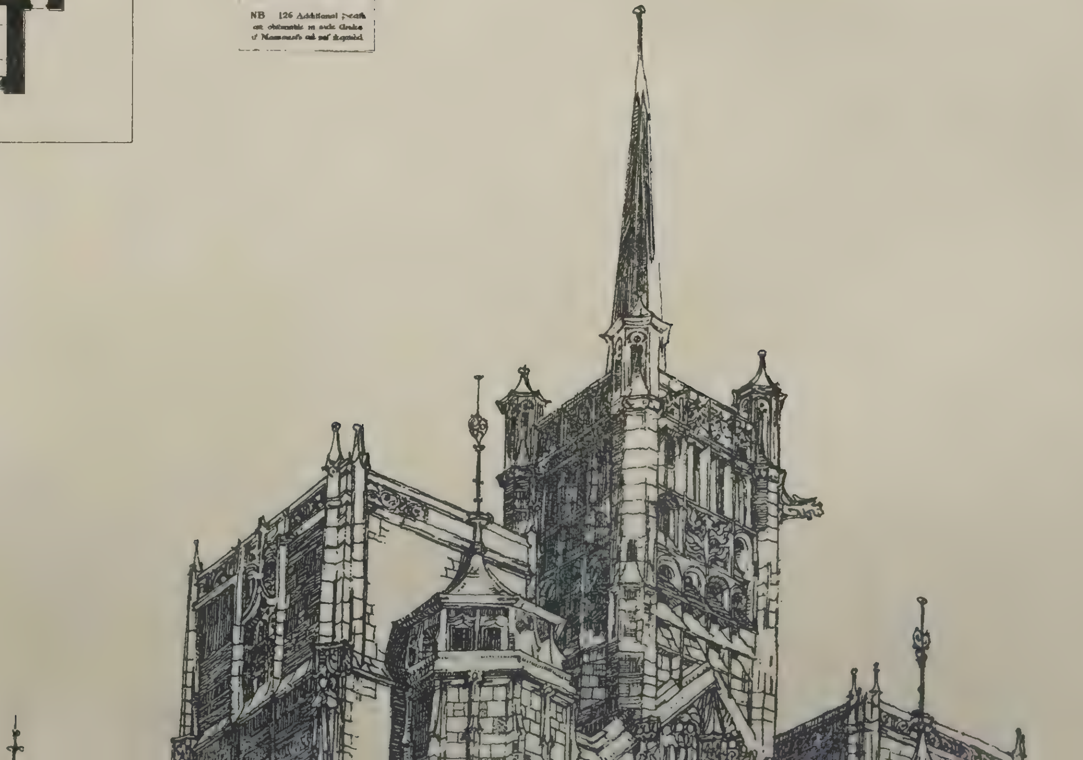
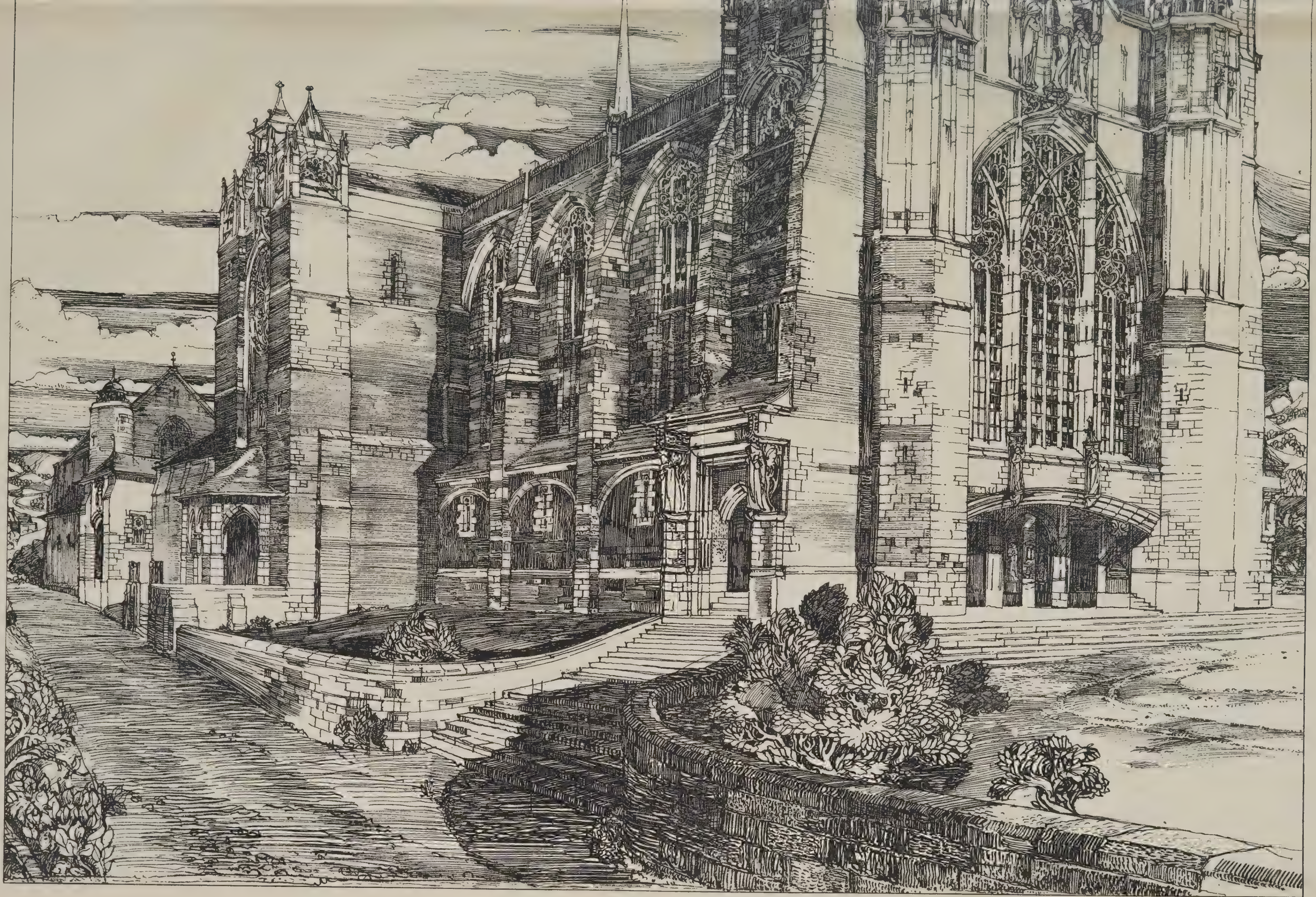


Schedule of Accommodation Provided	
North Transept	91
South Transept	98
Nave	804
Choir	72
Morning Chapel	84
Morning Chapel Choir	22
West Gallery	40
	1211

NB 126 Additional Seats are obtainable in side Chapels if Monuments are not required.





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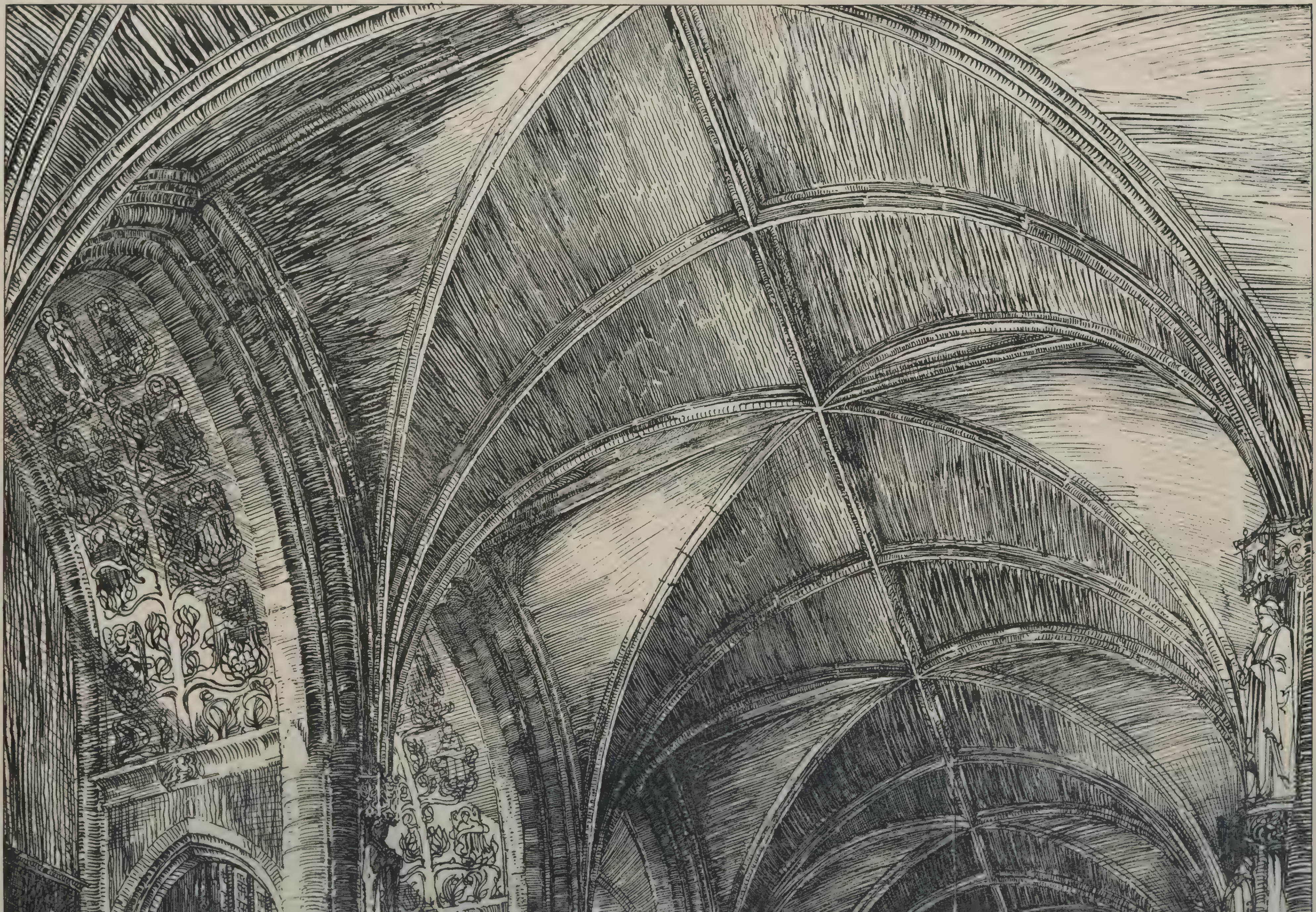

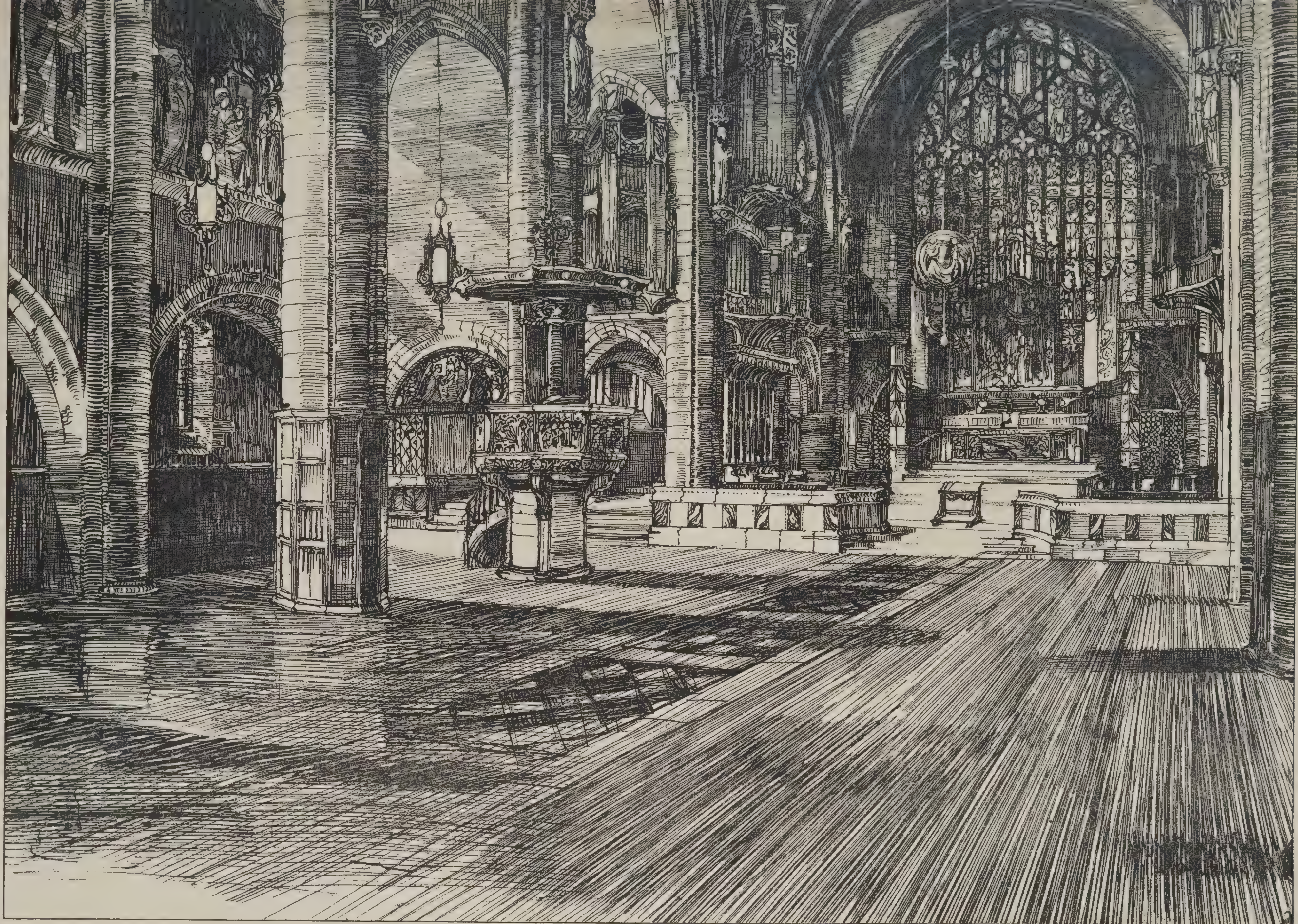

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CHRIST CHURCH NEW CATHEDRAL VICTORIA B.C

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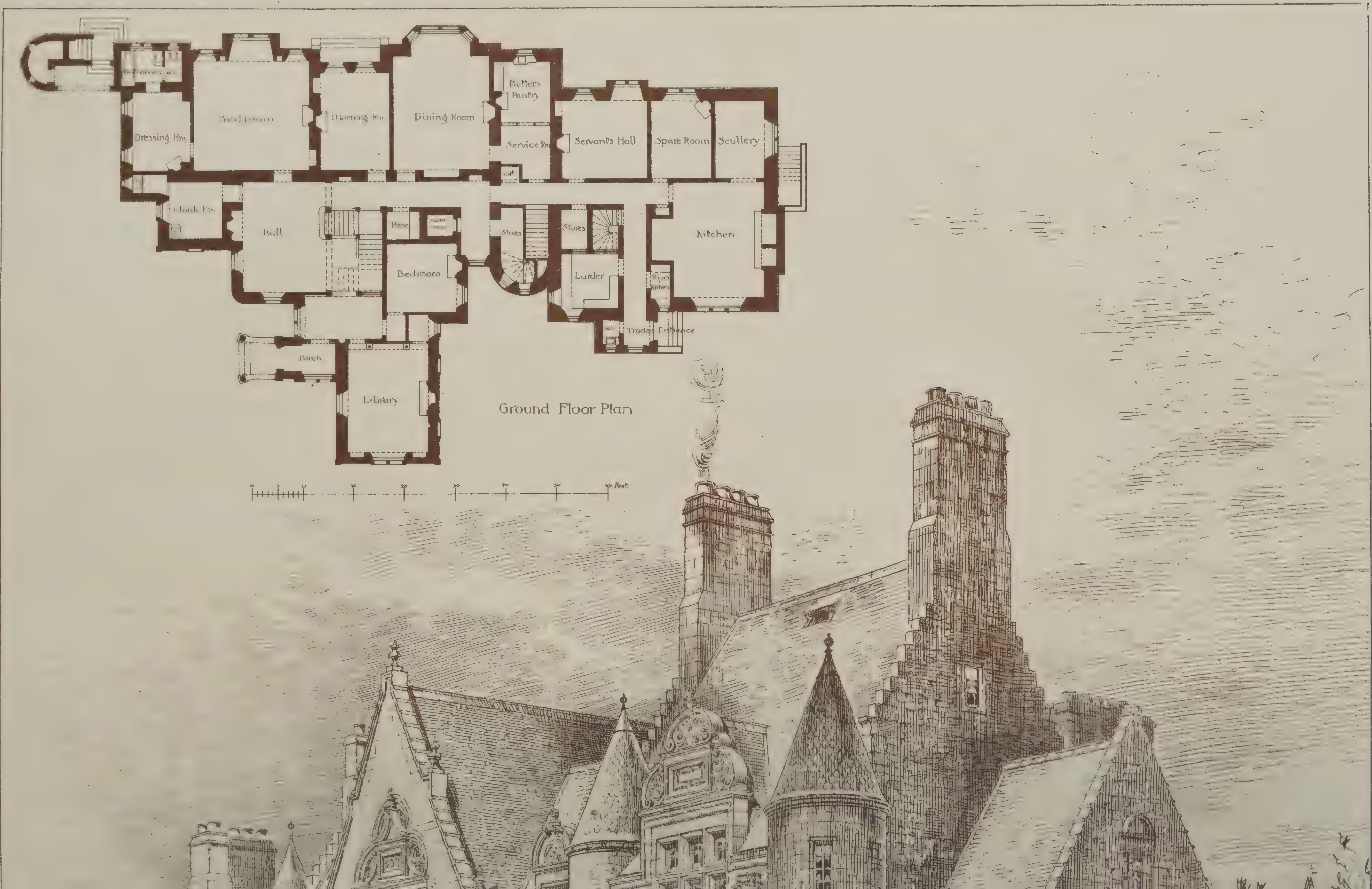
Bedroom
Dressing Rm.
Morning Rm
Dining Room
Butlers Pantry
Service Rm
Servant's Hall
Spare Room
Scullery
Cloak Rm
Hall
Press
Bedroom
Stores
Stores
Larder
Stores Knives
Kitchen
W.C.
Trades Entrance
Porch
Library
Ground Floor Plan
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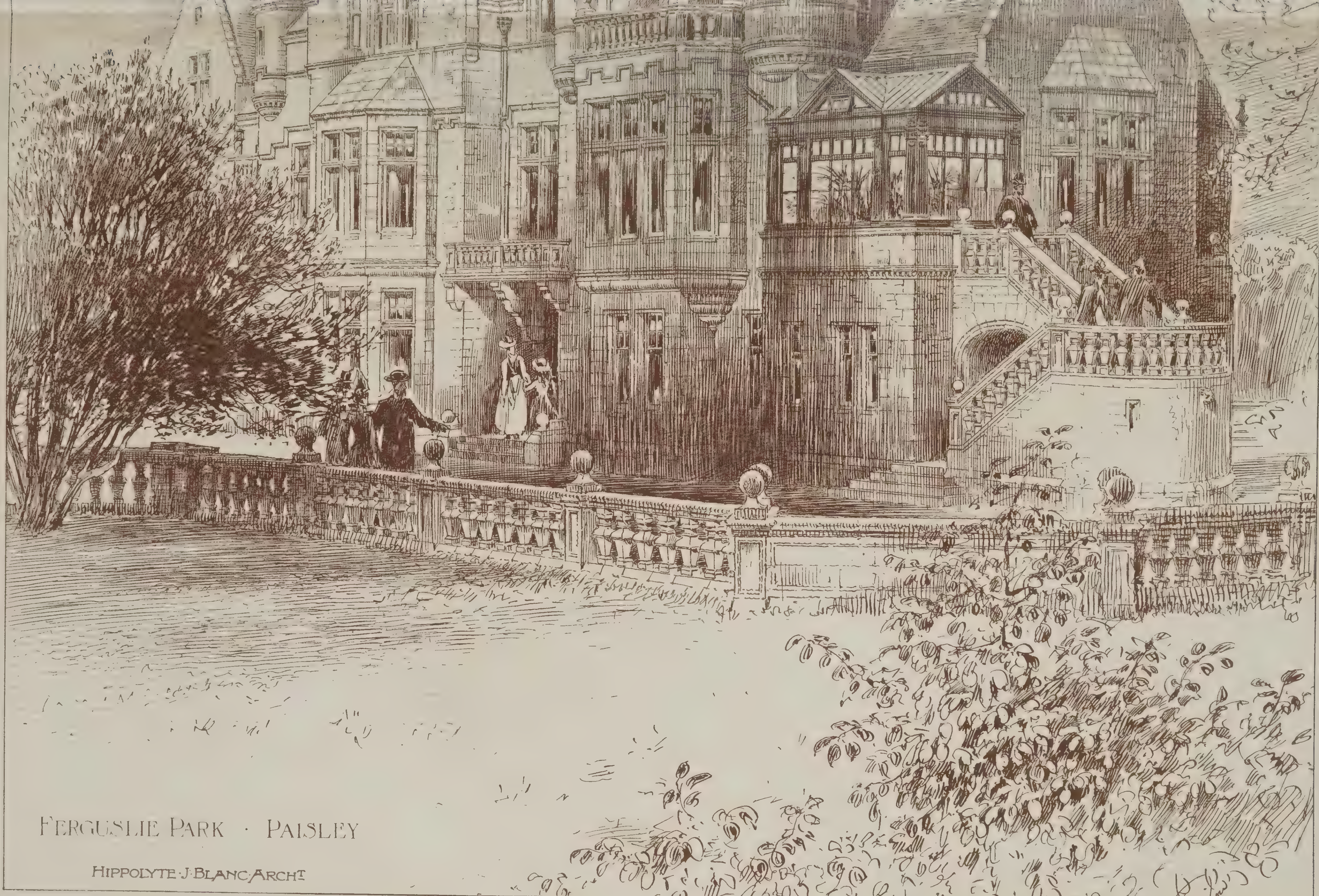
60 Feet



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THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXII.—No. 1952.

FRIDAY, JUNE 3, 1892.

THE TWO SEMI-CLASSIC STYLES.

THE history of European architecture for nearly two thousand years has been simply the history of Roman work and the work that has grown out of it. Primitive Romanesque, Later Romanesque, Domical Romanesque, and Byzantine; Gothic, both Early, Middle, and Late, as well as Renaissance in its numerous phases, all had their origin in the buildings of Rome. Nor did Roman influence end here. Mohammedan architects were indebted to it for their chief structural forms, and if we want to find something which arose quite independently of Classic traditions, we must turn to such art as that of the Hindoos or the Chinese. It seems strange, perhaps, that Roman architecture should have led to so much, and that Greek architecture, which was so much more perfect and refined, should have led to so little. But it was the very perfection of Greek art which prevented it from being a starting point for anything fresh. It was rounded and complete. There were no unsolved problems in it, stimulating the mind to fresh solutions and new inventions. What it attempted to do it did, once for all, and did as well as human heads and hands could do it. It was unimprovable, and could develop no further.

The Roman style was not a development of the Greek; it was rather the borrowing of the Greek style to cloak and conceal as far as possible some new and unrelated modes of construction. The chief of these were the arch, the cross-vault, and the dome. As Roman work passed on the one hand into Romanesque and on the other hand into Byzantine, and as the Byzantine subsequently changed into Saracenic, and the Romanesque into Gothic, there was a constant throwing off of the Greek forms, and a constantly increasing attention to one or other of the three structural elements just named. The external "orders"—that is, the columns and entablatures taken from Greece—grew less and less important as time went on. Finally they were quite abandoned. There was then no need for borrowed details to make the construction look artistic, because that construction itself had at length been shaped into artistic forms of its own. The Gothic style, in fact, had become rounded and complete, as the Greek style had been. Then it, too, could develop no further. The only chance for it was to assimilate some incongruous element, and so to become once more imperfect and improvable. This it did in the 15th and 16th centuries, by taking up again some of the discarded Classic features. Mixed with these, it grew into what is known as Renaissance. It had once more a future before it, and branched into many new directions before it finally expired.

There were thus two periods of mixed Classic and Mediæval detail—the pre-Gothic or Romanesque period, and the post-Gothic or Renaissance one. The architecture of these two periods differed considerably, and yet on the whole there is much affinity between them. The late Rev. J. L. Petit remarked on the singularly Norman look of some Spanish churches, built little more than 200 years ago. And there seems to be no doubt that a good deal of round-arched building, which at Treves and elsewhere in Germany has generally passed as pre-Gothic, is really not much older than these churches in Spain. Commonly, however, the difference between the two styles is manifest enough, and it is not uninteresting to notice in what it chiefly consists.

The Earlier Renaissance never became a really fixed and definite style. It was a mode of design wherein everyone did pretty much what was right in his own eyes, in which there were no standard types, and of which, consequently, it is hard to find authoritative examples. But, on the whole, its buildings had more verticality of effect about them than the Romanesque ones. Flat pilasters were common to both; but while in the 12th century these stopped under the principal cornices, in the 16th century the cornices often mitred round them. At the later date, too, the pilasters themselves became more Classic in type. The cornices also reverted more closely in their sections to ancient forms. The carving, instead of being rough and full of life and meaning, became finished and frivolous. Square-headed windows, divided by mullions and transoms, were as common as in Romanesque work they are rare. Sometimes the mullions are of Mediæval sections; but at other times they are rectangular, with sunk panels on the face. In the pre-Gothic period again, elliptical arches are rare. They are to be found here and there, as for instance, under the lantern at Wimborne Minster; but semicircular ones are the rule, and others are decidedly exceptional. The Earlier Renaissance adopted both forms freely, and the segmental one as often as either. In the interesting work of this date at Burgos, as in many other places, we find them intermixed, and harmonising well. Perhaps we might have found the same thing more frequently in Romanesque buildings had they been houses and palaces rather than churches.

Low-pitched roofs were common to both styles; but in the newer much more than the older style these were varied by very lofty ones. Gables formed into a variety of fantastic shapes, such as the popular mind in London has come to associate with Board schools, belonged rather to Northern than Southern types of Renaissance. The Classic pediment came back, but not, at first, as the grand finish of an end elevation. It was, on the contrary, used rather as an ornamental detail, and confined chiefly to doors and windows, dormers, and niches. This use of it and that of the projecting architrave in place of the sunken jamb moulding are two of the things that most distinguish the 16th-century from the 12th-century Semi-Classic style. Another thing is the use of the external dome, especially as a finish to towers and turrets. It may be round, pointed, or of ogee or similar sections, but it is found almost everywhere in Renaissance work, and its effect is widely different from that of the few external domes, such as those at Zamora and Salamanca, which still remain from the pre-Gothic period. Arcading, which is so abundant in Romanesque, gives way to panelling in Renaissance. Arches, too, have keystones; and pilasters, as well as columns, often stand on pedestals. For the rest, there are semi-Classic versions of all sorts of Gothic features: pinnacles made up of little obelisks, pilasters, or balusters; pierced parapets filled with leaf ornament or elliptical-headed openings; niches with scallop shells over them in place of groining; battlements (as at Heriot's Hospital, Edinburgh) with rounded and other curiously-shaped tops; vases in place of finials, and scrolls instead of flying buttresses. With such materials as these, a strikingly Gothic effect is sometimes made up, without the use of a single really Gothic feature. It can hardly be said that these Renaissance substitutes are as beautiful as the originals whose places they supply. But in the best examples they have a grace of their own. If they have little meaning and little expression, they have the superficial polish which an age like the present delights in; and while their novelty lasts, it is easy to understand why they should once more be fashionable.

THE REARRANGEMENT AND CONVERSION OF BUILDINGS.

WHETHER it is easier to design a new building or transform an old one is a question that often occurs to building promoters, and architects are often asked to give their opinion as to the practicability of turning an old building into something else. From a purely architectural standpoint there is much that can be urged against a process which deprives a building of its primary character. The question is essentially one of economy, and it often resolves itself into the following: whether a large portion of the old building can be retained. For example, if an employer is thinking of enlarging an old house, the chief point is whether a sufficient portion of it can be preserved intact to make the alterations or additions desirable. If it be found that the necessary alterations and demolitions would leave little of the old walls, or that the proposed extension would exceed the area of the old building, the least costly and most desirable course is to demolish and rebuild on a new plan; in short, the portion retained, while it may seriously hamper and restrict the architect's plan, would scarcely be worth preserving, unless, indeed, it had any architectural merit or historic interest attached to it, in which case its preservation might be worth any sacrifice. Even a mere fragment, as an old hall or entrance gateway, would be worth preserving, and making a feature of the new design. Personal or family associations are sometimes too strong to allow of a demolition under any pretence. In domestic alterations the most careful survey will fail to disclose defects in the old structure, such as decay, dry-rot, bad sanitary conditions, and after the extension has been made and the new fitted to the old, in defiance of the Scriptural injunction about putting new wine into old bottles, it begins to dawn upon the owner that the most thorough and least expensive plan would have been to pull down and rebuild the whole.

Although old and patched-up houses are often failures, no rule can be drawn from such a rough generalisation with regard to all other buildings. A very simple alteration, sometimes, the removal of a wall or a partition or two, and a few minor rearrangements, may convert an inconvenient or shapeless building into a very admirable one. The short of the matter is, there is an art of converting or transforming, and it is no more a haphazard thing than in making a new design. The faculty of discovering where a wall may be removed or an archway inserted, or a window or door transposed, with the least disturbance of structure is very different to a wholesale removal of walls and a substitution of new ones. The latter implies little skill or ingenuity.

Several kinds of buildings offer themselves for conversion. Private houses or streets are often turned into a large shop by the removal of party walls and staircases, and the insertion of girders to carry inside partitions; and of this class we have lately had numerous examples of conversion that have endangered the lives of inmates by a too parsimonious provision of necessary staircases and means of exit in case of fire. Private houses are often altered and made to serve as residences in flats. In some cases the experiment has been attended with success, and houses have been converted into model dwellings by a few slight alterations, as they have been in Liverpool and Manchester. We have also adaptations made of business premises, auction rooms, galleries, and bazaars; these are turned into entertainment and dancing rooms. Several of such buildings have been readapted with varying success, and many more would have undergone the process of transforming if the London County Council had not brought in their regulations for theatres and music-halls. Old residences have in some cases been converted into free libraries, and several old buildings have been altered as polytechnic institutes, though the cost of alteration has generally been found to be disproportioned to the advantages gained. One or two notable exceptions may be mentioned. We may instance the recent rearrangement and conversion of the old Royal Naval School at New Cross into the Technical and Recreative Institute by the Goldsmiths' Company, plans of which we published in July of last year. Here the old buildings were disposed round a quadrangle of nearly 100ft. square, and as they originally were used as class-rooms, school-rooms, and dormitories, they were, with few alterations, easily adapted to the new circumstances. The men's class-rooms and workshops occupy one side, the women's department the other side, while the front range is converted into official and administrative offices, library, and news-room. The great quadrangle was transformed into an admirable concert hall by covering it over, thus preserving light for the upper story facing the quadrangle, and this was effected by diagonal lattice ribs springing from the corners of court and meeting at an apex, the sides being filled in with latticed purlins, which carry rafters and skylights, making a large and unobstructed hall, capable of seating 1,300 persons, besides a large orchestra, with galleries on the mezzanine level. Of course such conditions for favourable conversion do not exist very often.

The architect's skill is often called into requisition in the rearrangement and additional accommodation required in old churches and chapels. An example of this kind of rearrangement is afforded in the alteration of those churches erected in the age of the Classical Revival, generally a large, oblong building of one span, with galleries, covered by a large vault of plaster or a coffered ceiling, of which St. John's, in the Waterloo-road, and St. Pancras, Euston-road, may be cited as examples. For the revived ritual, these buildings are very unsuitable; they afford no adequate room for the choir, and the chancel is generally a small recess. The galleries are objectionable excrescences as they exist, and the unbroken width of flat ceiling is bad for sound. By the simple expedient of constructing arcades in front of each side gallery, the avenue arrangement of nave and side aisles is obtained, and the galleries are supported in a more architectural manner; the ceiling is broken into three parts, while the arcades can be made to support a heightened roof in the centre, thus giving more ecclesiastical proportions to the interior. A deeper chancel added to the end completes an arrangement that adds considerably to the accommodation. The Classic Ionic church of St. Peter's, Eaton-square, designed by the late Mr. Hakewill, one of the fashionable West-end churches, is an instance of this transformation. The galleries are retained, and appear between a screen of elegantly-designed stone shafts carrying arcades of semicircular arches of buff brickwork which support an open roof of timber ribs, the aisle ceilings being at the original level. A chancel is thrown out at the eastern end, with a chancel arch, and a transeptal arrangement is made between it and the nave, the organ being placed on the north side of the gallery level. The sanctuary is enriched by alabaster arcading, with subject-compartments in marble-and-gold mosaic. In this alteration the Classic character is to a certain extent sacrificed interiorly; but the rearrangement has been carried out without any great structural changes, and in a manner suited to the present church requirements in what may be termed a Romanesque style. Another church of the same external Classic character—St. Luke's, West Norwood—presents a similar rearrangement. There are no side galleries, but the arcades are of round arches and more massively treated, and a dignified choir and sacrarium are added, we believe, from designs by the late Mr. Street. We might adduce many other instances where an interior can be remodelled without any important structural alteration to the exterior, and at comparatively moderate cost. In arranging interiors, we cannot always preserve the style. In the old Classic church the division into arcades at once takes away the character, and the round-arch style appears most suitable to the purpose. Externally, those buildings offer the most obstinate resistance to alteration which are designed on Greek or Roman models, as no additions can be made to them without a sacrifice of symmetry or unity of character, a fact which all architects know who have had alterations to make to residences of this kind. The Bath Municipal Buildings designs show a successful transformation because an old Classic structure is made the centre of new wings; Barry, in the façade of the present Treasury at Whitehall, succeeded, but it was chiefly a masking of the old buildings. The easiest to alter or transform are those buildings which have been arranged on simple plans, whose internal divisions agree with proposed arrangements.

* * *

CONTRACT CONDITIONS OF THE L. C. C.

THE resolution of the London County Council to the effect that all those who contract for work under it are to subscribe to certain terms, to sign a declaration agreeing to pay the rate of wages and to observe the hours of labour recognised by the local trade-unions, will be fraught with important consequences. The idea formulated by Mr. John Burns has been acted upon to some extent by the Council. A year or two ago the Committee on Contracts devised a scheme by which the works of the Council carried out by contract should be subject to certain conditions in the interests of the workmen engaged; representatives of the trades were consulted, and the committee came to the decision that in the Council's contracts the clause relating to sub-letting was sufficiently stringent to protect the workmen, as every person tendering was required to make a declaration that he had paid such wages and observed such hours of labour as were generally accepted as fair in his trade. It was also pointed out that sub-contracting was unavoidable in some cases, and a clause was agreed to giving the Council power to allow "the contractor to sub-let such special portions of the work as would not be produced or carried out by him in the ordinary course of his business." In many works, such as the maintenance and cleansing of bridges and embankments, the Council have acted upon the recommendation of employing their own men without the intervention of a contractor. We are quite sure experience must have proved to the officials and superintendents of the Council the wisdom of this system, as they are thereby enabled to order or counter-order works without delay; no official notices or awaiting of orders are required, the men being directly employed upon such work as are imperatively required. They can be shifted, and the labour distributed or concentrated, just as may be deemed necessary. In all repairs and road maintenance the plan has been found advantageous, less friction being the result, and we know that many provincial corporations employ their own labour, except for works in which there is a large expenditure necessary for plant.

The broad and clear principle that the local rate of wages and number of hours should form a condition of every contract lies at the root of all honest contracting. How can two contractors compete honestly if they each adopt their own ideas of wages and hours of labour? There cannot be in such a case any fair ground of competing. If A. can get men who are willing to work at a cheaper rate than B. can do, he has at once an advantage over B. in all contract work, supposing, of course, that the quality of labour performed is the same. Unfortunately, there is no actual proof of this if the architect or engineer is not particularly scrupulous about his supervision. As a matter of fact, contractors know too well that the actual quality of labour is seldom detected, and it is upon faith in this inequality that many enter into competition. But we cannot regard it as straightforward contracting, if A and B compete on unequal terms, one paying low and the other fair wages. So with hours: if one contractor can get hands to work overtime and the other conforms to the trade-union rules, it is easy to see how the former can afford to underbid. To make the conditions of wages and hours the same is to place all competitors on the same footing, and it is this principle which Sir T. Farrer's proposal insures, and which was carried by a majority of the Council.

There were some amendments made which show a desire to make the principle work well. How to insure the fair average rate of wages and the hours of labour, being those accepted by the trade, is of course very desirable, as rates may be found to vary, for there are rates of wages accepted in certain districts as well as those of the trade-unions, and these may, and often do, differ. There must evidently be some standard as to wages paid; it should be, of course, those paid to competent hands. One speaker, Mr. Leon, suggests that the rate is to hold good within twenty miles of London; but whatever it be, the rate of wages should be fixed, and we think the Council should agree to a scale and make it clear who are to arbitrate in case of dispute, themselves or the trade-unions. We cannot accept the dictum that all workmen, whether competent or incompetent, are to be paid the same wages; but this is a question that will probably be adjusted by each contractor. The incompetent hands will sooner or later find their own level. There are many who urge that the effect of these terms will be to benefit the men at the expense of the ratepayer. The *Times* thinks that the motion passed by the London County Council will result in putting a restraint on the trade, and to cause well-established contractors to hesitate before they accept work under the Council subject to the conditions; especially, it is urged, they will resent the suggestion that every contractor is to be obliged to keep wages and time books open for the inspection of the Council. It is also hinted that the demands of the trade-unions will rise to the occasion; that they will be inclined to exact other claims. But if the Council arrange matters on a proper basis, and adhere to their conditions, we do not think these prognostications will be realised. Under properly prepared specifications and contracts and careful supervision, there need be little anxiety as to scamping. We should rather say the inducements to scamp are greater when rival contracting firms are at liberty to employ men at wages that are considerably below the fair rate, and to make what terms they please with them. The system, no doubt, will meet with some opposition from firms who have long been their own masters in these matters, and we may expect to hear several suggestions put forward. As we have lately noticed, the Liverpool and other corporations have adopted clauses for contracts of a similar nature, and as far as we know they have given satisfaction. The details admit of further discussion; but the general principle of making fixed conditions of contract is undoubtedly a sound one. The effect will be to encourage a uniform rate of wages in the building trade, and as far as public works go to prevent the too-frequent and disastrous results of undercutting. No doubt the example thus set will be followed by other corporations, with advantage to the public, who lately, as in the school-board scandals, have had to pay dearly for open and unrestricted competitions.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

An ordinary meeting of the Institute was held on Monday evening, the President, Mr. J. MacVicar Anderson, in the chair, when a series of four papers on art metalwork was read by an architect and three art manufacturers.

THE APPLICATION OF METALS TO ARCHITECTURAL DESIGN IN ALL COUNTRIES.

An introductory address was delivered by Mr. Alexander Graham, F.S.A., who traced the use of metals for decorative purposes from the remotest period, remarking that perhaps the earliest employment of ornamental metalwork was the hanging of the leather shield, studded with copper knobs, in the hall of the chieftain. Having referred to the traditional origin of the art of casting in metals in Phrygia, Mr. Graham dealt with the development of the art in Egypt, Chaldea, and Assyria. In the two latter kingdoms metal-working displayed, he showed, great magnificence and technical skill in execution, as we learned not only from the writings of Philostratus, the Prophet Daniel, and other contemporary writers, but also from the fragments preserved in the British Museum and other collections. Persian art in bronze and silver was also glanced at. The earliest representation of the human form in metal was given us by the Egyptians, who, like the Assyrians, for ages cast in pure copper, and were for a long period ignorant of the fact that the metal could be greatly increased in hardness by the admixture of a little tin. The Jews were singularly deficient in ability to work in metal, and for Solomon's Temple skilled artisans had to be imported from Phœnicia. With both the earlier and later Greeks the application of metals to decorative purposes was of a restricted nature; but their productions were impressed with evidences of the genius which marked all their work. In touching upon Roman and Byzantine metalwork, the author referred to the absence of originality which was apparent in both periods. At the dawn of the æsthetic Renaissance in Italy we first traced the germs of the new departure in this art, and throughout Europe its development was comprised between the twelfth and fifteenth centuries. In the Renaissance after the Reformation it was attempted to revive the art, but the spell had been broken. He regretted that the Greek revival at the beginning of this century was barren in results in this field, and that the Gothic revival which followed only gave us a few improved and more suitable form for gas standards and other fittings; but indirectly we gained much from the study of Mediæval work and the numerous illustrations of old examples.

THE PRECIOUS METALS.

Mr. C. Krall (Barkentin and Krall) read a paper on this subject, illustrated by some examples of cast and hammered work, both ancient and modern. He confined himself to the description of furniture decoration and small useful arts. It was, he observed, surprising, on investigating what parts of such work should be cast as against parts made of hammered plates, to find how limited was the legitimate use of casting in precious metal; while, apart from its intrinsic value, the quality of the heavier cast silver and gold work was very inferior to wrought. First among the legitimate uses of cast work was high relief sculptured work—that was, all such parts which would first be modelled in clay or wax, and which to work by hand meant a great deal of costly and tedious handwork, and necessitated a number of solder lines. Thus a figure or animal 4in. high, with legs and arms or wings projecting, would be cast. Secondly, the decorated mouldings with patterns that repeat, and all such parts which, offering resistance, required greater thickness of metal than could easily be worked out of sheet-metal. Thirdly, the number of repeating ornaments, perforated borders and crestings, of which a few copies only were required, and which would not justify the engraving of a steel die for stamping. A figure 18in. high, however, would rarely be cast, particularly when modelled in high relief. This would be embossed out of thin plate as a whole or in sections, and soldered together or nailed down to the wooden or other foundation—a process used by the ancients, and in Byzantine art as well as in the present day. Precious metal was never cast in its pure and soft state, but was used in its harder alloys, the composition varying according to the colour and the amount of hardness desired. The process of casting flat work, mouldings, and ornament was by the sand moulds; that of hollow work with sand cores and by the wax process. The latter was the better for uniform thickness. By sand moulds the thickness varied greatly, which caused the thicker parts, in cooling, often to fall in, which was very detrimental to the work, and often impossible to correct. Knowing what parts should be cast, the designer would work with great advantage, and in many cases effect an easier and cheaper working. Silver and gold work was not in the present day estimated chiefly by its weightiness; the lighter it was, the more carefully it must be made, so as to be strong in all its parts. In designing silver and gold work it must be borne in mind that even plain mouldings did not always turn out satisfactorily in cast work; and that for all better work they were made in flat or turned up in sections of wrought tough metal, and joined together. Mouldings suitable for stone or wood should not be introduced. Examination of old works in the museums would show that the mouldings affording the greatest charm were mostly very indistinct, and often mere repetitions of lines or combinations of squares and round wires, with now and then a hollow and a twisted wire between. The old goldsmiths had no lathes and no machinery; they filed, engraved, swatched or rolled their mouldings; and for tracery work soldered one plate above another, with a round wire sometimes laid over it. He would advise designers to study the old work and learn its mysteries, and to let their work be carried out under its influence; then, whether cast or wrought, or made by any other process, the result would give satisfaction and delight both in the present and in the future.

CASTINGS IN IRON.

Mr. H. Longden, in the third paper, which was illustrated by models of wood, wax, and glass, and actual castings, remarked that in the usual process of iron-founding, wooden models were made by skilled model-makers, whose training was quite apart from that of a carpenter or cabinet maker. The sides of the model or any relieved parts must not be square, but slightly "stripped" or bevelled to ease the draught from the sand. The model was laid on a board on the floor of the foundry, which was covered with sand, a cast-iron casting-box, called the "bottom box," was put on the board over the model, and the foundry sand sifted upon the model, first through fine riddles until the whole surface of the model was equally covered with it, and then through a coarser riddle. The sand was carefully and evenly rammed with iron rammers until the box was filled. The whole was then turned over, and the board which was cramped to the box taken off, and the "top box" was put on, and the filling with sand and ramming process was repeated until the model was completely enclosed in evenly, lightly and yet firmly-rammed sand. The making of the channels through which the molten iron was to be run into the sand matrices was an important matter, and had to be carefully arranged. The "top box" was then removed, and the model taken out, leaving a beautiful impress of the ornament, if any, in the sand, which was carefully dusted over with fine-ground charcoal. Where the surface of a casting was to be full of ornament, the model was often put in again and evenly pressed upon the charcoal to give the fine surface seen on good castings; and this must be done with perfect accuracy of "register," the slightest inaccuracy blurring the impress. The two boxes were then cramped together again with iron cramps and wedged with wooden wedges. Casting with cores was another kind of moulding, and one requiring much skill and patience. If a great number of castings were required, instead of a wooden model, cast-iron models were used. Wooden models were sometimes carved, and at others made the ground-work of modelling in wax or in gesso if the effect desired were specially soft. There was also a pretty process called "reversing," by which a casting might be made from a solid block in plaster or wood. The choice of the iron for castings was an important matter, different mixtures being used for different castings. Most of the iron now used was smelted by "hot-blast," but when great strength and tenacity were wanted the older fashioned "cold-blast" was still utilised. When the iron was melted in the cupola the casting began. The furnace was "tapped" near the bottom with an iron bar, the white hot molten iron ran down a spout prepared for it into ladles of iron protected from being burnt by sand. The ladles were carried by the moulders to the casting boxes, and the molten metal poured through the channels into the place prepared for it in the casting boxes. When the iron had set, the top box was taken off and the casting taken up with the tongs, the loose sand about it removed, the gates knocked off, and it was reared up to cool until the next morning. Cast-iron some time ago fell into a certain disrepute; but with the further study of materials it had been found that it had qualities of cheapness and usefulness as well as of reproducing a suitable model with perfect precision and delicacy. In designing for cast-iron it was to be remembered that when the models were paid for enrichments cost nothing if suitably applied. This facility for ornament, although a temptation to the unwary, in the hands of a master produced fine results. The ornament, if applied, should rarely rise to much relief. In his judgment, respect for the real conditions of the work to be done would produce a finer effect than clever *tours-de-force*, such as imitating wrought-iron, stone, or wood in cast-iron.

CASTING IN BRONZE.

The fourth and last paper was read by Mr. Herbert Singer, of Frome, who said pure bronze was simply nine parts of copper and one of tin. A vast number of alloys, however, were produced for different purposes, and the Japanese were said to use 200 distinct alloys; delicate colours depending on the alloy used. He believed the proportion of five parts copper and one tin was the alloy of the bronze implements of the ancients. It gave a hard substance, but would not suit many of the bronze productions of the present day. The brothers Keller, who worked in France in 1699, used for their alloy 91½ parts of copper, 5½ parts of zinc, 1¾ of tin, and 1¼ of lead for statuary work; others used only about 82 parts of copper. The sculptors during the Renaissance were often their own founders, and generally used a metal of good quality, in order that their work might not be injured in the casting. Mr. Singer thought bronze statuary would be a more exact reproduction of the sculptor's model if an alloy similar to bismuth could be found that would give no contraction. If bismuth were not so expensive, it could be used with great advantage in the composition of bronze. The subject of alloys led to that of soldering. The Romans had not used solder, but it evidently had been employed by the Saxons. The alloy for gold solder was silver, for silver solder silver and brass, and for bronze a mixture with brass made a good solder. The two processes of casting bronze into any required form were known as the "sand" and the "*cire perdue*." The founders of early ages used the wax or latter process; but it had not been and was not so much practised in France as in Italy. Mr. Singer then proceeded to describe moulding by the sand process. For statues of more than life-size it was necessary to have a lofty foundry in order to raise the large flasks from the pit in which the large pieces of metal were cast. The pit should be at least 12ft. square and 10 to 12ft. deep. The flask for a statue 10ft. in height would weigh five or six tons, and should be so constructed of plates that it could be increased or reduced in size to suit the dimensions of the model. The model to be cast being then placed in the flask partly filled with sand, the preparation of the mould was commenced. The making of the mould would sometimes take three months, according to the number of pieces. The core had then to be prepared, and was a rough copy in sand of the original model, slightly reduced in size over the whole surface, the difference between the size of the core and the model giving the thickness of the bronze casting. The core was held in place by iron bars so as to leave half-an-inch of space between the exterior face of the model and the interior face of the mould. The mould and core being thoroughly dried, the flask was then lowered into the pit, and the molten metal run in. The flask, if all had gone well, being unscrewed, and the runners, or channels, which conveyed the metal to different parts of mould being cut off, there should be but little work to complete the bronze statue. For the "*cire perdue*" or "lost wax" process a very different method was followed. In this method, as now practised, the plaster moulder and the bronze founder relieved the sculptor of the mechanical part of the work. The sculptor modelled the work in clay or wax, the plaster moulder reproducing it in plaster, making probably several copies; one was handed to the bronze founder, whose first duty was to make an exact reproduction in moulder's wax, with a core inside it. He might effect this with a gelatine or a piece-mould—according to the subject. If a piece-mould, the work was laid down and the lower part covered with clay; upon the upper part the liquid plaster, of the consistency of thick cream, was moulded into appropriate forms fitting together; the whole being protected and kept together by one large outside piece. The upper part being completed, the work was turned over, the clay from the lower part removed, and it was treated in the same way as the upper part. If using gelatine, the moulder covered the work with clay of the thickness the gelatine needed to be, and on the clay he formed two coats of plaster to keep the work steady. The clay was then removed, and the gelatine poured into the place it had occupied—a mould of gelatine being the result. Having, whether by the piece-mould or gelatine method, obtained a complete mould, the moulder formed a core inside it. The mould being taken apart, the core was pared down to allow as much space between it and the mould as the metal should occupy. The mould being put together again with the pared core inside, the wax was poured in, producing an exact reproduction of the original model. The wax was then handed to the sculptor, who removed all seams and generally "touched it up." Being returned to the moulder, he then made the mould to form the metal, which mould was composed of a substance, kept secret by most founders, applied in layers until there was a tolerably thick coating all over the work. A cage made of iron was then formed round the work, and sand rammed between the spaces. The whole being placed in a muffle, the wax was melted out by means of gas, the mould thoroughly dried, and, while still hot, taken out of the cage, and, if necessary, placed in an iron flask and the metal poured in. It only remained to open the mould, remove the core, clean the casting, take off the runners, and apply the patina. An eminent sculptor had described the wax method of bronze-founding as an art, the sand as a trade. He (Mr. Singer) considered that an exaggeration. For some works, and where cost was an object, the sand process was the best. For others, especially where casting of the highest excellence was required, the wax process was the one to use.

Small models of the Chatham statue of General Gordon, seated on a camel, and a figure of Peace, both by Mr. Onslow Ford, and illustrated in our pages when on view at the Academy on June 13, 1890, were exhibited as examples of the success that could be achieved with the *cire perdue* process.

Mr. J. M. Brydon, Chairman of the Arts Committee, by whom the evening's papers had been arranged, proposed a vote of thanks to the four readers. He objected to one of Mr. Krall's reasons for recommending the use of cast work in precious metals that it saved time, for quality of execution was the great requirement in objects made of silver or gold, and architects were willing to sacrifice time to obtain it. He greatly preferred the *cire perdue* to the sand process for all statuary, as the former method gave a better surface and necessitated less intervention by the modeller and moulder between the sculptor and the finished production.

Mr. E. Onslow Ford, A.R.A., said the real difference between the sand and wax processes of casting was that by the sand method the actual sculptor was five times removed from the executed work, whereas by the wax method he was but twice removed; indeed, under the latter mode the differences were so slight that it was possible to make what was practically an exact reproduction of the artist's model. He bore testimony to the excellence with which Mr. Singer had carried out his works.

Mr. George Simmonds corrected Mr. Singer as to Cellini's practice; he had implied that in the 15th century, if a wax casting were unsuccessful, the model, and, consequently, all the preliminary labour, was lost; but Cellini told us that he made a piece mould to fall back upon. Mr. Singer had spoken of the metal of the wax mould as a trade secret. He did not think such trade secrets should exist in these days; but, as a matter of fact, the composition of the metal was very well known, and he himself possessed five or six different recipes, all written down. As a rule most founders adhered to one mixture, which in their practice proved satisfactory. As for the relative merits of the sand and wax processes, he always adopted the latter for the face and hands of a statue, as by it the minutest touch could be exactly reproduced, but did not think it necessary to the casting of, say, a frock-coat, and for the body used the sand method.

Mr. Starkie Gardner differed from Mr. Graham as to the most ancient metalwork; he believed that all work which we regarded as prehistoric was cast, and not beaten, and that it was run into moulds of porous stone which gave somewhat of the effect of sand casts. In the time of Charlemagne the Germans were certainly able to cast in brass, an example being the railings at Aix-la-Chapelle. Much of the beauty and richness ascribed to Eastern metalwork must, he feared, from the examples which had been examined, be put down to Oriental exaggeration. A few years ago Professor Roberts-Austin held out promises of some new alloys, including one of aluminium for iron, but nothing more had, so far as he knew, since been heard of these.

Professor Aitchison, A.R.A., seconded the vote of thanks, and mentioned that some time since, in decorating the interior of a country house, the owner wanted a range of capitals to be alike. After one had been carved in mahogany, Mr. Alfred Gilbert, A.R.A., was commissioned to design one to be cast. The series was reproduced in bronze from this model at a much lower cost than it would have cost in mahogany. He did not see why bronze castings should not be employed for work removed to a considerable height from the eye, when all hand carving would be thrown away. Unlike many of his brethren, he anticipated that cast iron would be more largely utilised in future architecture, and that it would compel a return to a trabeated style.

Mr. H. H. Statham said the question of durability would affect the use of iron. Sir Benjamin Baker once told him that he estimated that with careful usage the Forth Bridge might last five centuries, and if this was the maximum life of soft steel what could be expected of cast iron?

Mr. W. White, F.S.A., differed from Mr. Krall to some extent as to the usefulness of cast metal, and thought that many of the examples of old gold and silverwork which he showed would have been improved had all the ornamentation been wrought and not cast. For larger work, castings were admirable.

Mr. Sidney Vacher asked as to the relative cost of bronze and marble statuary.

Mr. Richard Pinker replied that the former was much cheaper; Mr. Singer concurred, and Mr. Ford said the difference in a bust would be that in marble it could be produced for from £45 to £50, whereas in bronze it would only cost from £20 to £25.

THE ARCHITECTURAL ASSOCIATION.

The closing meeting for the present session was held on Friday evening, the President, Mr. F. T. Baggallay, in the chair.

The following new members were elected:—W. G. Horseman, J. W. Holt, E. O. Sach, G. W. Stone, P. J. Groom, A. M. Sinclair, A. W. Moore, A. Hannaford, R. T. Grove, A. R. Dannatt, H. W. Anderson, and G. F. Grover.

THE RELATION OF THE ARCHITECT TO THE WORKMAN.

Mr. C. R. Ashbee, M.A., the founder and master of the Guild and School of Handicraft, read a paper on this subject, illustrated by many examples of the work executed by the school at their premises, Essex House, Mile End-road, a 16th-century mansion adapted to modern requirements. He arranged his subject under two heads—the first theoretical, the second more practical. He thought that the relation of architecture to life in modern times could not but be regarded but as of the slightest. To our life, he continued, as architects, it means much, and always will; to our life as a nation it means little—unfortunately for us. As a nation, we have small sympathy for, and scarce any understanding of, architecture, and what sympathy and understanding there is, is limited to a few in the profession and their supporters. As a nation, we love show and vulgarity, with its concomitant cheapness; we love poverty of construction and its symbol, the iron girder; we love hurry and its resultant, the ill-considered moulding. We have not the great sympathy which could build the cathedral and forget the name of the architect; or the great power of reserve that could leave in the consciousness of their harmonious development the hundred details of the building to the craftsman. Architecture is no longer democratic, no longer understanded of the people: it has lost its corporate significance. As a nation, we do not love architecture; we are content to let our mouldings be struck with compasses, and our subtlest details be evolved by the office-youth; and we firmly believe, when the assessor of the Royal Institute of British Architects has told us, or our representatives, the local committee, that this set of plans is the best we can possibly expect for the money, that it is good architecture we have got, and we thereupon proceed to what is called "merging the premium in the percentage." Let us compare the conditions of recent modern competition clauses, and the ethical frame of the English mind which these portrayed, with the document issued by the Florentines for the rebuilding of their cathedral in 1294. Here is the keynote of the Florentine document:—

> "Since the highest mark of prudence in a people of noble origin is to proceed in the management of their affairs so that their magnanimity and wisdom may be evinced in their outward acts, we order Arnolfo, Head Master of our Commune, to make a design for the renovation of Santa Reparata in a style of magnificence which neither the industry nor the power of man can surpass, that it may harmonise with the opinion of many wise persons in this city and state, who think that this Commune should not engage in any enterprise unless its intention be to make the result correspond with that noblest sort of heart which is composed of the united will of many citizens."

It was this "united will," this "noblest sort of heart," which those old burghers felt could only be expressed by architecture—the mother art. It seems a mockery to speak of architecture as actually being the mother of art nowadays. Look at the walls of the Royal Academy at this moment—is it true? Look at Gower-street—is it true? Look at Greater London—is it true? Look at the public-house, the restaurant, the Nonconformist chapel, the average shop, the suburban villa, the Board school, the railway junction, the pit, village, the factory town, and ask again—is it true? When that phrase was invented, building and architecture were synonymous terms; we draw a subtle distinction, and say with truth, Yea, those be buildings: what we wish to deal with is architecture, the essence of building. Possibly what we say is true in a double sense, but the truth is a bitter one. Now, I do not say these things as a tirade at existing circumstances, but in order to point at ways that, by the energy mainly of the young architect, may be bettered. Having spoken, therefore, of the national sympathy for architecture, I now regard the architect in his relation to existing things. To me it seems that this divorce of architecture from the national life leaves its mark on him, and injuriously. He is not sufficiently educated, not sufficient humanist. His scope and sympathies in the first place are not wide enough, and then his technical training is not sufficiently all embracing. The position of architecture is doubtful, and it ministers in the main to the private comfort of wealthy men, not the common heart of a great people. As regards his method of work, he feels himself but a link in the productive chain. He has not that wide training in life which should make him sympathise with the greater movements of his time. His training is a narrow one, in the four walls of his office. We ask, if this be true, how can it be best remedied? And we are brought face to face with the question of the relation of the architect and the workman. The architect has to understand his position as a workman in relation to other workmen; more than this, he has to feel his responsibilities in organising and directing their work; and more than that still, he should feel some direct responsibilities likewise in training and educating them. The architects of the later 19th century have settled the question of style; the Battle of the Styles has been fought out, and a rough-and-ready compromise has been made between eclecticism and originality. I believe we have gone deeper: the inner question of the origin of style is what we have now to solve. The origin of style lies in the social relations of men to men, in their state of society, in their habitude to one another, in the leisure they may have for the thinking out of problems and the creation of forms. In short, the origin of style is a social, not an artistic question. The question of style, therefore, is solving itself for the young architect, and will do so more and more as he grasps his relationship to the workman and the body social. I repeat, then, that the young architect has to feel that he is a workman in a privileged position, in the position of giving other workmen their line of work. Barry once suggested that it would be a good thing for an architect with capital to invest it in building operations, and such work as might be, in connection with architecture. That suggestion was a very wise and far-seeing one. Barry's age was, perhaps, not fully ready for it, but it has been and is being at the present day acted upon by architects in various ways. Regarding capital as the force that binds workmen together, regarding also the other great cohesive forces which were undiscernible by Barry—the workmen's movements, &c., which are tending to a reconstruction of industry at the present day; regarding also the advisability—nay, necessity—of commencing in the ministering arts, the crafts, in other words, rather than in the mother art direct; and regarding in the last instance the necessity of the frank recognition of the architect's connection with industry, Barry's suggestion we should all set before us. But I would like to see applied to this suggestion the system of the old Craft Guild; in this we find the right relation—a more human relation between the architect and the workman. Now, there are three ways in which we are approximating to what was good in the old system. These three things I might term "Craft-Guild Potentialities," and they may be distinguished as follows:—There is (1) the existing connection of architects with trade for artistic purposes, (2) the workmen's movements that are daily convulsing industry, and (3) the educational movement that is making progress with rapid strides. First of all, the existing connection of architects with trade for artistic purposes,—the architect and the shop, let us call it. In the relation of the architect to tradesmen we see these guild potentialities. We see it among the men employed by some of the leading architects,—his builders, his furniture makers, his painters, and so forth. I will put it plainer. In some cases the architect is in a position in which he can place his building with a particular builder with whom he has worked for years; or, if the contract is to be competed for, he can limit it to some three or four of those who have worked for him to whom he can trust. In this the guild element enters. In some cases an architect, or group of architects, support a business in which stuffs, or furniture, or materials are produced specially from their designs, and to serve the purpose of their building. I use the word support advisedly, for, if their work is conscientiously done, more money of theirs goes into these businesses than ever comes out of them. Here, again, the guild element enters. In some cases, again, the leading architects attract round them various small workmen—painters, carvers, sculptors, iron-workers—men of some special ability, whom they have met with in the course of their professional experience, and to whom they continue to give small jobs in one or other of their works. Here, above all, the guild element enters because of the educational element, and because there is a constant and direct relationship between the employing architect and the producing craftsman. Now, we younger men have to take up this side of the professional tradition, and develop it. Here is a portion of our heritage that is worth having; in this there lies a future. We should get into closer touch with our builders and carvers, decorators, &c. We should welcome the efforts of architects to work through the ordinary distributive agencies of the shop; and, above all, we should unite to us a body of men—young men, if possible—who are capable of ministering to the various crafts dependent upon architecture. The step from this to the completed Craft Guild is a social one, and one that time must bring. The atoms at present are distributed, but the personality of the architect should unite them. Their interests at present are discordant. The architect has it in his power to make them harmonious by uniting them with him. I am opposed to the idea that the architect should be connected in any way with trade or with dealing, or should receive any remuneration other than that professionally established for professional services, or for purely artistic work of his own hands in connection with it; but inasmuch as the architect's work is productive, so he should be in immediate touch with production. An architect should have a workshop at his back, and come into constant relation with a body of men in various crafts educated with and by him. 2. Then we come to the next point—the workmen's movements—the great underlying questions of the development of industry, its reorganisation, the evolution of co-operation and co-operative societies. I hold it the duty of the young architect, if he wishes to get more into touch with life, to learn to take an intelligent interest in these workmen's movements. The knowledge or interest of the architect at present is often limited to the "strike clause" in the contract. It is for the young architect to study the relations of capital and labour. If he does, he will see that there is no real antagonism between capital and labour. The apparent antagonism of the present day is (1), in the first instance, one in the degree of remuneration for services; (2), in the second instance, in the degree of control between master and men. 3. Now to my last factor in modern movements, to which also lie guild potentialities—the educational developments. The old apprenticeship system is dying out. It still remains in a somewhat unsatisfactory condition in architecture, and in such crafts as book-binding; but for the most part it is finished. Side by side with it we see a new growth—the technical school, which never has taken and never can take its place. Edward Bellamy, in his "Looking Backward," made the trenchant statement that, in the New State, a new force must take the place of the "master's eye" of the old trade system. This new force was "the perfectness of the organisation." I would accept this entirely, insisting only that perfectness of organisation comprises "humanism." Now, with the apprenticeship system dying, with the technical schools admittedly not fulfilling requiring conditions, and with organisation of industry imperfect, what is the educational outlook, as far as circumstances are concerned. We have to recognise that the apprenticeship system, regarded educationally, has been destroyed by subdivision of labour; but it is this subdivision of labour that we architects have to grapple with. I would urge you all to consider how far it is now within the scope of the profession, by entering more into the study of the crafts, by approaching more the men in their movements, by working more in workshops and less in offices, to supply somewhat that which is wanted educationally, to enter into this educational movement in its humanist and technical side which we see going on on all sides. I have now indicated the three main lines in which it would seem to me that in dealing with the question of the relation of the architect to the workman we younger men, having in mind the greater and more comprehensive development of the profession, have to look—its development, in fact, more in conformity with the ways and methods of the Mediæval guild. Let me now sum up the position of the architect as I conceive it should be in his relation to the workman. We should, in the first place, regard ourselves more as workmen on whom fall the duties of production and organisation, and less as gentlemen of the office. As far as our own training goes, we should draw as little as possible, but with our hands work as much as possible; or, rather, we should seek to express our designs in detail as much as possible in actual material and not on paper—that is to say, in the workshop. Working thus in the workshop, we should grow into the sympathies of the workshop, and then seek to develop our position as organisers and employers of industry. We should train up a body of men with us: it is only by educating workmen in architectural principles, and ourselves in the relation of the handicrafts to our work, that style can come. At present we act as a disintegrating force, and tend to keep the craftsmen asunder. It should be our effort to secure the advantages of freedom and spontaneity of work which a guild system would insure without losing those advantages of business method and order which the present system insures. We ought, in fact, not to use a good craftsman as an artistic convenience; but we should hold him, bind him to us—as it were, take him into partnership with us—and so take more responsibility for the man and less for the work. By so doing we shall avoid that waste which at the present day always tends to convert the good craftsman into the bad employer of labour. Mr. Ashbee proceeded to explain the method and system of the creative and educational work of the guild and school, in which he claimed to have made an attempt to get to establish a more healthy relation between the workman and the architect.

Mr. H. O. Cresswell proposed a vote of thanks to the lecturer, remarking that Mr. Ashbee was interested in the subject from the workman's view point. He did not quite see how the communal system would work in securing proper supervision on a job, and was not sure that "the perfectness of the organization" would fully replace the master's eye. He believed it would be much wiser and simpler to show the workman what was wanted by a pen-and-ink sketch than to entirely execute the work in the proper materials, and he failed to see how paper work was to be superseded for the preliminary plan.

Mr. Leonard Stokes, in seconding the motion, thought the fault in modern work was that the workmen did not know what they were doing, nor did they understand what the work represented by the architect's drawing would appear like when worked out. The foreman kept the working drawings locked up in his office, and no one else on the job saw them.

Mr. Sydney Vacher said that, if on a ship a captain's orders were implicitly obeyed all went well, although the seamen were not consulted, so on a building, if the drawings and specifications were clear and explicit, the result would be more satisfactory than if each workman was consulted at every turn. The architect must be the master mind. Original minds among workmen, as elsewhere, were very rare. Still, such a school of handicraft as Mr. Ashbee's helped to educate architects, and also the public. He asked if such schools and guilds became powerful, would they not be attacked by the New Unionism? Already men objected to apprentices, and modern unionists sought to reduce all to a dead level. He thought if any young architect felt himself unfitted for the race of professional life, he would do well to turn his attention to craftsmanship.

Mr. E. W. Mountford held with Mr. Ashbee that the interests of architect and workmen were generally identical. He thought the successful effort of the New Unionism to improve wages and shorten hours was a step in the right direction. His experience with contractors was that those who paid the highest rates of wages obtained far better work than other firms. It was impracticable for an architect to become a thoroughly skilled workman in every branch of the trades, for each took the best years of a lifetime to learn; nor was it necessary, for he could more easily, and in less time, show a man by a drawing than if he undertook the actual work.

Mr. E. Bartlett and Mr. Sidney Tugwell having spoken, Mr. Ashbee replied. As to the point raised by Messrs. Cresswell, Mountford, and Tugwell, as to how an architect's ideas should be expressed, by pencil or on the material, he agreed that the general planning must always be executed on paper; but, except where absolutely necessary, the idea as to the details should be conveyed directly to the workman who had to carry them out. He found most clients preferred to have the details worked out in his own workshops at Essex House, and they invariably gave more satisfaction where such was the case. He took exception to Mr. Vacher's contention that good workmen were rare, for he found that every man had the making of a good workman in him. As a matter of fact, the New Unionism was not opposed to his guild and school; indeed, many of the students had become leaders and secretaries of branches.

THE A.A. TRAVELLING STUDENTSHIP.

The President announced that only two sets of drawings were sent in for the Association Travelling Studentship, but both were considered by the committee to be of great excellence. The studentship had been awarded to Thomas Arthur Sladding, and the second prize to Edwin Alfred Rickards.

THE ELECTION OF THE COMMITTEE AND OFFICERS.

A long and animated discussion resulted from an inquiry by Mr. Stokes whether the name of Mr. Gerald Horsley had been struck off the voting papers. The President said this had been done because Mr. Horsley resigned his membership in November last, but Mr. Stokes replied that at his request the resignation was withdrawn at the time. The President replied that he was not aware of the withdrawal, nor did it appear on the minutes. The Committee's decision to exclude the name must stand. Mr. Pryce and Mr. Brodie confirmed Mr. Stokes as to the withdrawal, and Mr. Beale, as one of the scrutineers, threatened to refuse to present his report if the votes for Mr. Horsley were not received. The President called on the meeting to support the ruling of the chair, and a loud outburst of applause followed. The sealed papers were then opened, with the following result, the number of votes being annexed for the successful candidates for the vice-presidencies and committee:—

President: H. O. Cresswell. Vice-presidents: Paul Waterhouse, 444 votes; E. Woodthorpe, 391. (The third candidate, it transpired, received 188 votes.) Committee: F. T. Baggallay, 421; E. W. Mountford, 421; F. R. Farrow, 375; W. Burrell, 301; L. Stokes, 301; W. J. N. Millard, 272; E. J. May, 265; A. W. Earle, 246; A. C. Bulmer-Booth, 232; W. D. Caröe, 228. Hon. treasurer: Hampden W. Pratt. Hon. librarian: J. W. Stonhold. Hon. secretaries: Ernest S. Gale, Falcon-court, 32, Fleet-street, E.C.; and F. T. W. Goldsmith, 10, Gray's Inn-square, W.C. Hon. solicitor: W. H. Jamieson, the Outer Temple, 222-225, Strand, W.C. Hon. assistant librarians: A. T. Griffith and C. H. Freeman. Hon. auditors: E. C. Pinks and B. Dicksee. Assistant secretary and registrar: D. G. Driver, 56, Great Marlborough-street, W. Mr. Bernard Dicksee inquired, amid some signs of excitement, whether Mr. Horsley's name appeared among the first ten on the scrutineers' return, to which the President replied, No. A vote of thanks was then heartily passed to Mr. Baggallay for his conduct in the chair during the past two years, on the motion of Mr. Stokes, and also to Messrs. Mountford and Stokes, vice-presidents.

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EXCAVATED SITES OF BUILDINGS.

THE powers given to the London County Council to make by-laws with respect to sites and foundations ought to enable the authorities of certain districts to check the use of materials for mortar and plastering which are of an injurious character, and the filling up of excavations near new buildings. The excavations made for basements and cellars in many of the new estates that are now being covered with houses are conducted in anything but a method calculated to promote healthfulness. The soil is excavated and carted away; but the filling in against the outer walls of cellars is frequently of a very doubtful character. Dry rubbish, it may be; but it is often a mixture of all kinds of animal and vegetable refuse. We have seen this kind of material used to fill up the spaces below the ground-floor joists of small houses. The consequences are obvious. The heat of the house tends to vaporise and draw up the gases that may be present in the half-decaying matter, and to create a sickening effluvium at certain times. The Building Act prescribes by-laws for laying a bed of concrete 6in. thick unless the site be "gravel, sand, or natural virgin soil," and expressly says that no house is to be erected upon any "site or portion of any site which has been filled up or covered with any material impregnated or mixed with any fæcal animal or vegetable matter, &c." The by-laws say no building shall be erected on a site so covered, or in or upon which any dust, slop, or refuse shall "*have been* deposited, unless and until such matter or refuse shall have been properly removed by excavation or otherwise"; but nothing is said against filling up any space *after* the building has been erected with such refuse, and this seems to be an oversight on the part of those who framed the by-laws. The danger is in the filling in after the house is erected. As regards the concrete also, the exception made in favour of "gravel, sand, or virgin soil," as lately repealed, was unfortunate, for "natural virgin soil" may be interpreted in a sense that would leave many obnoxious soils, and soils impregnated with objectionable matter. These exceptions are now properly omitted. In the contemplated amendments to the London Building Law (Consolidation) Bill, the committee might, with advantage, insert a clause or by-law stating that all excavations, both within the outer walls of the building and those made without "at a uniform distance therefrom of 3ft." are to be filled up with approved dry materials (stating the description), such as hard brick, concrete, lime core, &c. The by-law 2 made by the Council under section 31 of the London Council (General Powers) Act, 1890, is a valuable addition; but it does not apply to any excavation within the walls of the houses, such as those at the side of cellar walls, which are often several feet within the outside or party-walls; nor does the clause expressly apply to the excavated spaces below ground floors. According to the by-law made under section 16 of the Metropolis Management and Building Acts Amendment Act, 1878, and which now reads that "the site of every house shall be covered with a layer of good concrete at least 6in. thick, and smoothed on the surface," we ought not to see any houses without such a layer within the Metropolitan area; but this is far from being the case, as hundreds of new houses will be found without so necessary a precaution. Our remarks on the use of improper filling beneath and round houses would not in any way be affected by the concrete layer, as both precautions are absolutely necessary in the interests of health. We should be inclined, in fact, to lay more stress on the necessity of building on soils that are free from all sources of pollution and dampness than covering up such soil with concrete, and there can be no doubt the district surveyors of the Metropolis will find all their work looked out in making builders comply with the by-laws and in detecting modes of evasion.

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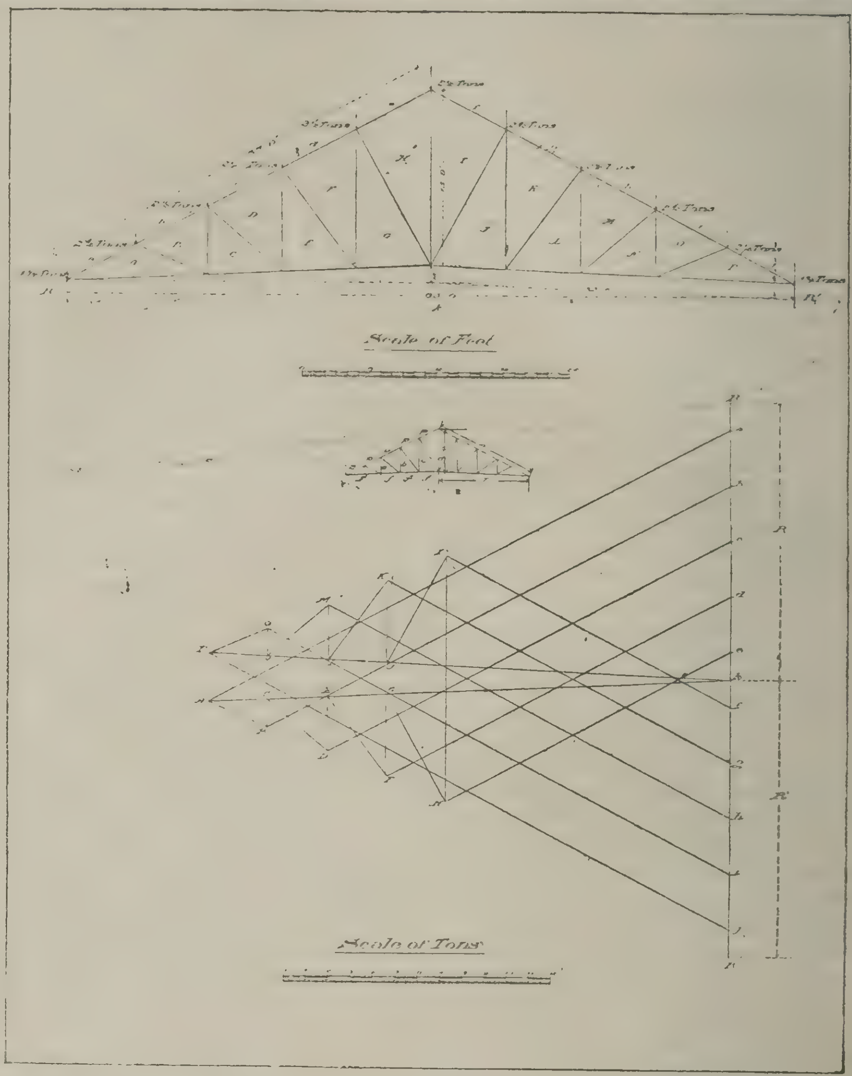
Marcross Church, Glamorganshire, is about to be restored. The work has been intrusted to Messrs. Kempson and Fowler, architects, Llandaff.



CONSTRUCTIONAL DRAWINGS.—IV.

DETAILS OF AN IRON ROOF.

FOR Specification of Ironwork see Articles 1 and 2.

By calculation, total load on each principal (including its own weight) equals 25 tons.

P = Length of principal rafter = 37ft.
R = Rise of roof from centre of tie-rod = 15ft. 9in.
T = Length of half tie-rod = 32ft. 6in.
L = Load on truss, including weight of framing = 25 tons.
N = Number of bays formed by the intersection of struts and ties with the principal rafter = 10.

$$S = \frac{LP(N-1)}{2RN} = \frac{25 \times 37(10-1)}{2 \times 15{\cdot}75 \times 10} = 26{\cdot}43.$$

$$p = S - \frac{S}{N-1} = 26{\cdot}43 - \frac{26{\cdot}43}{10-1} = 23{\cdot}50.$$

$$p' = S - \frac{2S}{N-1} = 26{\cdot}43 - \frac{2 \times 26{\cdot}43}{10-1} = 20{\cdot}56.$$

$$p'' = S - \frac{3S}{N-1} = 26{\cdot}43 - \frac{3 \times 26{\cdot}43}{10-1} = 17{\cdot}62.$$

$$p''' = S - \frac{4S}{N-1} = 26{\cdot}43 - \frac{4 \times 26{\cdot}43}{10-1} = 14{\cdot}68.$$

$$F = \frac{LT(N-1)}{2RN} = \frac{25 \times 32{\cdot}50(10{\cdot}1)}{2 \times 15{\cdot}75 \times 10} = 23{\cdot}21.$$

$$f = F - \frac{F}{N-1} = 23{\cdot}21 - \frac{23{\cdot}21}{10-1} = 20{\cdot}62.$$

$$f' = F - \frac{2F}{N-1} = 23{\cdot}21 - \frac{2 \times 23{\cdot}21}{10-1} = 18{\cdot}05.$$

$$f'' = F - \frac{3F}{N-1} = 23{\cdot}21 - \frac{3 \times 23{\cdot}21}{10-1} = 15{\cdot}47.$$

$$a = \frac{L}{2N} = \frac{25}{2 \times 10} = 1{\cdot}25.$$

$$b = \frac{L}{N} = \frac{25}{10} = 2{\cdot}50.$$

$$c = \frac{1{\cdot}5L}{N} = \frac{1{\cdot}5 \times 25}{10} = 3{\cdot}75.$$

$$d = \frac{4L}{N} = \frac{25 \times 4}{10} = 10{\cdot}00.$$

NETHERLANDISH OLD MASTERS.

THE Burlington Fine Arts Club have just opened, in their rooms at Savile-row, one of the best exhibitions ever held under their auspices. The contributors include some of the best known names in England. The paintings are arranged in historic sequence, and among them are several representations of the Virgin Mary and Holy Child. In the earlier specimens an ideal type of woman is piously realised, and the Infant Saviour is represented with a solemnity approaching sternness. These characteristics change in the later works, the Mother becoming heavy in bearing, and modelled after the contemporary taste for Flemish massiveness and fleshly beauty, while the Child becomes sportive, plucking with gaiety a fruit from the hands of a smiling angel, playing with beads, or toying with flowers. Mr. Henry Willett's Early French panel, attributed by him to Jean Fouquet (1470), represents the Virgin and Child with angels on a background of gold, and is a broad treatment of draperies. "The Holy Family" painted about the same time by Antonello da Messina is also remarkable for its elaboration of the costumes. Hanging hard by it is Jan Van Eyck's "Consecration of Thomas à Becket as Archbishop of Canterbury," lent by the Duke of Devonshire, and said to be the earliest known work by this master. The Earl of Northbrook is the owner of a portrait of a young man by Petrus Cristus, of Bruges, a pupil of Van Eyck. The microscopic work in the cruciform nimbus miniature Vernacle, shown on the wall of the chamber in which the young man is seated, may be mentioned for its wonderful care. A long, rhymed prayer is inscribed below in eight verses. Van Eyck's "Holy Women at the Sepulchre," is a remarkable and beautiful work, full of refinement. No. 13 shows the Virgin and Child in a castle garden overlooking a river, and seated on a grass-covered wall, beyond which is a cloistered garth laid out with formal beds and powderings of flowers. Mrs. Stephenson Clarke also lends another beautiful work, No. 16, likewise of the Early Flemish school, of the same subject. The Virgin, in this case, sits on a low stone wall overgrown with daisies, and behind her is a cloth of estate in black and gold, beyond which on either hand stretches a sunny landscape, gracefully painted. Hugo Van der Goes, of Ghent, is represented by "A Military Saint with a Donor," lent by the Corporation of Glasgow. An abbot in a rich cope of crimson velvet and brocade kneels under the mantle of a military patron, possibly St. Louis. He wears armour, a *justaucorps* of blue velvet with *fleur-de-lys*, a scarlet baldrick and kilt, a dark crimson-purple cloak trimmed with brown fur, most exquisitely painted, and white leather gloves. In his right hand he holds a lance and shield, which is *gules*, an escarbuncle *or*, and the same blazon appears on the forked pennon of the lance. Hans Memling is here shown by one of his finest works, appropriately described by Mr. W. H. James Weale. It is a triptych altar-piece, painted probably between 1461 and 1466. The Virgin is seated on a brass faldstool beneath a canopy, and with a rich cloth of honour behind her. She sustains with her right hand the Infant Christ seated on her knees, and in her left she holds the Book of Wisdom open. Angels support the central group, and beyond are Saints Catherine and Barbara presenting the Donors, Sir John Donne and his wife Elizabeth. Both these worthies wear the badge of Edward IV., the collar of roses and suns. These figures are represented in a cloister, and an undulating landscape, with a river, a water-mill, a bridge, and swans, forms the background. The same landscape adorns Memling's "Madonna" in the Uffizi Gallery at Florence, and it corresponds with the background of a portrait in the Van Ertborn collection at Antwerp, ascribed by the catalogue to Antonello da Messina. No. 23 is another Madonna by Memling, worthy of his fame. Earl Spencer sends a portrait of Lady Jane Grey of the school of Jan Scorel, a work wrought skilfully in red and rubies. "The Virgin Enthroned," by the master of the Mater Dolorosa in the church of the Notre Dame at Bruges, is a noble piece of work showing the Virgin seated in a florid Renaissance marble alcove in thoughtful attitude caressing her Child. The Earl of Crawford and Balcarres sends No. 46, the Virgin and Child in a garden, by Gheerhardt David, a grand specimen of the Netherlandish school. It is inscribed with the well-known initials of Albert Dürer, and dated 1513, but no reference is made to this in the catalogue, so that presumably the A.D. refers solely to the date of the painting, though the lettering figures as in Dürer's works. Gheerhardt David died in 1523, five years before the German master. This painting is worth a journey to see, with the lilies, irises, columbines, celandines, and other flowers in the foreground at the Madonna's feet. To the sides of the cloth of estate at the back of her chair is a park-like landscape of exquisite beauty. The great Triptych, by Jan Gossaert, called Mabuse, on this same wall, is equally interesting. On the volets are St. John the Evangelist and St. John the Baptist, with Adam and Eve on the reverses. The exhibition is now open to members and their friends.

THE SURVEYORS' INSTITUTION.

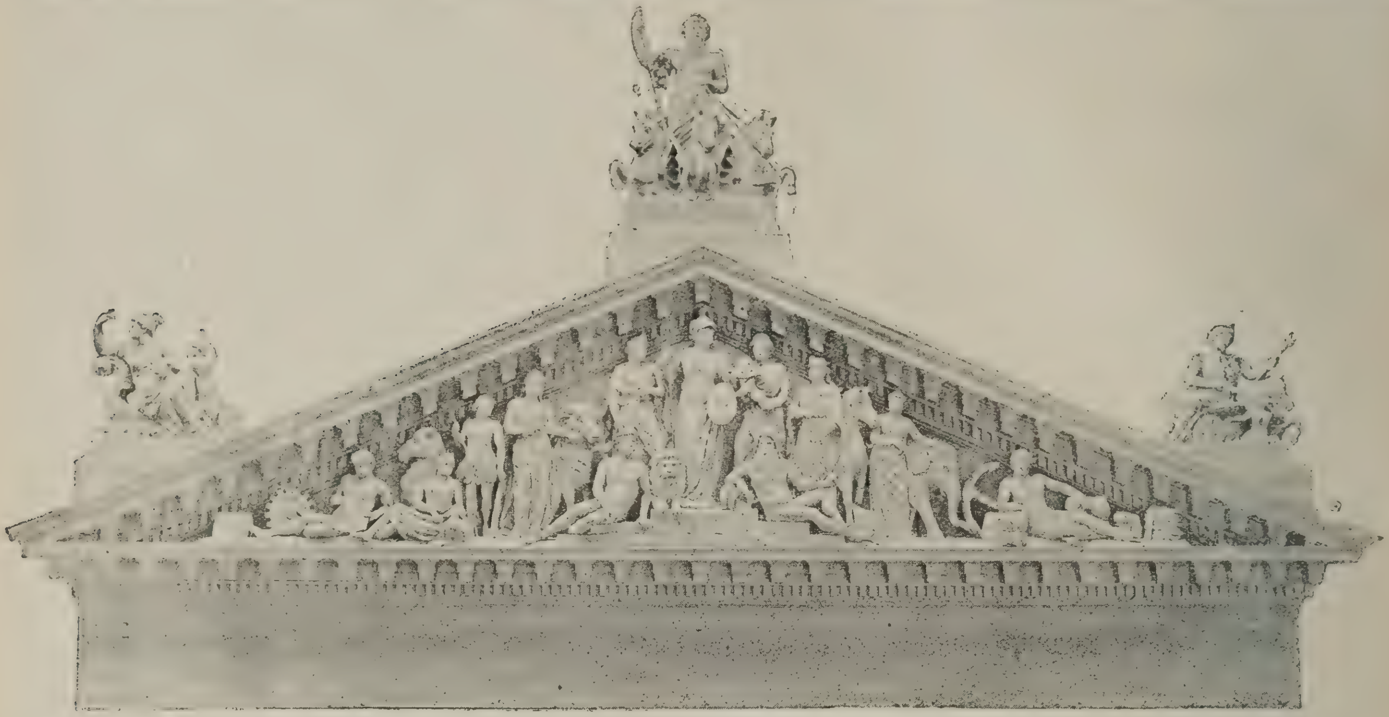
THE annual general meeting of this society was held at 12, Great George-street, on the afternoon of Monday, May 30th, at 3 p.m., when the report of the council for the year was presented to the members, and the new officers for the coming year elected. The new president, Mr. C. J. Shoppee, is a member of that branch of the surveyors' profession with which our readers are more intimately concerned, and his election to this important office cannot fail to promote the interests of the architect-surveyor class, of which so large a proportion of the membership of the institution is composed. Before resigning his office, Mr. R. C. Driver, the outgoing president, presented to Mr. Shoppee a handsome badge of office, consisting of a copy in gold of the corporate seal of the Institution, to be worn by him on official occasions, and to be handed down to his successors in office. The report is a record of steady, substantial, and material progress. In 24 years the membership of the Institution has increased from 200 to 2,268, the annual income is now between £5,000 and £6,000, and the invested capital of the corporation amounts to £20,600, representing at its present value over £22,000.

Nearly 700 candidates have been examined for the professional membership of the Institution, of whom 494 have satisfied the examiners, the number both of entries and successes, 125 and 93 respectively, being this year larger than on any previous occasion.

Handsome prizes of books and mathematical instruments to the value of some 50 guineas were awarded to the most successful of this year's candidates, and the report shows that although the percentage of marks obtained was satisfactory (72·97 per cent.) the examination is quite sufficiently severe to gauge accurately a candidate's practical and theoretical acquaintance with the long list of subjects which in each division he has to take up. The provincial committees of the institution appear to continue their successful course, now numbering upwards of 900 members in the various districts of England and Wales, and having held many important meetings and collected and discussed much valuable information on professional topics in their several localities. The council of the Institution have also during the year performed a useful and arduous task in considering, at the request of the President of the Local Government Board, the provisions of the new Bill for the codification and simplification of the London Building Laws, which, if that measure ever becomes law, will not fail to have a marked effect on its value. On the whole, the council were able to look back with satisfaction to a year of increased and increasing prosperity, and to look forward to a continuation of that steady growth in numbers, influence, and usefulness which has marked the career of the Institution from its foundation.

THE A.A. TRAVELLING STUDENTS' NOTES.

THE report of M. Kotoro Sakurai, the winner of the Architectural Association Travelling Studentship for 1891, should have been read at the last meeting of the Association, but was not reached, owing to the postponement from the previous meeting of Mr. Ashbee's paper, and has therefore been published as a paper. Mr. Sakurai's tour was spent in Somersetshire in July and August last, and extended over seven weeks. The first fortnight was spent at Wells in studying the cathedral and its precincts. Picturesque and dignified as the group of buildings is, the chief glory of the cathedral lies, the author considers, in its interior. Decorative features and details of various dates and designs are at their best in the Lady-chapel, and deserve the closest study. Grand as the west front is, with its tiers of sculpture, he does not regard it as the best part of the cathedral; judging from a purely architectural point of view, it exhibits clumsy bits of composition, and a very stiff outline. He also sketched the parish church of St. Cuthbert, with its magnificent and bold western tower, and next visited Glastonbury Abbey, Croscombe, where the beautiful church, rich in Jacobean work, and the many old houses attracted attention, and Cheddar, alliteratively celebrated for its cliffs, caves, church, cross, and cheese. His next halt was made at Langport. In the place itself there is not much of interest, but it is a good centre for visiting the numerous churches in the neighbourhood. Those at Curry Rivell, Long Sutton, and High Ham are specially noteworthy for richness of oakwork. At Muchelney there are considerable remains of the Benedictine Abbey, founded by Athelstan in 939. Most of the existing parts date from not long before the dissolution of the monasteries, i.e., a portion of the richly panelled cloisters, the kitchen, the ante-room, and a large chamber over, with a fine mantelpiece and linen-pattern panelling round part of the wall. The abbey church is said to have been entirely destroyed, and the present building, though known as the abbey, is really a parish church, situated just outside the abbey gates. Close by is a fifteenth-century thatched cottage, long used as a vicarage house. Huish Episcopi, the nearest church to Langport, is perhaps the most important one in the neighbourhood, as it has one of the best towers of the "Taunton type." The charm of the structure consists chiefly in its elegant details, admirable execution, and the delightful colour of the Ham Hill stone employed. Leaving Langport, the author next went to Martock, a typical old country town. The church is a large structure of the usual local type. The nave of six bays, covered with an elaborate tie-beam roof, is a good specimen of late fifteenth-century work, but not equal in merit to the enthusiastic description of the late E. A. Freeman. On the south side of the church there is a 14th-century manor-house, retaining all the original arrangement of the hall (with a good roof), kitchen, and offices in a perfect state. The churches at Kingsbury Episcopi and Stoke-sub-Hamden were also visited. The former has a tower almost identical, though somewhat inferior in detail, to that of Huish Episcopi; but the church itself is much better in every respect to the last named. Stoke-sub-Hamden church, cruciform without aisles, is originally Norman, but now combines every architectural period. At South Petherton, the so-called King Ina's Palace, an erection of the time of Henry VII. and VIII., has been much restored since Parker described it as perfect in his "Domestic Architecture." Domestic architecture of the same date, on a much larger scale, may be seen at Barrington Court, which was next visited. The interior is a lamentable spectacle of desolation and decay, though a part is occupied as a farmhouse. More fortunate is the house at Montacute, which was the next stopping place. Built between 1581 and 1691, it has since served as the seat of the Phelips family. Here we have a typical Elizabethan mansion, with its symmetrically-treated structures. Dignity of mass and breadth of treatment are here very successfully attained, and one can only regret the coarse nature of the details employed. Newton House, an Elizabethan manor-house, about half a mile outside the town of Yeovil, is the most interesting building in the district. The tour closed with a visit to Salisbury. In conclusion, the author gave a short *résumé* of Somerset architecture which came under his study. "The strength of Somersetshire," said Mr. Freeman, "like that of Northamptonshire, lies in its parish churches." Here, perhaps, the fifteenth century was a great building epoch. The practice of giving every possible prominence to the tower of the church when carried too far, as is often the case, produces a very unfortunate result. In more than one instance the nave and aisles were entirely dwarfed by the size of the tower. The position of the tower, almost invariably the west end of the nave, was a most



PEDIMENT TO THE NEW TOWN HALL, PORTSMOUTH.
W. Hill, Architect. H. T. Margetson, Sculptor.

difficult place for a tower to produce an agreeable composition, and he has rarely come across any truly successful façade thus designed. The architects of Somerset seem to have taken a childish delight in a confectionery-like treatment of the tower. Some features are, however, very charming; but the delight of these designers in the employment of pretty features led them to forget the more important elements essential in perfection of design—i.e., good proportion, proper distribution of ornaments, and contrast of voids with solids, &c. As to the other parts of the church, a short nave, tall arcades, and small clerestory windows, often hidden behind the parapets of the aisles, appear to be almost universal. The plan of the nave piers is that of a hollow lozenge, with a three-quarter-circle shaft running up at each angle; the capitals are placed only at the top of these shafts, the hollow mouldings between continuing round the arch. There is, Mr. Sakurai thinks, no English county where all the buildings, both ecclesiastical and domestic, bear a stronger family likeness than in Somerset. Local traditions are rigidly kept, and features, stamped with a well-defined character, are always there, whether good or bad. Of screens and pulpits, both of wood and stone, and, in fact, of all other minor fittings, the county is exceptionally rich, and some retain their original colour. For domestic architecture it is regarded by Mr. Parker as "the richest district in England for the remains of the 15th century." The Elizabethan builders, also, left us many specimens of their work. Barrington, Montacute, Brympton, and Norton are among the conspicuous examples, while almost every village displays abundance of plain mullion-and-lintel houses, entirely devoid of special features or pretentious embellishments. This kind of work is quite as interesting as the richer examples, insomuch as it teaches us how quiet and homely a character could be imparted by simple means. In fact, all the houses, large or small, rich or plain, never lack a home-like appearance, and are always in harmony with the pastoral charm of what has been well called the "pleasant" county of Somerset.

* * *

THE PEDIMENT, PORTSMOUTH TOWN HALL.

This large Classic building, which to a certain extent is a replica of Leeds Town Hall, by the same architect, the late Mr. William Hill of that town, has since his death been completed, and one of the most conspicuous features in the design is the big pediment over the main entrances to the hall and offices. The tympanum which we herewith illustrate was designed and executed by Mr. H. T. Margetson, of Chelsea, who also carried out all the carving to the building. The subject of the sculpture in the pediment represents "Britannia," supported on the right hand by "Peace," with "Plenty" standing on the left. "Thames" reclines below with "Mercury" on the other side. "Europe," "Asia," "Africa," and "America" are the other figures, with "Science" and "Commerce" at the extreme ends. All these statues are 8ft. high. The tympanum measures 60ft. wide by 13ft. high in the centre. On the apex appears "Neptune" seated in a chariot driving sea-horses. "Navigation" and "Fire" are the subjects of the two groups at the angles. The design was accepted in a limited competition.

* * *

A NEW DOUBLE-ACTION CLOSET—THE "PRESTO."

We have seen many automatic closet seats, self-rising and otherwisse, with more or less complicated mechanism; but for simplicity of action and cleanliness nothing can surpass the new double-action self-flushing water-closet introduced by Messrs. John Knowles and Co., the well-known firm of sanitary manufacturers, of 38, King's-road, St. Pancras, and appropriately named the "Presto." The chief merit of this new and *only* double-action closet is that by a most simple adjustment of the hinged seat by a gearing arrangement that can never get out of order, every time a person rises from the seat (it being slightly depressed by the weight) the closet is flushed. This constitutes the first action. When used for slops or as a urinal, the closet is again flushed by returning the seat to its normal position, and this is the second action which makes this so unique an appliance. For slops and like purposes, the "Presto" has undoubted advantages over the ordinary automatic action, which allows the slops to be poured in without flushing. In this arrangement, which can be used for any kind of closet pan flushed by water, a body of water is always retained in the pan to receive anything that may be put into it, and the whole is flushed out when the seat is let down—an essential condition of sanitary cleanliness which renders the use of the "Presto" invaluable for every household, be it mansion or cottage, hospital or school. One of its great merits is that it does not permit any use of the closet to be made without flushing. We know the great value of an apparatus which can be used both for slops as well as for ordinary purposes. The usual forms of closet are not intended for slops, and when used for them, allows the obnoxious liquid to remain if the handle is not raised, but can we guarantee this being done by careless chambermaids? With the "Presto" the necessary raising of the seat for the slops must be followed by its being put down, thus insuring a flush, so that we have two actions instead of only one. For invalids the latter recommendation is self-obvious, and we believe the Presto will take the place of other closets in hospitals and infirmaries. It is especially adapted for schools, where children are thoughtless in attending to these matters. We may add that the invention can be used in connection with any kind of flush-out closet. The seats we have seen in action at John Knowles and Co.'s London offices were applied to flush-out and common hoppers without objectionable casings of wood; the back hinged flap is connected by a brass chain to the siphon waste-preventer overhead, and this can be easily adjusted by a screw if it requires tightening. The models can be seen in action at the chief offices, 38, King's-road, St. Pancras, N.W., and these show mahogany and pine seats, the latter adapted for cottages. The Presto closets will compare in price favourably with the ordinary fixed and framed arrangement, while as the action is so extremely simple, and the flush so certain, we are sure that it will become the popular closet as soon as it is known.

In connection with this firm, we may mention that, at the late Municipal and County Engineers' Conference, held at Nottingham on the 29th of April, a very instructive test took place of the stoneware pipes through which the sewage flows. These pipes, which are 9in. diameter, and are connected by Hassall's patent safety joint, were tested by hydraulic pressure above ground, in the presence of the engineers, and it was not until 100lb. to the square inch had been registered that the bursting point was reached. The joints were found intact. The pipes were manufactured by John Knowles and Co., of Wooden Box, Burton-on-Trent, and 38, King's-road, St. Pancras, N.W.

* * *

Sir Charles A. Cameron, medical officer of health, Dublin, has accepted the presidentship of the Congress of the Sanitary Institute, to be held at Portsmouth in September next.

At the Carlisle Consistory Court on the 26th ult. a faculty was granted for the insertion of a stained-glass window in Kendal Church, in memory of the late Edward Sinkinson, financial secretary to the Supreme Government of India. The window will be the work of Messrs. Ward and Hughes, artists, and the subject "Duty."

CONTENTS.

The Two Semi-Classic Styles ... 755
The Rearrangement and Conversion of Buildings ... 755
Contract Conditions of the L.C.C. ... 756
Royal Institute of British Architects ... 757
The Architectural Association ... 758
Excavated Sites of Buildings ... 760
Constructional Drawings.—IV. ... 760
Netherlandish Old Masters ... 761
The Surveyors' Institution ... 761
The A.A. Travelling Student's Notes ... 761
The Pediment, Portsmouth Town Hall ... 762
A New Double-Action Closet—"The Presto" ... 762
The Building News Directory ... XIII
Our Illustrations ... 763
Competitions ... 763
Architectural and Archæological Societies ... 763
Wayside Notes ... 782
Plumbers' Registration Bill ... 782
An Improved T-Square ... 783
Building Intelligence ... 783
Engineering Notes ... 783
Correspondence ... 784
Intercommunication ... 784
Legal ... 785
Legal Intelligence ... 785
Water Supply and Sanitary Matters ... 786
Parliamentary Notes ... 786
Our Office Table ... 786
Meetings for the Ensuing Week ... 787
Trade News ... 787
Tenders ... 787

ILLUSTRATIONS.

TWO DESIGNS FOR THE NEW CATHEDRAL, VICTORIA, B.C.—CROYDON MUNICIPAL BUILDINGS.—DRILL HALL AND RIDING SCHOOL, BOLTON.—LONDON AND MIDLAND BANK, BRADFORD. — CONSTRUCTIONAL DETAILS OF AN IRON ROOF.

Our Illustrations.

CHRIST CHURCH NEW CATHEDRAL, VICTORIA, B.C.

Already we have published the two perspectives and plan of the design for this work marked by the motto "New and Old." Following up last week's illustrations of these we print to-day the principal elevation and plan of the design called "Ars," and also the exterior view and plan distinguished by the motto "Duomo." We shall give other drawings, and would have preferred to have issued the perspective view of "Ars's" design after what we said about it; but, unfortunately, the pencil views are so very roughly executed that they will not reproduce so well as could be wished; indeed, as already pointed out, they really fail to do the design justice. "Duomo" suggests a familiar hand, and has not a few good points about it. Up to the present no further particulars of the referee's award have been made public. For our notice of all the designs our readers are referred to page 620 in the Building News for May 20th last.

MUNICIPAL BUILDINGS, COURTS, AND PUBLIC LIBRARY, CROYDON.

These buildings are in course of erection by the corporation of Croydon, upon the site of the former Central Croydon Station. The municipal buildings (shown to the left in the view) comprise suites of offices for the town clerk and other officials of the corporation, with the council chamber, mayor's parlour, ante, and committee rooms on the first floor, arranged *en suite*, so that they may be used for receptions. The court for the Borough Bench and Quarter Sessions, and the County Court, with rooms for the magistrates, magistrates' clerk, barristers, solicitors, jury, and witnesses, are at the back of the municipal buildings, with entrances from a new street at right angles to the one shown in the view. The public library is entered by the porch on the right face of the tower, the lower portion of which forms a vestibule, giving access by a short flight of steps to a central hall; on the left is the lending library, on the right the public reading and news-room, between and overlooking them and the entrance is the librarian's room. The magazine-room, stores, and workroom are below, an arrangement rendered necessary by the exigencies of the site. A corn market completes the group. The materials are red brick, with Portland stone dressings, and green Westmoreland slates for the roof coverings. Mr. S. Page, builder, of Croydon, has undertaken the contract for the foundations and lower ground floor. Mr. E. W. Nightingale is the clerk of the works. Mr. Charles Henman, A.R.I.B.A., of 64, Cannon-street, London, is the architect. The foundation-stone is to be laid next week.

DRILL-HALL AND RIDING SCHOOL, BOLTON-IN-THE-HAULGH, BOLTON.

Captain Hargreaves has erected, at his own expense, headquarters for the Bolton troop of the Duke of Lancaster's Own Yeomanry. The drill-hall is 120ft. long by 43ft. wide, with tan-bark floor for riding. Dressing-rooms and bath-room are placed adjoining, and in addition to the necessary storage room is a good lecture and assembly room. Quarters are arranged for the sergeant-major who has charge of the troop. The large riding yard and parade ground has tanned riding track. Messrs. Bradshaw and Gass, F.R.I.B.A., of Bolton, were the architects for the work, which has been executed by Mr. W. Bryce, of Bolton.

LONDON AND MIDLAND BANK, BRADFORD.

The present premises having been found inadequate for the enlarged business of the bank, and additional land having been acquired, contracts have been entered into for the erection of these banking premises upon the old site. The front will be of red Corsehill ashlar, except the ground story, which will be of polished red Peterhead granite. Internally marble and hard woods will be freely used; the work elaborately treated. Mr. James Ledingham, A.R.I.B.A., is the architect.

CONSTRUCTIONAL DRAWINGS, IV.—DETAILS OF AN IRON ROOF.

(See specification and further sketch on p. 760.)

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COMPETITIONS.

Eaglescliffe.—In a limited competition for a new Wesleyan church at Eaglescliffe, the plans submitted by Mr. W. H. Linton, M.S.A., of Stockton-on-Tees, have been selected.

London.—Plans were sent in on the 31st of May for a new hall and public library, to be erected on a fine site in Bishopsgate-street, at the cost of the Governors of the Bishopsgate Charity, who invited the following architects to prepare competition designs—viz., Messrs. T. Chatfeild Clarke and Son, T. E. Collcutt, R. Dale, Charles Bell, A. Pridmore, C. H. Townsend, and T. Osborn Smith. Mr. MacVicar Anderson, as President of the Royal Institute of British Architects, is the assessor. All the above are not competing, however.

Paisley.—From the numerous plans lodged for the laying out of the "open space" at the Cross of Paisley, recently purchased by Mr. Dunn, M.P., for the benefit of the inhabitants, a selection was made on Tuesday. It was decided that the plans of "St. Mirren" (Mr. James Donald, Paisley) were those which accorded best with the requirements of the case. The first premium was awarded the set of plans by Mr. H. J. Blanc, Edinburgh, the second premium falling to Mr. T. G. Abercrombie, Paisley. Under the accepted plans the cost of the undertaking is estimated at £2,530.

Southport.—The joint committee of the Southport new infirmary have examined in the examination hall of the Schools of Science and Art, the plans sent in for the new infirmary, which it is proposed to build on Scarisbrick New-road, at a cost not exceeding £13,200. The Mayor presided. Thirteen sets of plans had been sent in, eight or nine being by local architects, and these were referred to a sub-committee, who were instructed to make a selection of three to lay before the general committee, and to call in professional assistance, if necessary, to help them to arrive at the best conclusion.

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The death is announced of Mr. Benjamin T. Thurgood, estate agent and surveyor, of Saffron Walden, of which town he was twice Mayor.

There has been placed in the south aisle of Llangollen Church a stained-glass window as a memorial to the late General Yorke, C.B., of Plas Newydd. The window, which is the work of Alexander Gibbs and Son, of London, consists of three lights, the centre being a representation of the Crucifixion, the side lights representing the Agony and Burial of our Lord.

Mr. Rienzi Walton, M.Inst.C.E., Local Government Board inspector, held an inquiry recently at the Liverpool Town Hall with respect to the application of the corporation for sanction to borrow £3,000 for the purpose of acquiring and laying out twelve acres of land adjoining the Wavertree Park. Mr. Shelmerdine, city surveyor, explained the plans.

ARCHITECTURAL & ARCHÆOLOG SOCIETIES.

The Architectural Association.—This ciation held its annual dinner at the Criteri staurant on Tuesday night, Mr. F. T. Bagg the retiring president, in the chair. The man proposed "The Royal Academy," to Mr. H. L. Florence responded. The to "The Royal Institute of British Archit was given by the chairman, and replied Mr. J. M. Brydon. Mr. W. Hale, Presid the Birmingham Architectural Association, gave "The Architectural Association." fessor Kerr responded. Other toasts foll including "The President Elect" (Mr. Cresswell), who suitably replied.

Coventry Master Builders' Associat The master builders of Coventry dined to for the first time for 24 years on Wedn week at the Queen's Hotel in that city, Haywood, jun., presided, Mr. J. Worwood in the vice-chair. There were also p Messrs. A. A. Wincott, A. Cave, J. Li T. W. Liggins, G. L. Taylor, J. Harper, Shaw, W. Carter, J. H. Cox, C. Garlick (secretary to the Master Builders' Associa H. T. Garlick, W. E. Hart, R. Woott Wetton, T. G. Golby, W. O. Ivens, a Haywood. In the course of the evenin chairman presented Mr. Councillor John wood with a marble clock on behalf o members of the association, and in recognit his 14 years' service as hon. secretary.

Edinburgh Architectural Associati The annual general meeting of this assoc was held on the 26th May in the Archite Hall, George-street, Edinburgh. Mr. W Robertson, vice-president of the society, to chair. In his report, the treasurer state the membership was now 278, and the ba in hand £176. The reports of the other bearers were submitted and approved. Robertson intimated a new departure of th sociation in the fact that the members wou housed next year in the Royal Institution, a new field of usefulness would be entered in connection with the School of Applied in which the members of the society we much interested, and which the associatio undertaken to support in every possible The increased advantages of the associ would be only equalled by the increased o tunities of usefulness which the new sc opened up to them. The following office-be were elected:—Past-president, Mr. J. Kin president, Mr. W. W. Robertson; vice-p dents, Mr. R. Anderson, LL.D., and M Ross.

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CHIPS.

The foundation-stone of Woodlesford vic near Rothwell, was laid recently. The vic is being erected from designs by Mr. R. J. Smi Leeds, and will cost about £2,300.

An altar was dedicated at the R.C. Chu Our Lady of the Sacred Heart at Cleato week. It has been constructed by Mr. Wa Cheltenham, and cost £120.

The rebuilding of All Saints' Church, Her recently destroyed by fire, will be comm almost immediately. The estimated cost is £ and the architects are Messrs. Paley, Austin Paley, of Lancaster.

Colonel Ducat, R.E., has held an inqui Bangor touching an application by the council to the Local Government Board fo sanctioning of a loan of £1,300 for the purpo purchasing and constructing a pleasure-grou Garth. Mr. Gill, city surveyor, explained the

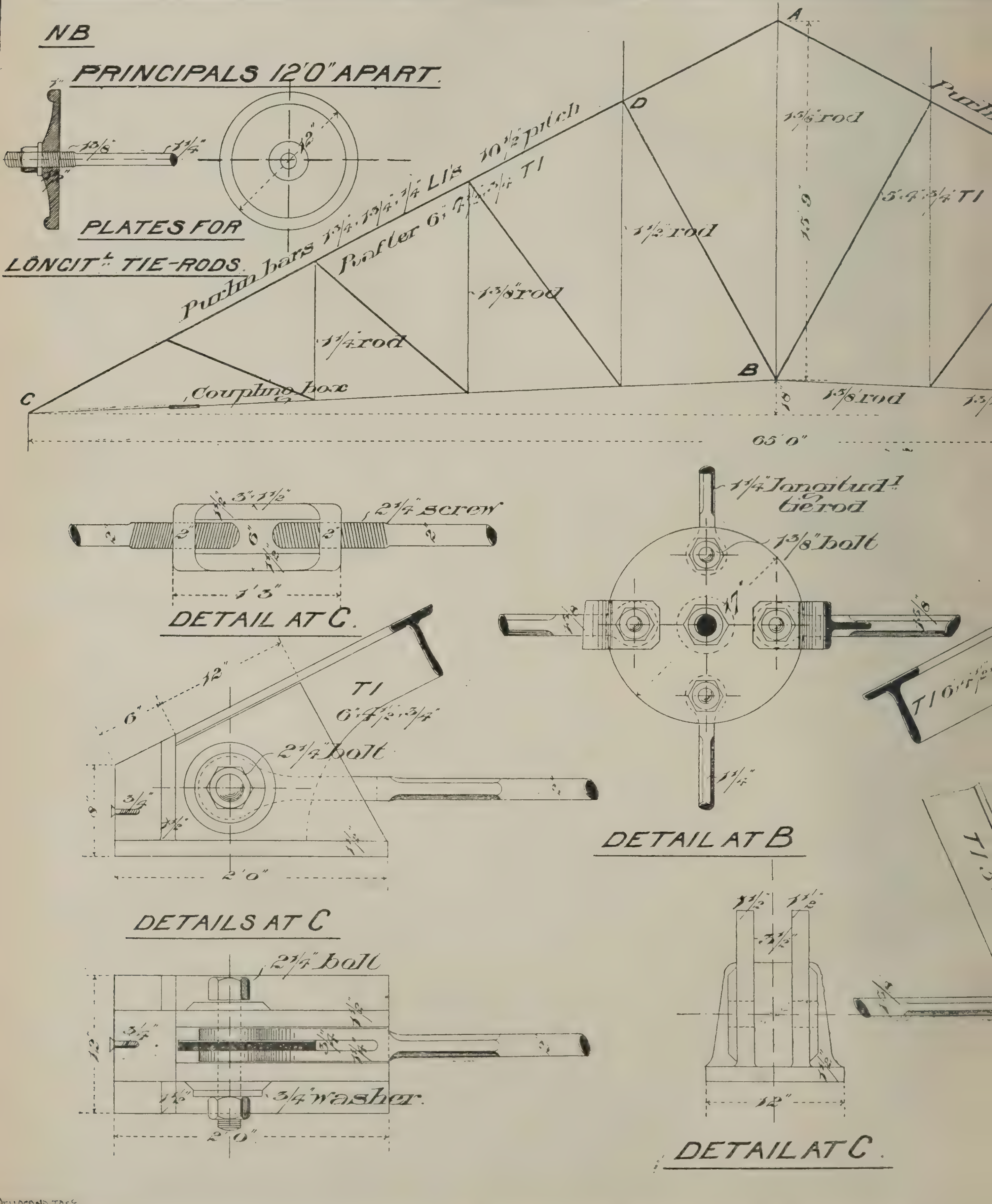
A statue of the late Emperor Frederick wa veiled at Homburg last week. It is the wo Herr Uphues, the Berlin sculptor, and repre the Emperor in his military cloak.

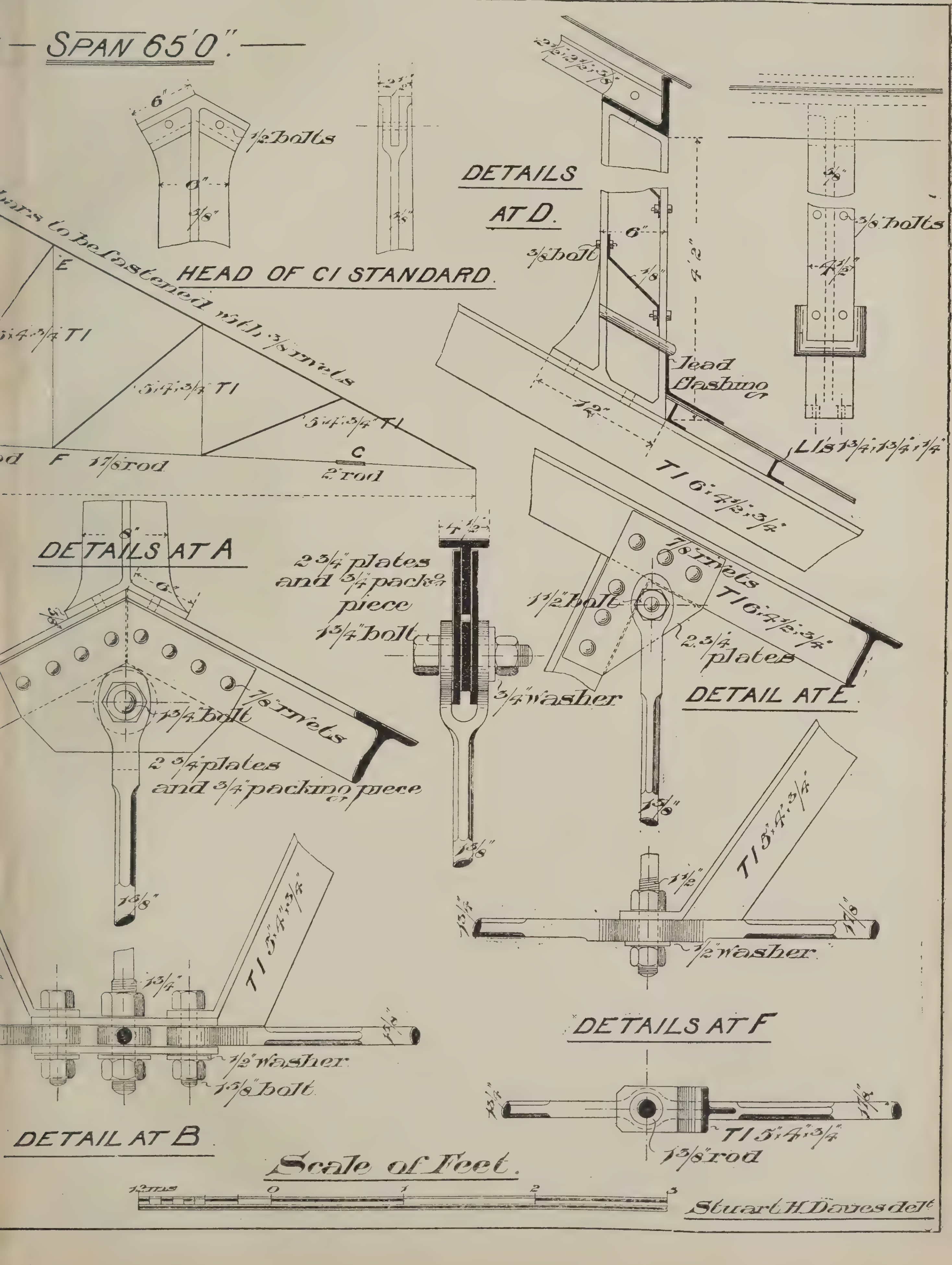
The City Commissioners of Sewers have el a superintendent of street cleansing for the in the room of Mr. W. Swale, who rec retired. The salary allotted to the office is with a house. There were over a hundred c dates. The election fell on Mr. William Keill present superintendent of cleansing in the Hol district.

In the case of John Body, of Frith-road, Ley stone, builder, the order for discharge has suspended for five years, ending April 27, 1897.

The new schools, Northampton, are being wa and ventilated throughout by means of Shorl patent Manchester grates, the same being sup by Mr. E. C. Shorland, of Manchester.

CONSTRUCTIONAL DRAWINGS – No. 4 – DETAILS OF AN IRON ROO

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HEAD OF CI STANDARD.
6″
1/2″ bolts
6″
3/8″
2 1/2″
3/8″
DETAILS AT D.
2 1/2″ 2 1/2″ 3/8″
3/8″ bolt
6″
1/8″
4′ 2″
Lead Flashing
12″
L1/s 1 3/4″ 1 3/4″ 1/4″
T1 6″ 4 1/2″ 3/4″
3/8″
3/8″ bolts
4 1/2″
bars to be fastened with 3/8″ rivets
E
5″ 4″ 3/4″ T1
5″ 4″ 3/4″ T1
5″ 4″ 3/4″ T1
F
1 7/8″ rod
C
2″ rod
DETAILS AT A
8″
6″
3/8″
7/8″ rivets
1 3/4″ bolt
2 3/4″ plates and 3/4″ packing piece
1 3/8″
4 1/2″
2 3/4″ plates and 3/4″ packg piece
1 3/4″ bolt
3/4″ washer
1 3/8″
7/8″ rivets
T1 6″ 4 1/2″ 3/4″
1 1/2″ bolt
2 3/4″ plates
DETAIL AT E.
1 3/8″
T1 5″ 4″ 3/4″
1 1/2″
1 3/8″
1 7/8″
1/2″ washer
DETAILS AT F
T1 5″ 4″ 3/4″
1 3/4″
1 7/8″
1/2″ washer
1 3/8″ bolt
DETAIL AT B
1 3/8″
1 7/8″
T1 5″ 4″ 3/4″
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Scale of Feet.
12 ins
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1
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3
Stuart H. Davies delt

WAYSIDE NOTES.

THE increasing size of ocean steamers is causing the committee of works at Liverpool to extend the area of Mersey Dock, and to enlarge the entrance thereto. Some prophetic statements made at the meeting of the committee are of interest to naval architects. Mr. R. Gladstone, for example, declared that he did not consider 100ft. in width more than an essential accommodation for such large vessels as the Cunard Company are building, and recommended very strongly that the board should be prepared for vessels 700ft. in length. No such vessel is, of course, building of this dimensions; but size has been so gradually increasing year by year that it is possible that some company may attempt a new Leviathan. At the Liverpool meeting it was stated, I see, that the largest ship afloat—a man-of-war—is 71ft. in the beam, while the newest Cunard boats are to be only 65ft.

Recent cyclones have been terribly destructive to even substantial buildings. Personal narratives just published of the disaster at the Mauritius show the force of a hurricane of unusual strength on buildings of sound masonry. An eye-witness writes: "Proceeding up Rampart-street, I came on the ruins of the Church of the Immaculate Conception, and a little farther up, on the other side of the street, were those of the Convent du Bon Secours. Here, to my amazement, I saw a thick, strongly-built, well-mortared wall of squared stones, and fit for a fortification, levelled with the ground." Another account says that this church "was reduced to a mass of ruins," but "the cathedral, by some strange chance, escaped destruction." To read the accounts of the streets choked with the *débris* of fallen houses and of roofs blowing over like the lid of a bandbox, it seems that the destruction at Port Louis would not have been more complete had a severe earthquake taken the place of the hurricane. As is well known, the calamities and loss of life attending this disaster have been deplorable.

No less disastrous has been the result of the cyclonic winds in Kansas. A whirlwind passed over the centre of Wellington City on Friday night last, and left a track of desolation behind. Two churches were wrecked, and in all some 150 houses destroyed. Had the buildings been of a temporary wooden character there would have been less surprise at the wholesale nature of the destruction; but, as at Mauritius, solid walls were concerned and apparently brought to the ground in an instant.

Wren, as the great Renaissance architect, has erected buildings that all modern architects would see carefully preserved. It does not follow that all and each of Wren's contemporaries should have produced works that we would see preserved just because they date back to Wren's time. I fear it would be difficult to define the hard-and-fast line your correspondent, Mr. Phipson, requires. There are three things that make an old work worth preserving, either being sufficient to form the foundation of a plea for its preservation. We have (1) antiquity, (2) intrinsic beauty, (3) association. Now in the case of Wren's library, even if there be no vast antiquity concerned, we certainly have intrinsic beauty and association. All will agree that the library affords an elegant façade, and that Wren was a true master-architect, head and shoulders above all his near contemporaries, and—although our young men might sneer at him as an old fogey who designed by modules and was bound by the Orders—with no compeer at the present day.

I fancy that no such case may be made out for the old Law Courts or the houses in Abingdon-street, let alone the Egyptian porch of St. Margaret's. Where is the antiquity, where the beauty, and where the association? True, there were many legal memories and an odour of silk about the old Law Courts; but a plea for the preservation of the buildings could scarcely have been founded on that basis. To the architectural mind there is never any shadow of doubt as to whether this and that work should or should not be preserved. One feels intuitively that either it should be held in reverence, or that it has no true worth. Your correspondent says that Wren's style "is, after all, exotic and wholly irreconcilable with purely English architecture." Here he ruffles the feelings of many architects of the day, and does not see that the alien has become naturalised English. Now, indeed, it may almost be said to be "racy of the soil." We do not ignore the matter of the removal of the old Mediæval work at Lincoln. If it appears to be otherwise, it must be because in days past we have become so used to the destruction of fine old work under the mask of "restoration," that now we are insensible to much of the evil. Protest, unfortunately, has so often availed little.

The Brighton (or Hove) School Board are carrying out a piece of folly. East and south of the West Brighton station has arisen a district of choice residential character, quiet, well elevated above the sea-level, and comprising first-class houses of residents. Of "small property," or houses likely to provide scholars for a board school, there is absolutely no sign, while south-west of the station there is quite a large district, such as would supply the requisite boys, girls, and infants, company upon company. The fine Cromwell-road will be known to many readers. This road now forms one continuous thoroughfare, by means of a newly-constructed road at its east end, to the Dyke-road. If all goes as it should, the land adjoining this new road and the Holland-road will be covered with buildings of at least equal average class to those mentioned. Yet at this spot the School Board has commenced to build a new school, and in due course the residents of the district will experience the delights of much bell-ringing and the half-daily trooping of numbers of noisy children through their quiet roads.

The immediate and visible outcome of the decision of the London County Council with respect to the wages to be paid by their contractors to their workmen will be the diappearance of much "sweating." So far, so good. For all labourers and artisans who can obtain employment with contractors working for the Council it will mean better things, or, to speak more correctly, the assurance of good things. Time will show wondrously beneficial results from the application of the true principles of beneficial "socialism."

Coach-making is in a very flourishing state. When the industry is considered in its artistic bearings, a good carriage of two wheels or four is a model of fitness to a given purpose, and shows how such fitness results in beauty. There is just what is wanted in the way of work, and no surfeit of any kind. What is done is done well—three-fourths of the secret of architectural designing, as I thought the other day when I examined a wretched piece of building where all necessary features had been left to take care of themselves, and "ornament," elaboration, and time bestowed upon parts best left alone.

The Worshipful Company of Coachmakers and Coach-harness Makers of London opened their annual exhibition on Monday, at the company's hall, in Noble-street, and satisfaction is expressed with the exhibits, a new feature this year being the mechanical drawings of designs. These annual exhibitions were commenced in 1864, for the purpose of stimulating skill and intelligence in those engaged in coachmaking, and to encourage technical education. They must have done much good; at any rate, carriage-building as an art has greatly advanced.

I see that a supper was recently given to the workmen engaged on a house of which Mr. Lutyens was the architect. This is a pleasant event to dwell upon. Give a supper to your workmen at the end of your job, and you do more to practically advance the question of the arts and crafts than all the letterwriting, velvet-coats, bottle-glass, and bad draughtsmanship in the world. GOTH.

The London County Council held a special meeting last Friday to consider the wages question. After considerable discussion, Mr. J. Burns's motion establishing the rates of wages and the hours of labour recognised by the London Trades Unions, as the rule in connection with all work done by the Council, was amended by the omission of the word "London." The pay and hours are, therefore, to be according to the scale prevailing in the place where the contract is to be executed.

PLUMBERS' REGISTRATION BILL.

WE have received the report of the Select Committee on the Plumbers' Registration Bill who have taken evidence thereon. The object of the Bill our readers know pretty well, and the evidence taken appears to confirm the necessity for registration. Several important bodies have petitioned in favour of the Bill, including the Royal College of Surgeons of Edinburgh, and several corporations, including that of Dublin, lodges of operatives and plumbers; in all we hear 44 petitions are in favour and not one against the measure. The objections to the Bill made by the National Association of Master Builders are that it is an unnecessary legislative interference with the freedom of a large and important branch of the building trade, sought to be enacted without being submitted for consideration to any leading section of that trade; that if adopted it would have a far-reaching injurious effect not only on plumbers, but on all other branches of the building trades, in that such legislation must tend to make the supply of permitted plumbing labour scarce, and enable the workmen to demand and obtain much higher rate of wages and shorter hours than would be obtainable under ordinary conditions, and thus unsettle other branches with whom they have to work, and greatly increase the cost to the public of an already expensive section of building. Further, if passed it will take the means of subsistence out of the hands of a large number of good honest plumbers (both employers and employed), there being numbers of old-established persons and firms who could not, and would not, face the ordeal of an examination. It is also alleged that sanitation is now carried out by ironmongers, drain-layers, and bricklayers, while the plumbing trade covers work quite outside sanitary arrangements. The master builders are unable to see sufficient reason for the plumbing trade of the whole country being subjected to unlimited taxation under Clause 12. They propose certain amendments as necessary if the Bill becomes law—that no powers be given to the council to tax the plumbing trade beyond the amount of the registration fees; that the treasurership be not permanently vested in the Plumbers' Company of London, but be made annually elective; that the members of the council be drawn much more largely from the local plumbers and builders' associations, and less from bodies who can know little about the trade; that protection should be given to old-established persons in the trade; that there should be an appeal from decisions of both local and general councils. These objections and amendments will no doubt receive careful consideration. Some statistics furnished by Mr. W. R. E. Coles, the energetic clerk to the Plumbers' Company, are interesting, as proving what effect registration has had upon the increase of professions in checking their too rapid increase. Comparing the ratio of increase of the closed professions of law and medicine with that of architecture, it was shown that during the period from 1861 to 1881 the legal profession increased 20 per cent., the medical 5 per cent., and architects 79 per cent. These figures undoubtedly prove the value of statutory regulation in keeping the number of a profession within reasonable limits.

CHIPS.

Extensive additions are being made to parish church schools, Middleton (Lancs). The works will be carried out by Messrs. Grundy and Sons, of Middleton, under the supervision of Mr. T. A. Fitton, architect, of Middleton and Manchester.

It should have been stated that Mr. Bronsdon, not Brownlow, of 5, Wine Office-court, was the author of the show card mentioned on page 754 last week.

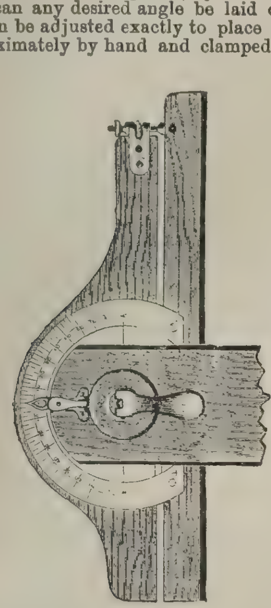
A stained-glass window, illustrative of the text "Blessed are the Pure in Heart," has been presented to Thornton Watlass Church by Lady Cowell. The work is from the studio of Messrs. Powell Brothers, of Leeds.

Mr. J. G. Gradon, builder, of Durham, has the contract for the erection of additions and improvements at Ushaw College. The price is considerably over £2,000. The architects are Messrs. Pugin and Pugin, of Westminster.

The Leeds town council recently resolved to give notice to the local tramways company requiring them to sell their undertaking to the corporation, and the Board of Trade has appointed Sir Douglas Galton, K.C.B., to act as arbitrator in the matter.

AN IMPROVED T-SQUARE.

VE illustrate herewith an improvement in draftsman's T-squares, by means of which only can any desired angle be laid off, but the are can be adjusted exactly to place after being approximately by hand and clamped. For this



rpose the adjusting nuts at the upper end of the ad are used, the auxiliary head being turned by em upon a centre which coincides with the main ıd. By this means a very fine adjustment is ıdily obtained. The blade is clamped to place by eccentric lever instead of a milled nut.

The pointer or index for the graduations of the tractor is also adjustable by means of the small -screws seen at either side of it, this adjustment mitting the blade to be brought into a position coincide with any previously drawn line, or to npensate for an inaccurate drawing-board, and index can then be brought to zero. The many s to which these features can be put will readily gest themselves to draughtsmen. The squares are de by E. L. Deane, Holyoke, Mass., and our istration is taken from the *American Machinist.*

* * *

The Bill promoted by the London County Council the construction of tramways over Westminster idge, with a terminus on the Victoria Embankment, opposite Whitehall Parade, which was ently passed in the House of Commons, passed initial stage in the House of Lords on Monday, en the Examiner certified that the Standing ders of the House had been complied with.

Mr. Arnold Taylor, Local Government Board pector, has held an inquiry at North Shields, in erence to the application of the Tynemouth ral Sanitary Authority for sanction to borrow ,500 for works of sewerage and sewage disposal the contributory places of Burradon and Longıton. The authority desired to complete a verage system for the Longbenton district, in ınection with the Ouseburn sewer recently conucted by the corporation of Newcastle. Mr. nning, engineer, explained the scheme.

The parish church of Lambourne, Berks, has been pened after restoration at a cost of £3,000. Mr. O. Scott was the architect, and Mr. J. Thomp, of Peterborough, the contractor.

A stained-glass window has been placed in the ath aisle of Manchester Cathedral as a memorial the late Dean, Dr. Oakley. It has been executed Messrs. Burlison and Grylls, of London, and presents the Magnificat.

The brick manufacturers in Toronto and vicinity ve organised an association, and have decided to duce the scale of wages paid to employés. This tion has been promptly followed by the organiion of a brickmakers' union, and a determination the part of the employés to submit to no luction.

On Wednesday week a mission church which has en erected at the junction of the Kingswinford d Wolverhampton roads at Wall Heath, near ngswinford, was dedicated by the Bishop of chfield. Messrs. Holland and Son, of Dudley, ve carried out the entire work from the signs, and under the superintendence, of Mr. C. nam, diocesan surveyor, of Stoke-on-Trent. The ırch will seat 200 persons, and has cost about 500.

New works of water supply have just been comted and inaugurated at Market Drayton, having n carried out by a private company. Mr. att was the engineer, and Mr. Dale the conictor.

Building Intelligence.

CARLISLE.—The "merrie citie" was *en fête* on Thursday in last week, the threefold occasion for rejoicings being the laying of the foundation-stone of the enlargement of Tullie House by the Mayor, the inauguration of the Mayor's Drive on the boulevards round the Sauceries, and the dedication to the public of the new Recreation Ground in Botchergate. Tullie House, a 17th-century mansion in Abbey-street, will be rearranged internally to serve as a museum, and a new wing will be built at right angles, in which the public library and school of art will be housed. The plans have been drawn by Mr. W. Howard-Smith, M.S.A., the city surveyor, and the cost will be £12,700, in addition to £2,000 for furnishing. The chief contracts have been taken by Messrs. J. and W. Baty, excavator, bricklayer, and mason's work, and by Mr. H. Court, carpentry and joinery. The Mayor's Drive was commenced from plans by Mr. H. U. McKie, then city surveyor, and has been completed by his successor, Mr. Howard-Smith, who has also laid out the Botchergate Recreation Ground.

LEEDS.—On Saturday the Right Hon. W. L. Jackson, M.P., laid the foundation stone of a new Sunday-school and parochial institute for All Hallows', Burley, Leeds. The Sunday school will accommodate 1,100 in three departments. The boys' school will measure 50ft. by 30ft., and 14ft. high. It will be lighted by windows on three sides. The dimensions of the girls' schoolroom will be 60ft. by 30ft. On the second floor there is to be a large assembly-room. The architects are Messrs. Kelly and Birchall. The site has cost £375, and the contractors, Messrs. Wood and Airey, have taken the work at £2,500.

LEITH, N.B.—A new church called Wardie United Presbyterian Church, is about to be erected on Primrose Bank, facing the sea. The church is to seat 536 people, and is to cost £2,500. All the accommodation is in the area, as there is to be no gallery, but provision is made for a steeple at the north-west angle of the building. The pulpit is to be a platform one, and space is left behind it for an organ. A classroom is also to erected alongside the church to accommodate other thirty people. The style is the Middle period of Gothic. The architect is Mr. John M'Lachlan, York-place, Edinburgh.

NEWHEY.—A new cotton-mill at Newhey, near Rochdale, was opened on Saturday. It has been erected from plans prepared by and under the superintendence of Messrs. Stott and Son, architects and consulting engineers, of Manchester and Oldham. The structure is fireproof, 11 double bays, or about 230ft., in length by 132ft. wide, and, excluding the basement—which extends the whole area of the site—five stories high. The flooring consists of brick arches, constructed on the architects' patent system, which leaves clear passages for access for creeling. At the back of the mill there is a shed, one story high, for the purpose of additional carding. The engine-house is behind the mill, and the boiler-house occupies an angle between the engine-house and the blowing-room. When fully furnished, the mill will contain about 103,000 mule spindles. The contractors for the erection and furnishing of the mill were Messrs. E. Taylor and Co., Littleborough.

SMETHWICK.—The new church of St. Michael and All Angels, Smethwick, was consecrated recently by the Bishop of Lichfield. The church has been built in Crocketts-lane at a cost of £5,100, exclusive of £500 for the site. The building was designed by Mr. A. E. Street, M.A., of London, who, forced by the necessity of economy, has adopted a very unpretending treatment, both for the exterior and the interior. The windows are lancets, and the roofs flat-pitched for this reason. The interior is formed of nave and aisles, with baptistery and double porches at the west end, chancel raised some 4ft., morning chapel, north transept, and organ chamber. Underneath the chancel a parish room has been provided, 47ft. by 35ft., and there is also a vestry on the same level. The church will accommodate 650. Mr. H. Wilcock, of Wolverhampton, was the contractor.

* * *

The rural sanitary authority of Guildford have adopted plans by Mr. C. N. Lailey, C.E., for the sewerage and drainage of Woking.

Engineering Notes.

BONARBRIDGE, N.B.—A special meeting to discuss the rebuilding of the fallen viaduct at Bonarbridge was held last week by the joint committee of the Ross and Sutherland County Councils. Mr. Charles P. Hogg, of Messrs. Crouch and Hogg, civil engineers, Glasgow, submitted plans prepared by that firm, which were unanimously adopted. The new bridge will be composed of bow-string steel girders, in three spans of 140ft., 105ft., and 70ft. respectively, resting on mason-work at either end, and supported by stone piers in channel. There will thus be a clear waterway of 315ft. instead of 260ft. as formerly. The roadway will be 25ft. wide. Telford's bridge had also three arches, one of iron 150ft., and two stone arches 50ft. and 60ft. wide, while the roadway was only 15ft. wide.

COVENTRY.—The extensions in connection with the goods department at Coventry, by the London and North-Western Railway Company, are now in active progress. Two new bridges under the railway between the Butts and Earlsdon have been completed before those responsible for the construction of the new road between the two places are ready to proceed. The new bridge to carry the footpath leading from Grosvenor-street to Stivichall over the railway is nearly finished, and stables for 40 horses are about to be built near by, together with a two-story set of offices. Alongside of the present goods shed a large grain warehouse, the excavations for which have been commenced, will be built. Sidings are being made close by, and the Nuneaton line, as far as Coundon-road Station, has been widened so as to carry additional lines of rails. The bridges contract is in the hands of Messrs. Radcliffe, of Huddersfield, and the building contract has been placed with Messrs. Parnell, of Rugby.

ROSLIN, N.B.—During this week Messrs. P. and W. MacLellan (Limited), of Glasgow, have been carrying out the work of renewing the Bilston viaduct on the North British Railway, at Roslin. The old structure consisted of six spans of 75ft. each; but in the new viaduct these have been replaced by one large steel span of 330ft., and two side spans of 60ft. each. The height from the bottom of the valley to the level of the rails is 135ft. The work has been carried out under the supervision of Mr. James Carswell and Mr. James Bell, engineers of the North British Railway Company, and Mr. William Turner MacLellan on behalf of the contractors. About 200 men were employed on the work.

* * *

CHIPS.

The name of William Harmer, of Southborough, surveyor, late surveyor to the Southborough local board of health, appears in Friday's list of receiving orders in bankruptcy.

Messrs. Powell Brothers, of Park-square, Leeds, have just completed a series of figure paintings upon the walls of St. Michael's Church, Haworth, the birthplace of Charlotte Brontë.

It is stated that before removing the Wellington monument in St. Paul's from the Consistory Court to an arch under the nave it will be necessary to strengthen the floor and to underpin the crypt floor beneath it.

The Bible Christian chapel at Padstow was reopened last week after restoration, including new fittings, rostrum, and singing seats. Mr. W. H. Martin was the builder.

A work by Mr. J. C. Hook, A.R.A., entitled "Fish from the Dogger Bank," has been purchased for the permanent art collection at Birmingham. It represents the shore at Scheveningen, with three Dutch fishing-boats riding at anchor. In the foreground a group of women are bargaining over the sale of a quantity of fish. This picture, which is from the David Price collection, was exhibited in the Royal Academy in 1870.

The Bill under which powers are sought to extend the Epsom Downs Railway to Walton-on-the-Hill, by a line passing in tunnel under the Epsom "Straight Mile" course, has now received the sanction of both Houses.

A nurses' home is about to be built as an adjunct to the infirmary at Carlisle from plans by Mr. C. J. Ferguson. Accommodation will be provided for twenty nurses, and the building will form an upper floor to the dispensary. The cost will be £2,200, and a mortuary will be added in the yard at a further outlay of £275.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

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ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two the minimum charge being 5s. for four lines.

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The charge for advertisements for "Situations Vacant" or "Situations Wanted" is ONE SHILLING for TWENTY-FOUR WORDS, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., L., LI., LIII., LIV., LVIII., LIX., and LX. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

TWENTY YEARS SUBSCRIBER. (Claridge's asphalte will be perfectly damp-resisting in such a case. It is used, among many other places, under such conditions, at the New Scotland-yard Police Office on the Embankment.)

RECEIVED.—R. and T. S. Co.—J. Mansfield.—S. J. A.—Reg. Plumb.—M. and R.—J. R. and Co.

"BUILDING NEWS" DESIGNING CLUB.

DRAWINGS RECEIVED. — "Symbol," "Vulcan," "La Cigale," "Sphinx," "Excelsior," "Don Quixote," "Box," "Perseverando," "Smilash the Goth," "Firefly," "Cyclist," "Sweet Auburn," "Neufardi," "Zingarella," "Black and White."

PETERBOROUGH. (The fall indicated in the conditions for the current subject is intended to be from N.W. to S.E., not from N.E. to S.E.)

Correspondence.

PATENTED PLANS FOR WORKMEN'S DWELLINGS.

To the Editor of the BUILDING NEWS.

SIR,—If the validity of Messrs. Flockton and Gibbs' patented plans (which contained a principle worth patenting) was questioned, I think no one, if he had the desire, need fear of infringing any patent right Mr. Hughes may have in the plans illustrated in your last issue. Personally, I should like to know of what the patent consists. As far as can be made out from your description, it is in the overlapping of the houses, with the living-room and scullery at front and back alternately; but such houses were commonly built in this district until a short time ago, but now discarded, as property-owners have found the small saving of cost through lessened frontage is partly made up by the extra depth, and is more than counterbalanced by the reduced income arising from the number of empties in those houses having the living-rooms to the back.

If the result of lowering the patent fees is the patenting of every such effort in design, it had been better for Mr. Goschen to be still reaping the advantage of the higher fees.—I am, &c.,

WM. H. DUNCAN.

Ingle Nook, Bury-road, Rochdale, May 28.

SIR,—With reference to the plans which appear in your issue of the 27th inst., will Mr. Hughes kindly explain what his "patent" consists of? I, for one, cannot see anything in the illustrations nor in the description anything that can be "patented."

It cannot be the "interlocking" principle in the planning, for this has been used many years. Nor can it be the particular arrangement of his plan, for I have somewhere among my papers plans of some houses of almost precisely the same arrangement, only better. These plans came from Mr. Cashin, who at the time I got them, in 1862 or 1863, was an architect in Bank-street, Sheffield, and I am under the impression that some houses were erected from the plans in that town, which had a good many back-to-back houses. If Mr. Cashin is still practising, he would, no doubt, have something to say in the matter.

Mr. Hughes's plans indicate an unlighted and unventilated staircase, whereas in Mr. Cashin's plan I distinctly remember the staircase being sufficiently wide for a small "well" to be left, and a good-sized skylight threw down the light, while ventilation was provided for at the sides, or the skylight opening.

I can understand a painting or drawing being a copyright, but I consider it to be nearly, or almost, impossible for any plans of cottages to be the subject of a patent, for the planning of cottages has been so worked out in all directions, that there is nothing really original left.

Woking, May 30. SAML. RIDGEWAY.

SIR,—I suppose, and hope, Mr. Hughes has only been at the cost of obtaining a provisional patent, as I beg to inform him that there is not a single new feature or improvement in his plan that has not been thought out and built years ago by the writer, in a Northern borough town. The main principle of the idea first appeared in 1866, when Messrs. Kelly and Crossland, of Huddersfield; Mawson, of Bradford; and one or two others, at the desire of the Royal Agricultural Society, sent plans of workmen's dwellings to their show that year, and you, Mr. Editor, perhaps are not aware that these plans, one of which includes the best features in Mr. Hughes's supposed new invention, were duly illustrated in the BUILDING NEWS of 1866.

Mr. Hughes's plan is not the best, by far, that it is possible to have, even in a less frontage and the same area. In a work I have been engaged on over 30 years (since 1859) I have 17 different plans of double through back-to-back houses, beginning at 18ft. frontage for a pair up to 27ft., and it is as possible to create a new order of architecture as it is to invent a new plan not contained in my collection.—I am, &c.,

A NORTHERN ARCHITECTURAL EXPERT.

THE AUSTRALIAN PLUMBERS AND REGISTRATION.

SIR,—Referring to a note in your issue of 20th inst., during the past year I have received various communications from Adelaide, Sydney, and Melbourne.

The plumbers of Australia indicate their strong desire to adopt as far as possible the system which has been introduced in this country, and they seek the active co-operation of the company in the matter.

I am now in communication with representatives of various master and operative plumbers' associations, and with the public authorities of Australia upon the subject. I expect to be in a position shortly to make a further communication to you upon the matter.

In the mean time I may add, with your permission, that a considerable number of plumbers holding the company's certificates are now engaged in the Australian Colonies and in New Zealand.—I am, &c.,

WM. R. E. COLES, Clerk.
The Worshipful Company of Plumbers.
1, Adelaide Buildings, London Bridge.
May 27.

The committee for the restoration of St. Mary's Church, Warwick, have adopted a report and plans by Mr. J. A. Chatwin, of Birmingham, for the work.

A memorial cross of 15th-century character has been placed over the grave of the late wife of the rector of St. Sidwell's, Exeter. Messrs. Harry Hems and Sons, of Exeter, carried out the work.

Intercommunication.

QUESTIONS.

[10780.]—**Church Bells and Towers.**—Is there any risk of bell-ringing injuring the parish church tower, especially when they do what is called "firing"? If so, is there any method of hanging or ringing the bells so as to avoid or counteract the danger?—E. M. J.

[10781.]—**Mastic Cement.**—I should feel much obliged to any of your readers having practical experience in the frequent use of mastic cement to kindly inform me as to the best mode of tempering and preparing same for use—namely, repointing cut stone work which is taking wet. Should the joints which have been deeply raked out be wetted before applying the cement? Is mastic cement best for this purpose?—NOVICE.

[10782.] — **Darkening Oak Half-Timbered Work.**—I am erecting some cottages in half-timbered work, and should be glad to know if there is any process of fumigating the same so as to darken the oak, and to stand the weather without getting blotchy. If there is no satisfactory process of fumigation, what is the best stain to use—one that will not require any varnish?—W. H. S.

REPLIES.

[10775.]—**Hydraulics.**—I notice in last week's issue two methods of ascertaining the hydraulic mean depth in circular pipes—viz.: 1. By the use of the formula $\frac{Sa}{Wp}$; 2. By the rule, "The hydraulic mean depth of a circular pipe running half-full is ·125 of the diameter." The application of these two rules to the following example apparently produces very different results:—Required the H.M.D. in a circular sewer 24in. diameter running half-full (*i.e.*, 12in. deep). According to the first rule, the H.M.D. would be—

$$\frac{Sa}{Wp} = \frac{\frac{1}{2}(24^2 \times \cdot 7854)}{\frac{1}{2}(24 \times 3\cdot 1416)} = \frac{226\cdot 1952}{37\cdot 6992} = 6\text{in.}$$

According to the second rule, the H.M.D. would be—

·125 of 24in. = 3in.

An explanation would be deemed a favour.—B. H. S. A.

[10779.]—**Government Exams.** — "Examinate" had best write to the Secretary, Civil Service Commissioners, Cannon-row, S.W., from whom he will receive, gratis, full official particulars of the various examinations for which he would be eligible to enter, the subjects examined in, where the examinations are held, the fees, and salaries. There is the medical examination, which is severe only when foreign service is one of the conditions, and this takes place after the examination has been passed. Examinations are held almost annually for as many posts as may happen to be vacant at the time—this number generally not exceeding two or three.—G. A. T. MIDDLETON.

CHIPS.

Mr. Charles Newman, of Wednesbury, registrar of births and deaths, and also practising as an architect and surveyor, died on Saturday from consumption.

Extensive improvements have been made in Burley Church, near Leeds, including the paving of the chancel with black and white marble, erection of new stalls, and also of an alabaster pulpit, designed by Mr. J. L. Pearson, R.A.

An inquest was held at Morecambe on Friday as to the death of Mr. Robert Turner, 35, builder and contractor, which took place the previous day. Deceased, who had been drinking heavily, in the early morning got out of a window and on to the roof of his shop, and fell. He died from fracture of the skull. The jury returned an open verdict.

A stone sedilia, some 11ft. in height, has been placed in St. Faith's Church, Stoke Newington. It was designed by Mr. J. Martin Brooks, of 35, Wellington-street, and was executed by Mr. Davidson.

On Saturday afternoon the circular inclosure known as De Beauvoir-square, Kingsland-road, N., which has been laid out by the Metropolitan Public Gardens Association, was formally opened to the public.

Several correspondents of the *Stratford Express* call attention to the fact that in a portion of the borough of West Ham refuse and dust are being tipped into the hole made by excavating gravel for sale, and that on the made land houses are being erected. One writer asserts that "there are some houses near Upton Cross (built only about four years ago) on the verge of falling down on account of bad foundations."

At the Marylebone police-court on the 26th ult., a private in the Leicestershire Regiment, named Charles Ratcliffe Benjamin, was committed for trial on a charge of obtaining £4 by false pretences from George Piercy, a builder and house agent, of Maida-vale and Clifton-road, Paddington. According to the witnesses, the prisoner, in the autumn of last year, before he joined the army, had represented himself as a person of means, and was about to open stores all over London. He entered into negotiations with the prosecutor for the carrying out of certain alterations in the premises, and gave some large orders. He tendered a cheque in payment, the name on which had been repudiated as a forgery, and obtained an advance of £4.

Legal.

WATER RATES.

THE law as to water rates and rating grows more and more complicated, and it is becoming essential that it should be understood by all who have to do with house property. This is more especially so since what is known as Fulton's Act of 1887 (50 and 51 Vict. c. 21), practically makes unpaid arrears of water rate a charge upon the premises where the owner is responsible for the rates, and renders the owner or occupier for the time being liable to an action for their recovery in some cases. The point was considered and so far decided by a Divisional Court in the recent case of East London Waterworks Co. v. Ketterman (*Times*, May 10), where the company had brought an action against the defendant to recover £3 6s. 6d. for 14 quarters' water rate from January, 1889 to Dec., 1891, in arrear and unpaid in respect of a dwelling house at Stratford. This house being under the annual value of £20, the owner, and not the occupier, was liable by virtue of the company's own statute. Then came Fulton's Act of 1887, which provided that where the owner was so liable water companies should have a charge upon the premises, instead of their former power to cut off the supply, which was repealed, and they should also have a right of action for such arrears of rates against the "owner or the occupier for the time being." The defendant had been tenant of the house from January, 1889, to July, 1891, when he bought the freehold, though he mortgaged it directly afterwards. He now disputed his liability for the rates due previous to his purchase, and which, of course, should have been paid by the former owner, whose liability he had thus unknowingly taken over.

The County Court judge had held that the defendant was not liable because, being mortgagor, he was not the "owner" within the meaning of Fulton's Act, but the Divisional Court at once overruled that contention. They laid down the effect of the statutes in this case as being that the defendant was not liable for the water rates of the house, being under £20 annual value while he was occupier, as the owner only was responsible. But as soon as he bought the house in July, 1891, and became owner, he took it subject to the charge upon the premises for all unpaid arrears given by the statute. Then came the other section of Fulton's Act, giving the water companies a general right of action for arrears of water rates upon houses in which owners were liable against the "owner or occupier for the time being." If an occupier had to pay such arrears of rates, he could deduct it from his rent. If a subsequent owner had to pay them up, he could sue his vendor. But clearly the defendant was liable, and so he will have to pay these arrears which were a charge on the property when he purchased, and which he could have deducted when settling with his vendor. In this class of house it now becomes necessary to see receipts for water rates on completing a purchase.

FRED WETHERFIELD, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

NOTE.—All questions for reply in this column must be headed "BUILDING NEWS," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

A. D.—BUILDING CONTRACT.—DAMAGES.—If he has broken his contract you can bring an action against him for damages, and this would include what you would lose upon the frames and other work you had got ready for the job. I, of course, presume that the contract is clear and binding, and so could be enforced.

J. B. AND S.—BUILDING.—BAD MATERIALS.—Some one should be liable for this bad work. But much would depend upon the specification and estimate and other things. The question could, of course, be raised effectually by suing both the architect and the contractor for damages for breach of duty and contract; but it would be an expensive business.

The formal consecration of the first completed portion of St. Luke's Church, Deeplish, took place on Thursday, May 26th. About £2,900 has been spent on the finished part of the church, which comprises the chancel and transept. The nave, which is not yet commenced, will cost £4,000. The building is in the Early English style, and narrow red bricks with Rainhill stone dressings. Its windows are lancet-shaped and fitted with cathedral glass. Mr. R. Knill Freeman, of Bolton, is the architect, and Messrs. W. A. Peters, and Sons, the builders.

LEGAL INTELLIGENCE.

EMPLOYERS' LIABILITY ACT CASE.—At the Epsom County Court on Wednesday week, before his Honour Judge Vernon Lushington and a jury, William Gates, bricklayer, Great Bookham, brought an action, under the Employers' Liability Act, against Messrs. Longley and Sons, contractors, of Crawley, for damages for personal injuries sustained by reason of a defect in the works on which he was engaged. Messrs. Longley had taken a contract for the restoration of Leatherhead parish church, and the defendant was employed in October last on a scaffolding, when, owing to the removal of a strut, some material fell on the scaffold, and he was thrown to the ground, sustaining bruises on the leg. At the close of plaintiff's case a compromise was accepted, by which defendants agreed to pay plaintiff £20 damages, each party to pay the respective costs.

SEWERING CONTRACT DISPUTE AT HAMPTON WICK.—The action of Cunliffe v. the Hampton Wick Local Board came before the Lord Chief Justice and a special jury in the Queen's Bench Division last week. The original claim was brought by Mr. William Cunliffe, contractor for the Hampton Wick Sewerage Works, against the Local Board, for £737 16s. 2d., set out as follows:—To amount certified by the defendants' surveyor to be due to the plaintiff, £637 14s. 7d.; to amount of erroneous deduction for flints, £42; to amount paid for opening up the sewer at the park gates, £68 1s. 7d. The plaintiff further claimed interest on the sum of £637 13s. 7d. up to the time of payment or judgment. In their statement of defence the local board alleged that at the time when the certificate was given the surveyor had been discharged, and that he had no authority to give such certificate. The defendants denied their liability in respect of the £42 and the £68 1s. 7d. and interest. The local board also made a counter-claim against the contractor for £3,990 18s. 9d., set out as follows:—Liquidated damages for non-completion of the contract works within six months, £2,950; cost of remedying defects, shrinkages, faults, and improper workmanship and materials, and the cost of maintenance and repairs, £908 5s. 5d.; indemnity in respect of damage to a wall of the railway bridge in Upper Teddington-road, £20; and £112 13s. 4d. in respect of other matters for which the surveyor had no authority to give a certificate. In his reply and defence of the counter-claim, the plaintiff gave a categorical denial to each of the matters mentioned therein. After the case had been part heard, the Lord Chief Justice suggested that it would be more satisfactory for all parties if the case was dealt with by an official referee. This course was agreed to, and Mr. Ridley has since been appointed referee, with power to call in a skilled engineer to inspect the works.

HULL CORPORATION v. TURNER AND OTHERS.—This case, originally heard before Mr. Justice Grantham at Leeds Assizes in April last, as reported in our issue of April 15, p. 554, was again opened before the same judge in the Queen's Bench Division on Saturday. The plaintiffs had contracted for large sewage works, and they now sued the contractors and their sureties for damages upon the ground that the contract had been properly carried out. At Leeds the jury expressed an opinion that the work had been scamped and fraudulently done. The certificate of the engineers of the completion of the work had been obtained; but the jury were of opinion that the certificate had been got by fraud, though the sureties had no knowledge of the fraud. The jury also found that there was an omission on the part of the corporation properly to superintend the work, and that this had led to the scamping. The question now raised was whether, under the circumstances, the sureties were discharged from liability.—Mr. Justice Grantham, after argument, held that sureties having entered into an independent covenant that the contractors should well and truly perform the work, and the contractors, not having so carried out the work, the sureties were liable upon their covenant.—There was judgment against the sureties, the amount to be settled by a referee, and there was also a stay of execution upon terms.

AN INTERESTING CASE TO BUILDERS.—HILL v. ROWE.—This case, in which damages were claimed for wrongful imprisonment, was heard at Bloomsbury County Court, whither it had been referred from the High Court, failing the plaintiff giving security for costs, on Monday, before Judge Bacon and a jury. According to the statement of counsel in opening the case, the plaintiff was last September a carman in the employ of Mr. Johnson, of New-street, Borough. He was ordered to go to the Cambridge Music Hall and cart away some scaffold-poles, the property of a Mr. Foster, of Blackfriars, who had been engaged in erecting and taking down a scaffold for a West End firm of decorators. The defendants, Messrs. Rowe Bros., of Wellington-street, Camden Town, were executing a contract there at the same time. Coming out of the gateway, Mr. Henry Rowe found two men in the employ of Mr. Foster putting some pieces of zinc belonging to him into the cart driven by Hill. He asked them what they were doing, and where they were taking it to, and they said they did not know; that a dark gentleman in the yard had promised them some beer-money if they would load it away for him. The three men were charged at Worship-street Police-court with being concerned together in stealing this material, but the case was finally dismissed for want of evidence. In consequence of this Hill had lost his situation and been out of work for 15 weeks. In cross-examination, plaintiff admitted that it was only partly because of this charge he was dismissed the service of Mr. Johnson. Mr. Henry Rowe having briefly given evidence as to the circumstances under which he gave Hill and the others into custody, his Honour said Mr. Rowe would have been little better than a congenital idiot if he had acted otherwise. He must defend his property, and if Mr. Rowe had acted otherwise he would have proved himself unfit to conduct his business. Verdict for defendant, with taxed costs.

NOTICES TO TREAT UNDER THE LANDS CLAUSES CONSOLIDATION ACT. — THOMPSON v. TOTTENHAM AND FOREST GATE RAILWAY.—This case, heard by Mr. Justice Mathew without a jury, raised the question under the Lands Clauses Act—namely, whether when a person has received a notice to treat for a strip of land which is occupied by two different persons, he can, after he has first given a counter-notice, and has been met with a notice abandoning the notice to treat, still treat the notice good as to the one, ascertain the amount of compensation, and then sue for the amount. After the case had been argued, Mr. Justice Mathew reserved judgment, which was given on Friday without reservation for the defendant company, the learned Judge holding that in such a case there was but one notice to treat.

BANKRUPTCY PROSECUTION. — Joseph King, builder and contractor, of Rudgwick, appeared before the Horsham magistrates on Saturday, on a charge of having between the 8th July and 19th October, 1891, obtained credit to the extent of £103 17s. 9d. from George Weller Butt without informing the latter that he was an undischarged bankrupt. Mr. Butt, the creditor, is a timber merchant, of Littlehampton, trading under the title of John Eede Butt and Son. Defendant was committed for trial at the West Sussex Quarter Sessions, bail being allowed.

CHARGE UNDER THE BANKRUPTCY ACT.—Charles Oades, a builder, of Egham, surrendered to bail at the last Surrey Assizes to answer a charge of obtaining credit to the extent of £371 8s. 6d., from the London and Provincial Bank, he, at the time, being an undischarged bankrupt. There was no allegation of fraud, but the prosecution alleged that he never told the bank manager he had been a bankrupt. The jury, after a lengthy consultation, returned a verdict of "Not guilty," and he was discharged.

RE H. C. J. HENRY.—The debtor is described as an art decorator, and in November, 1890, commenced business at 60, St. James's-street, his affairs at that date showing an estimated surplus of £4,358, and that he carried on the business until February last, when his furniture and effects were seized and sold under an execution; that from 1864 until commencing business as above he was in employment, latterly at a salary of £1,500 per annum; that in 1876 he founded the Royal Tapestry Works, Windsor, which were afterwards formed into an association, of which he acted as managing director at a salary of £500 per annum until 1889, when the association was wound up. Further, that in 1887 he established stained glass works at Windsor, which he afterwards transferred to another person for a small consideration, and that during the last 25 years he has designed various tapestries and silk fabrics, which produced him an income of about £600 per annum. A receiving order has been made. The gross liabilities are returned at £22,541, with an estimated surplus of £3,915.

DUROLINE AND THE BUILDING ACT ONCE MORE.—At the North London Police Court on Tuesday Mr. Burton, representing the London County Council, attended to receive from Mr. Haden Corser the reversal of a decision made by his Worship. The original summons was by the County Council against a gentleman at Hackney for erecting a building with a roof of patent duroline contrary to the provisions of the Metropolitan Building Act. The case had a protracted hearing at the police court, and has been fully reported in our columns. The defence to the action was taken up by Mr. Wright, manager of the Patent Duroline Company, Queen Victoria-street, and the magistrate, having seen the material tested, gave a decision against the County Council. The County Council applied for a new trial; but as the magistrate said he had decided the case on the merits and not on a point of law, he declined to give one. The Council thereupon went to the High Court for a mandamus, and in the result the magistrate was ordered by the High Court to reverse his decision, and direct the offending structure to be taken down. The contention of counsel for the Duroline Company was that this patent material was exempt from the operation cf the Act; but Mr. Burton adhered to the strict letter of the clause of the Building Act, which mentions slates, stone, tiles, or glass as the incombustible material with which roofs may be constructed.—Mr. Haden Corser, in doing as directed by the Judges—namely, convicting the defendant—said he was in no way antagonistic to the Judges, but he saw no legal process for again bringing the defendant before the court after dismissing the summons.—An application for costs was refused.

WATER SUPPLY AND SANITARY MATTERS.

Coventry.—Mr. Mansergh, of Westminster, the engineer consulted by the Coventry Corporation upon the question of sewage disposal, has sent in his report. It sets forth in detail three alternative schemes that might be adopted. One scheme is an extension of the present works by additional tanks, and the acquisition of more land for filtration. Another alternative suggested is that known as the "International" system, and the third is broad irrigation. The system which Mr. Mansergh favours most is the last—that of broad irrigation—and he points out that there is plenty of available and down the valley of the Avon.

PARLIAMENTARY NOTES.

Architectural Registration Bill.—This Bill was set down in the Commons for second reading, to be moved by Mr. Athlerley Jones, yesterday (Thursday), but was so low down in the long list that it was not reached when the hour arrived for adjournment. The Registration Committee have received a larger number of promises of support from members than in any previous year.

CHIPS.

A new building has been erected at Hastings, for Lloyds' Banking Co., and special attention has been paid to the ventilation, which is carried out on the Boyle system, the latest improved form of the self-acting air-pump ventilator being adopted for the extraction of the vitiated air, and fresh air admitted by their improved air inlets.

The new chancel of Christ Church, North Finchley, has just been completed from the designs of Mr. Norton, architect. The lighting arrangement consists of brass standards and brackets, which, together with the eagle lectern, have been made by Messrs. Jones and Willis, of London and Birmingham.

An organ built by Messrs. Abbott and Smith, of Leeds, has been placed in the great hall of the Goldsmiths' Institute at Leeds, and was opened on Tuesday.

At Wednesday's meeting of the Liverpool City Council, the Mayor announced that the Duke of Connaught will visit Liverpool on July 14th for the purpose of opening the new water supply from Lake Vyrnwy. A resolution was passed voting a sum of £1,500 for the expenses attending the Royal visit.

A chapel is about to be added to the workhouse at St. Alban's, at a cost of £900, to be raised by subscriptions. Mr. T. Davys is the architect.

The new fruit, vegetable, and flower market in Farringdon-road, which has been established by the City Corporation as a section of their London Central Markets, will be opened by the Lord Mayor on Monday week, the 13th inst., at 1 p.m. Farringdon Market will simultaneously be discontinued, and the site will cease to be used as a market.

The salary of the Borough Surveyor of Dover has been increased from £300 to £350.

Mr. Candler has been appointed surveyor to the local board of Gillingham, Kent.

The Preston Town Council has resolved to expend £95,000 on works of additional water supply, it being stated that this would give a 263 days' storage supply.

Messrs. Lockerbie and Wilkinson, art metalworkers, of Birmingham, have issued an exceedingly useful and comprehensive illustrated catalogue of wrought-iron railings, gates, gas and electric-light fittings, &c., which will be found very useful for reference.

The foundation stone of the Church of St. Michael and All Angels was laid at Westfields, Barnes, by Viscount Halifax last week. The church has been designed by Mr. Charles Innes, on the plan of an ancient basilica, the materials being red brick and dressed stone, and when fully completed will accommodate about 700 people.

A scheme of sewerage is being carried out for the Milnrow local board. Messrs. Perkins, Graham, and Co. have taken the contract at £2,750.

Our Office Table.

Mr. A. Waterhouse, R.A., will lecture at Toynbee Hall on Wednesday, June 8, at 8 p.m., on "The Architecture of the 13th and 14th Centuries." Mr. Waterhouse's hearers will have an enviable treat. It is regrettable that the public do not oftener have the opportunity of listening to our most able, but most modest, exponent of the noble art of which he is the leading English representative.

At the London School Board meeting yesterday (Thursday) the Works Committee reported on the general question of the charges for quantities. Since 1889 the Board have employed six quantity surveyors for taking out the quantities for new schools and enlargements at a rate of one per cent., with certain additions for special surveys in the case of alterations to existing buildings, the cost of lithography, and other out-of-pocket expenses. It was thought desirable some time since to arrange for the percentage to be inclusive of all charges, and tenders having been invited and considered, the following fresh scale of payments was drawn up, viz.:—For any works, the total estimate of which under one contract does not exceed £2,000, at 1¼ per cent.; for any works, the total estimate of which under one contract exceeds £2,000, at 1 per cent.; for any works to old buildings, including measurements on site as set forth in sections (*b*) and (*c*) of clause 5 of the conditions, at 2½ per cent.; for alternative estimates (on both additions and omissions) at 1 per cent. It was further decided to employ seven instead of six surveyors, and the following seven firms who had agreed to the new scale were accordingly appointed by the Board yesterday: Messrs. Bond and Buzzard, Mr. C. W. Brooks, Mr. Frederick Dunning, Mr. C. J. Dunning, Mr. F. H. A. Hardcastle, Mr. W. H. Strudwick, and Messrs. Young and Brown. Mr. Brooks and Mr. Strudwick are fresh appointments; the other five were previously engaged on the work by the board.

The subway scheme suggested by Mr. H. H. Bridgman in 1885 to facilitate the traffic opposite the Mansion House, is likely soon to be carried out free of expense to the ratepayers. The Commissioners of Sewers unanimously adopted on Wednesday a report of the Finance and Improvement Committee, recommending the proposal of the Electric Railway promoters to construct a central station underneath the open space in front of the Mansion House, Bank of England, and Royal Exchange, on condition that a series of public subways be constructed thereat at the sole expense of the railways. The Bills will, therefore, go before the Parliamentary Committee untrammelled by any objections under this head by the City authorities. The access to the subways will be by means of staircases from the public way—descending about 8ft.—at the corner of the Union Bank, in front of the Royal Exchange, by the London, Liverpool, and Globe Insurance Office, by the side of the Mansion House, at Cheapside, south-east corner, and by the Safe Deposit building, and will all communicate with a circular corridor, 15ft. wide, embracing the several points mentioned, lighted by electricity, from which the station will be entered and access gained to the railway level some 60ft. beneath the surface of the street.

Brockwell Park is to be formally opened by Lord Rosebery on Whit-Monday. There are few of the Metropolitan parks that, for undulating contour and park-like features, can surpass, or even equal, this newly-acquired South London estate, and we may express the hope that nothing will be done to deprive the public of the natural charm of the ground by additional gravelled walks—one of the allurements of park committees and gardeners, and which has done much to spoil the recreative value of Dulwich Park. The formation of the lower pathway on the east side, and another to Brockwell Hall in a more direct line will satisfy all persons, and we are glad to hear it is proposed to acquire a small piece of land near Half Moon-lane to give a better entrance. The conversion of the stable-yard into a gymnasium will provide a useful diversion for juveniles. An artificial lake at the lower level of the park has been formed, which adds to the landscape variety; but here, we think, the alterations may end.

The collection of pictures belonging to the late Mr. F. R. Leyland, of Princes-gate and Woolton Hall, was dispersed on Saturday at Christie's. The sale, including keramics, Italian and French furniture, and 114 pictures, realised £37,857. The collection was especially rich in the works of the pre-Raphaelite brotherhood. The highest prices were given for works by Burne Jones, his master-piece, "The Mirror of Venus," realising 3,400 guineas, and his "Merlin and Vivien" fetching 200 guineas more. Only one of Dante Gabriel Rossetti's works, the "Veronica Veronese," reached 1,000 guineas, and Millais' "Eve of St. Agnes" was knocked down for 2,100 guineas. Two works by Madox Brown realised 225 and 100 guineas respectively.

The Company of Turners offer this year the sum of five guineas, their silver medal, and the freedom of the Company to, and (subject to the consent of the Court of Aldermem) will also obtain the freedom of the City of London for, any workman, whether master, journeyman, or apprentice in the trade, in the United Kingdom, who may send in the best specimen of turning, in either wood turning or in pottery. Prizes will be awarded. Competitors are at liberty to send in any number of specimens, which may be of any dimensions they prefer. The honorary secretary of the competition committee is Mr. Edgar Sydney, 53, Gresham House, Old Broad-street.

Almost the entire sitting of the Plymouth town council, on Wednesday in last week, was occupied by a discussion on a withdrawn and revised tender. The work of erecting sewage tanks at Sutton Harbour and building a new fish market over them, had been submitted to competition. Nine firms had sent in tenders, varying from £43,066 down to £24,673. The lowest tender, that by Mr. G. Shellabear, had been withdrawn, and another substituted for £26,858—exactly £1 below the price which had been previously sent in by Messrs. Pethick Bros. This amended tender was, the *Western Morning News* states, received after the solicitor of the Sutton Harbour Company—by the directors of which the tenders were opened—had pointed out to Mr. Shellabear that he had made a manifest error in his calculations. The singular coincidence of his substituting figures almost identical with those of Messrs. Pethick, whose tender was the next lowest, was repeatedly pointed out during the discussion of the meeting of the town council, but no satisfactory explanation was then offered. In the end an amendment was carried referring the matter back to the committee for investigation, and they have accepted Messrs. Pethick Brothers' tender. Mr. Shellabear has since written a letter to the solicitor, which has been published, protesting against his revised tender being passed over when it remains the lowest sent in, and pointing out that he only revised it in consequence of an intimation from the directors, through their secretary, that certain items had been omitted. We know nothing as to the particular case under notice; but it is a salutary general rule to refuse to allow a tender to be amended, but to accept the next lowest or invite new offers, if necessary, on amended specifications.

The *Electrical World* refers to a long-span telephone wire across the river Dart, in England, which is 2,400ft. in span, and a subscriber calls attention to the two telephone lines which cross the Ohio River between Portsmouth and South Portsmouth, Kentucky, connecting the latter city with the Portsmouth, O., telephone exchange. The pole on the Ohio side is 102ft. high, and the wires to the Kentucky Hills opposite are 3,773ft. long, and are made of steel, the size being No. 12 gauge.

The annual report of Mr. Hickson, the engineer-in-chief for roads and bridges in New South Wales, shows great development in that colony. The expenditure of the department for the year has been £1,232,876 17s. 1d., of which £978,782 10s. was spent in connection with roads and bridges, and £211,696 6s. 9d. on sewerage works. There were about 31,000 miles of road dealt with by the department, 9,356ft. of bridges, 1,040ft. of footways to bridges, and 45,935ft. of sewers constructed during the year. Two thousand five hundred contracts were let during the year, ranging in value from a few pounds up to £98,000. For the purposes of the road expenditure the colony is divided into six divisions, five of which are immediately under the control of assistant-engineers, and the sixth comprises six outside districts with which the chief deals direct. These divisions are subdivided into 63 districts, looked after by resident engineers, who in many cases have assistants. The branch employs 222 professional officers, 46 clerks, 78 inspectors, besides something like 4,000 maintenance men and chainmen. The field officers have large districts, averaging 5,000 square miles each, with numerous works spread over the whole area, necessitating constant travelling, and greatly increasing the difficulties of supervision.

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MEETINGS FOR THE ENSUING WEEK.

SATURDAY (to-morrow).—Edinburgh Architectural Association. Excursion to Drumlanrig Castle.

WEDNESDAY.—Toynbee Hall. "The Architecture of the Thirteenth and Fourteenth Centuries," by A. Waterhouse, R.A. 8 p.m.

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CHIPS.

A meeting of the General Purposes Committee of the Salford Town Council was held on Friday for the purpose of appointing a borough engineer and surveyor in place of Mr. A. Jacob, resigned. The voting was very close between Mr. J. Corbett, Albert-square, Manchester (late member of the Salford corporation), and Mr. John Price, surveyor to the Toxteth local board, the latter finally receiving a majority of one.

The design of Messrs. Atkinson Bros., stained glass artists, Oxford-street, Newcastle, has been selected for the memorial window to the late Mr. John Crosby, to be erected in St. James's Church, West Hartlepool.

Mr. Arthur Englefield, who for three years and a half has been head master of St. Alban's School of Art, has been appointed head master at the School of Art at Gloucester.

On Saturday, Mr. Arnold Taylor, Local Government Board inspector, attended at the offices of the Whitley and Monkseaton Local Board, to hold an inquiry into the application of the authority for sanction to borrow £1,000 for the purposes of street improvement. Mr. W. Pattison, the surveyor to the local authority for the past seven years, then explained the plan, showing a footpath 12ft. in width to be constructed in cement. It commenced, he said, at the houses at Eastcliff and extended to East Parade, where it joined the new road to the sands, and the length was 2,000ft. In addition to the footpath, there was to be an iron railing, to take the place of the present wooden one, for the whole length. In his opinion the work would cost £1,000.

Dr. T. Eustace Hill, formerly of Birmingham, and at present medical officer of health for South Shields, has been elected by the County Council of Durham medical officer of health for the county.

In the bankruptcy case of William Henry Sawle, of Worthing, builder, the order for discharge has been suspended for two years and three months, ending July 22, 1894.

The Cheriton Arch, the chief approach to Folkestone and Sandgate from a growing inland district shut off from access to the sea-front by the South-Eastern Railway, is about to be rebuilt and widened to 59ft. span, at the joint cost of the railway company, Earl Radnor, and the Folkestone corporation. The plans have been prepared by Mr. Bradley, engineer to the company, and the estimated cost is £4,250.

Under a provisional order just obtained, Helmsdale Harbour, N.B., is about to be improved at an estimated cost of £16,000, from plans prepared by Mr. James Barron, C.E., of Aberdeen.

The vestry of St. Mary, Newington, have commenced a re-survey of the parish for drainage purposes. Mr. Alfred Mark (who has recently been engaged upon similar work for St. Martin's parish, Charing Cross, under Mr. Charles Mason, surveyor to the vestry), has been intrusted with the work, which will bring the whole of the plans of the district (632 acres in extent) up to the present date. Mr. Mark previously prepared a new map of the parish of Islington, under Mr. J. Patten Barber, chief surveyor to the vestry.

A memorial reredos in the parish church of Alrewas was dedicated last week. The subject of the reredos is the Crucifixion, with the two thieves at either end of the panel. At the feet of the central figure is the Magdalen. On the right of the Saviour is represented the Virgin in a swoon, with Apostles supporting her. On the left side is St. John, behind him being the figure of the high priest, Roman centurion, and soldiers. The material of which the figures are carved is Dumfriesshire stone. The work has been executed by Mr. R. Bridgman, of Lichfield, the architect being Mr. Basil Champneys of London.

Trade News.

WAGES MOVEMENTS.

THE LONDON BRICKLAYERS.—It will be remembered that in February last the Operative Bricklayers' Society gave three months' notice to the Central Association of Master Builders of a proposed new code of working rules to come into force on June 1st, the principal changes being an increase of wages from 9d. to 10d. per hour, and a reduction of time to 50 hours per week in the summer, and 47 hours in the winter. On May 2nd the representatives of the Society met the Master Builders' Association and stated their case. It was arranged to hold an adjourned conference on the 25th ult., when it was announced that the Council of the Association were "of opinion that the demands of the bricklayers cannot be conceded, but recognising the disadvantage under which the building trade is now working, and the desirability of having one code of working hours and rules that shall apply to all trades, desires and empowers the Strike Committee to take the necessary steps, by conference or arbitration, with the bricklayers and other societies with that end in view." After a discussion, it was decided to postpone further consideration of the bricklayers' demands till after a conference of all trades, at which the question of wages and trade rules would be considered and arranged, it being agreed that should the conference prove abortive the bricklayers' claims should not be prejudiced thereby, and that in the mean time they should continue at work until the termination of the negotiations. A joint meeting of representatives of all the building trades was held yesterday (Thursday) at the Hall of the Operative Bricklayers' Society in Southwark Bridge-road. Representatives of the bricklayers, carpenters, plumbers, masons, plasterers, and painters, and of the labourers in the several trades were present. Mr. Edwin Woodfield, chairman of the Central Committee of Operative Bricklayers, explained the present position of affairs, and the delegates decided on the demands to be made by the several trades at the conference, and the course of action to be taken. The conference will be held either to-day or to-morrow (Saturday).

BIRMINGHAM.—The dispute between the bricklayers, labourers, and masters engaged in the local building trade, which it was hoped a few days ago might be settled by the introduction of Mr. Colmore (stipendiary) as mediator between the parties, now seems far from being ended. After the meeting of the masters and the men's representatives before Mr. Colmore it was arranged that the latter should examine the books of a selected number of firms before proceeding with the inquiry. The men stuck to their demand for an increase of wages, and the masters intimated their willingness to make the concession if the men could get an arbitrator to decide that they were entitled to it. The mediation of Mr. Colmore has thus been without result. The men declare that they will not under any circumstances accept arbitration. A number of bricklayers are at work in Birmingham and the district at the advanced rate of wages; but the employers who are paying the higher rates do not belong to the Master Builders' Association.

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TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

ANDOVER.—For new house for Mr. L. Buckland. Mr. A. Purkess, borough surveyor and architect:—

Annett and Sons	£1,170	0	0
Beal (accepted)	1,169	0	0

ANDOVER.—For laying new water-main for the Andover Town Council. Mr. A. Purkess, surveyor:—

Beale (accepted)	£56	17	6

AYLESBURY.—For alterations and additions to house in New-street, Aylesbury, for Messrs. E. and H. Middleton. Mr. Guest Luckett, M.S.A., Aylesbury, architect:—

Jewell (accepted)	£140	0	0

(No competition.)

BIRTLEY, NEAR NEWCASTLE-ON-TYNE.—For main sewerage and sewage disposal works for the town of Birtley, per plans, &c., by Mr. D. Balfour, M.Inst.C.E., F.G.S., 3, St. Nicholas-buildings, Newcastle-on-Tyne:—

Meston, Alex., London	£6,160	12	2
Band, J., Peterboro'	4,950	0	0
Kennedy, W., Jarrow-on-Tyne ...	4,797	0	0
Kell and Groves, Chester-le-Street	4,583	12	8
Robson, G., Newcastle-on-Tyne ..	4,464	8	3
Hudson, R. jun., Sunderland ...	4,055	0	0
Carrick, J., Durham	3,965	0	0
Dixon, T., Houghton-le-Spring* ...	3,914	0	0

* Accepted.

BOURNEMOUTH.—For No. 2 mess-houses, for the Bournemouth town council. Mr. F. W. Lacey, A.M.I.C.E., borough engineer and surveyor:—

Boulton and Paul, Norwich	£82	5	0
Wrinch and Sons, Ipswich	80	0	0
Hill and Smith, Brierley Hill ...	78	0	0
Humphreys, Ltd., London (accepted)*	67	0	0

* Including erection.

BUSHEY.—For carrying out works of sewerage at Bushey, for the Watford Rural Sanitary Authority. Mr. Urban Smith, engineer. Lowest tenders:

Judge, W., Watford	£15,886	14	10
Taylor, G., Blackburn	15,747	14	4
Morgan, Isted, and Co., Southampton*	12,935	0	0

* Recommended for adoption, but withdrawn on account of error, raising amount to £14,725.

CAMBERWELL.—For the erection of artisans' dwellings, Brief-street, Burton-road, Camberwell, S.E., for the Tenant Co-operators, Limited. Messrs. Goodey and Cressall, Great Eastern Chambers, 20, Bishopsgate-street, E.C., architects:—

Clarke and Bracey	£3,580	0	0
Nightingale, B. E.	3,490	0	0
Stimpson and Co.	3,337	0	0
Dupont, F., Colchester	2,975	0	0
Dobson, G., Colchester	2,970	0	0
Co-operative Builders, Brixton, S.W.*	2,896	0	0

* Accepted.

CARLISLE.—For furniture for Brook-street School, for the city school board. Mr. T. Taylor Scott, Carlisle, architect:—

Heywood, Manchester (accepted) ...	£79	7	0
North of England Co.	75	15	6

COVENTRY.—For the erection of the new baths:—

Hill, C. G., Coventry (accepted) ...	£16,380	0	0

FOREST HILL.—For erection of printing works, &c., for the Victoria Printing Works Company:—

Wells	£1,659	0	0
Waddington and Co.	1,369	0	0
Dorrell and Co.	1,275	0	0
Whitewick and George	1,162	0	0

GILLINGHAM, KENT.—For the supply of a 15-ton steam roller, for the Gillingham local board:—
Wallace and Stevens, Basingstoke (accepted), £375.

HIGH WYCOMBE.—For rebuilding the Rye Paper Mills (first contract). Mr. Arthur Vernon, 29, Cockspur-street, London, architect:—

Hunt, C. H. (accepted)	£4,985	0	0

KIRKBY, NOTTS.—For two pairs of cottages, for Messrs. Owen. Mr. H. Harper, Norton-street, Nottingham, architect:—

Gell and Son, Nottingham	£577	0	0

LEAVESDEN, HERTS.—For making alterations and additions to workshops at the Leavesden Asylum, for the Metropolitan Asylums Board. Messrs. A. and C. Harston, 15, Leadenhall-street, E.C., architects. No quantities supplied:—

Windebank, Balham	£979	0	0
Miskin, C., St. Alban's (accepted) ...	940	0	0

LEEDS.—For the erection of a new gas-holder at the Meadow-lane Works, capable of storing five million cubic feet, for the town council:—

Clayton and Sons (accepted) ...	£35,000	0	0

LONDON.—For alterations to the Vine-street casual ward, for the Holborn Board of Guardians:—

Wall, C., Kentish Town (accepted)	£209	0	0

London.—For pulling down and rebuilding No. 81, Bishopsgate-street Within, for Mr. Arnold Gabriel. Messrs. Lewis Solomon, F.R.I.B.A., and E. Carrington Arnold, architects :—

Downs, Wm.	£2,680	0	0
Barlow and Roberts	2,679	0	0
Holloway Bros.	2,640	0	0
Reson	2,455	0	0
Scott	2,448	0	0
Coulson	2,423	0	0
Patman and Fotheringham	2,361	0	0
Philips, C. N.	2,333	0	0

London.—For alterations and additions to No. 53, South Molton-street, W., for the Tayler-Smith Electric Lighting Co. Mr. T. Tayler Smith, architect. Quantities by Messrs. Bushell and Crosier, 22, Great James-street, Bedford-row, W.C. :—

Sayers, Thos., Brockley	£733	11	5
Shoolbred and Co., London*	728	0	0
Battley, R. G., London†	647	0	0

*Accepted. † Time not stated.

London.—For the erection of dwellings, Peacock-street, Newington Butts, for Mr. A. Rickarby. Mr. F. A. Powell, 344, Kennington-road, S.E., architect :—

Young and Lonsdale	£808	0	0
Downs	798	0	0
Newton	725	0	0
Burman	690	0	0

London.—For the erection of flats, Audville-road, Brixton, S.W., for Mr. J. Roycroft. Mr. E. L. Schneider, architect :—

Higgs, F. and H. F.	£1,869	0	0
Young and Lonsdale	1,824	0	0
Taylor	1,485	0	0
Cowper	1,300	0	0

London, E.C.—For new fittings, &c., to the George, East Harding-street, Fetter-lane, E.C., for the Burton and Lincoln Breweries, Limited, Burton-on-Trent. Mr. H. I. Newton, 49, Victoria-street, Westminster, S.W., architect :—

Close, H. S. and W., Lincoln (accepted) ... £593

London, W.C.—For pewterer's work for the Swiss Stores, Cranbourne-street, Leicester-square, for Mr. E Maddick Mr. H. I. Newton, 49, Victoria-street, Westminster, S.W., architect :—

Saunders and Son, High Holborn (accepted).

London, W.C.—For decorations, &c., to 45, Strand, W.C., for Mr. F. F. Anstiss. Mr. H. I. Newton, 49, Victoria-street, Westminster, S.W., architect :—

Cox, F. T., sen., Holloway (accepted).

Middleton.—For extensions to Kidclough dye-works, Middleton, near Manchester. Mr. T. A. Fitton, architect :—

Pollitt, W., Middleton (accepted) ... £1,500 0 0

Middleton.—For extensions and improvements to the parish church schools, Middleton, near Manchester. Mr. T. A. Fitton, Middleton and Manchester, architect :—

Young, Tinker, and Young	£1,127	0	0
Partington, E., and Sons	1,052	0	0
Partington, J.	1,050	0	0
Jackson, T.	1,030	0	0
Mellalieu, J. R.	1,029	0	0
Grundy, J., and Sons (accepted)	1,017	0	0

Newmarket.—For the erection and completion of a stable block at Wellington Villa, Newmarket, for Mr. Christopher Turner. Messrs. Bushell and Crosier, 22, Great James-street, Bedford-row, W.C., architects :—

Linzell, H. J., Newmarket (accepted)... £196 10 0

No competition.

Newmarket.—For the erection and completion of four cottages on Cheveley-road, Newmarket, for Mr. Christopher Turner. Mr. Charles Crosier, M.S.A., architect. Quantities by Mr. Henry Bushell, F.S.I., 22, Great James-street, Bedford-row, W.C. :—

Linzell, H. J., Newmarket (accepted)... £830 11 0

No competition.

Orpington, Kent.—For decorative repairs to Aynscomb House, High-street. Mr. St. Pierre Harris, Basinghall-street and Orpington, architect and surveyor :—

Glassup Bros.	£145	0	0
Owen	120	10	0
Taylor	108	0	0
Somerford and Son (accepted)	99	10	0

Orpington, Kent.—For additions and repairs to residence at Orpington. Mr. St. Pierre Harris, 1, Basinghall-street and Orpington, architect and surveyor :—

Knight	£609	0	0
Lowe	579	18	0
Somerford and Son	578	0	0
Stebbings and Pannett (accepted)	480	0	0

Plymouth.—For the construction of sewage tanks and a new fish market, for the Sutton Harbour Company and the town council. Mr. Inglis, engineer :—

Lovett, Wolverhampton	£43,066	0	10
Lapthorne and Goad, Plymouth	33,500	0	0
Finch	28,998	0	0
Reed, Blight, and Co.	28,976	0	0
Shaddock, Thomas	28,179	0	0
Debnam, A. R.	27,932	5	11
Shaddock, W. C.	27,821	5	1
Pethick Brothers (accepted)	26,859	0	0
Shellabear, G.	24,673	0	0

[It was reported that a letter had been received from Mr. G. Shellabear abandoning his tender for the sum of £24,673, and offering to execute the work for £26,858.]

St. Mary Bourne, Andover.—For new lodge at Havenhill House, for Mrs. Madgwich. Mr. John Hillary, surveyor :—

Beale, Andover (accepted) £224 10 0

(No competition.)

St. Pancras.—For the completion of reconstruction of St. Pancras Workhouse, Pancras-road, for the Guardians of the Poor of the parish of St. Pancras. Messrs. A. and C. Harston, 15, Leadenhall-street, E.C., architects. Quantities by Messrs. Corderoy and Selbey, 19, Queen Anne's-gate, Westminster; and Mr. W. T. Farthing, 46, Strand, W.C. :—

Shillitoe and Son	£67,500	0	0
Beed, Blight, and Co.	64,662	0	0
Patrick, Mark	58,200	0	0
Kirk, Knight, and Co.	56,648	0	0
Lawrance and Son	54,042	0	0
Leslie and Co.	53,930	0	0
Brooks, W., Folkestone*	50,881	0	0

* Accepted.

St. Paul's Cray, Kent.—For detached private residence at Sandy-lane, for Mr. T. H. Nash. Mr. St. Pierre Harris, 1, Basinghall-street, architect and surveyor. Quantities by Messrs. Stanger and Son :—

Norris and Son	£2,872	0	0
Crossley	2,842	0	0
Knight	2,789	0	0
Holt and Son	2,550	0	0
Gregory and Son	2,460	0	0
Somerford and Son (accepted)	2,395	0	0

Sidcup.—For erection of eight cottages at Sidcup. Arthur Vernon, F.S.I., 29, Cockspur-street, Charing-cross, and High Wycombe, architect :—

Black	£3,250	0	0
Joyce	3,244	0	0
Linfield	3,225	0	0
Munter	2,900	0	0
Payne	2,864	0	0
Duthoit	2,793	0	0
Richardson	2,757	0	0
Groome	2,730	0	0
Minton	2,649	0	0
Furness	2,600	0	0
Heathfield	2,597	0	0
Pearce	2,547	0	0
Barker	2,491	0	0
Morgan	2,490	0	0
Trappit and Bartley	2,460	0	0
Peters	2,440	0	0
Jefford	2,400	0	0
Harris	2,140	0	0
Sayers	1,985	0	0
Gale	1,880	0	0
Sunley	1,757	10	0

Surbiton.—For house on Crane's Park Estate, Surbiton, for Mr. A. R. Upjohn. Mr. Alfred Mason, architect and surveyor :—

Harris, A. H.	£5,950	0	0
Faulkner, jun., H.	3,287	0	0
Piller, J., and Son	3,204	0	0
Mortimer, G. C.	3,160	0	0
Nicholls, R., Surbiton	3,030	0	0

Ushaw, Co. Durham.—For additions to the College. Messrs. Pugin and Pugin, Westminster, architects :—

Gradon, J. G., Durham (accepted), over £2,000.

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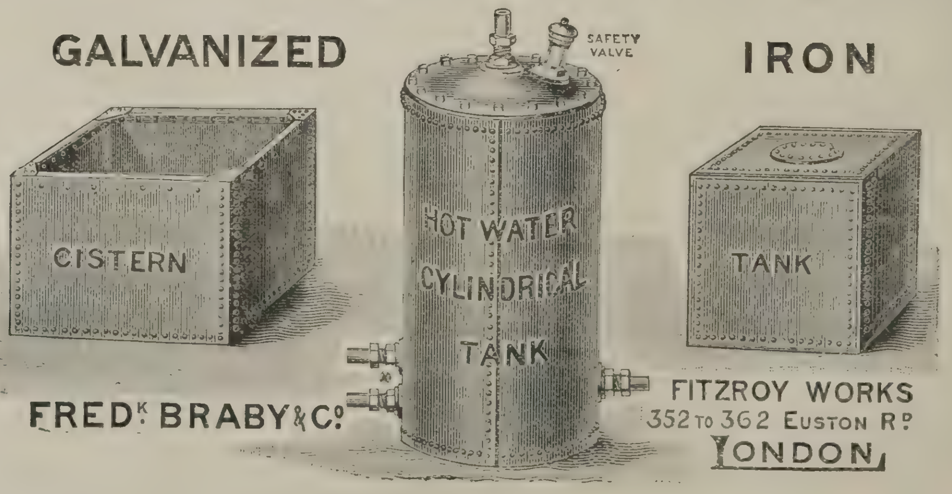

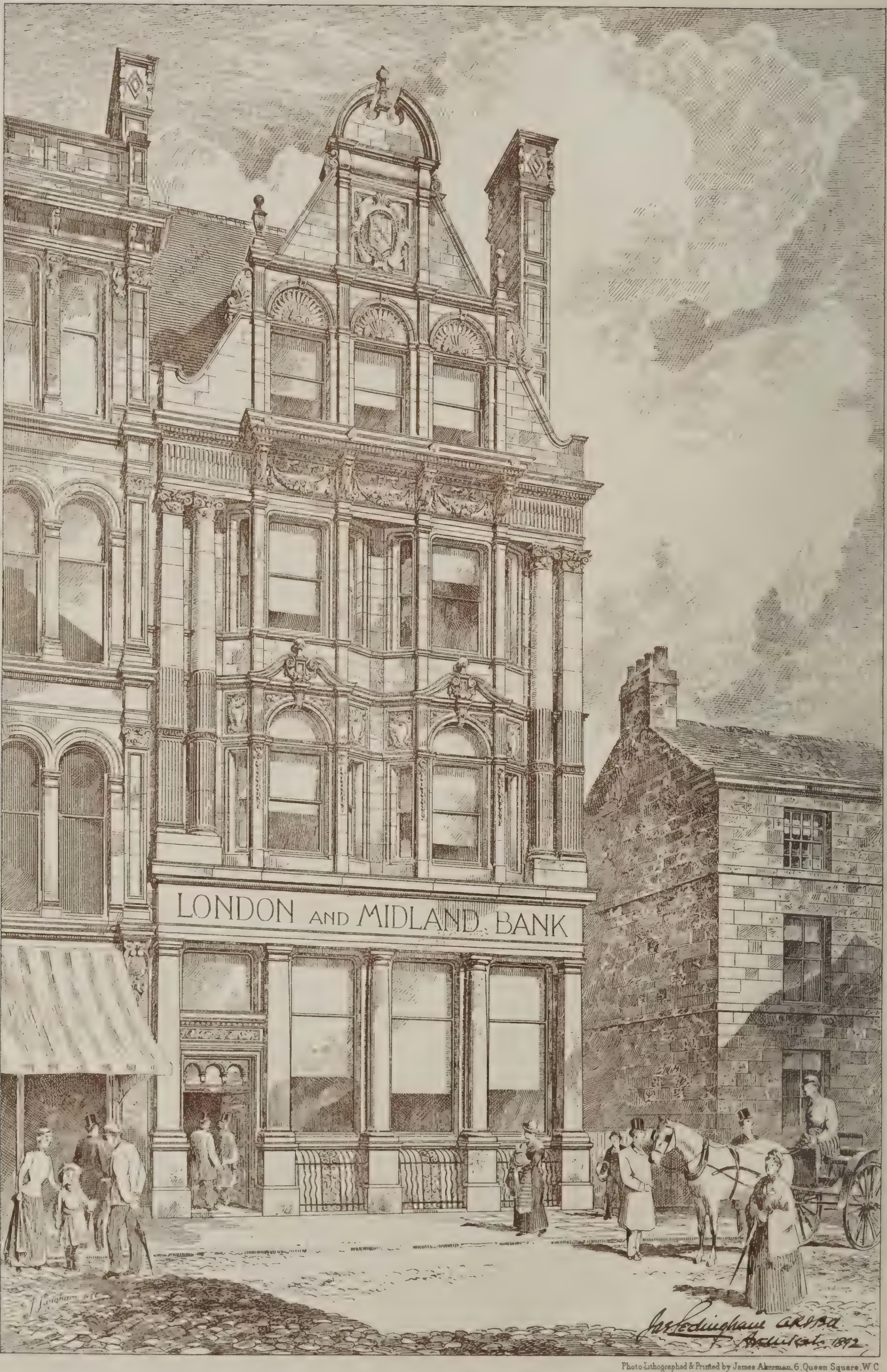

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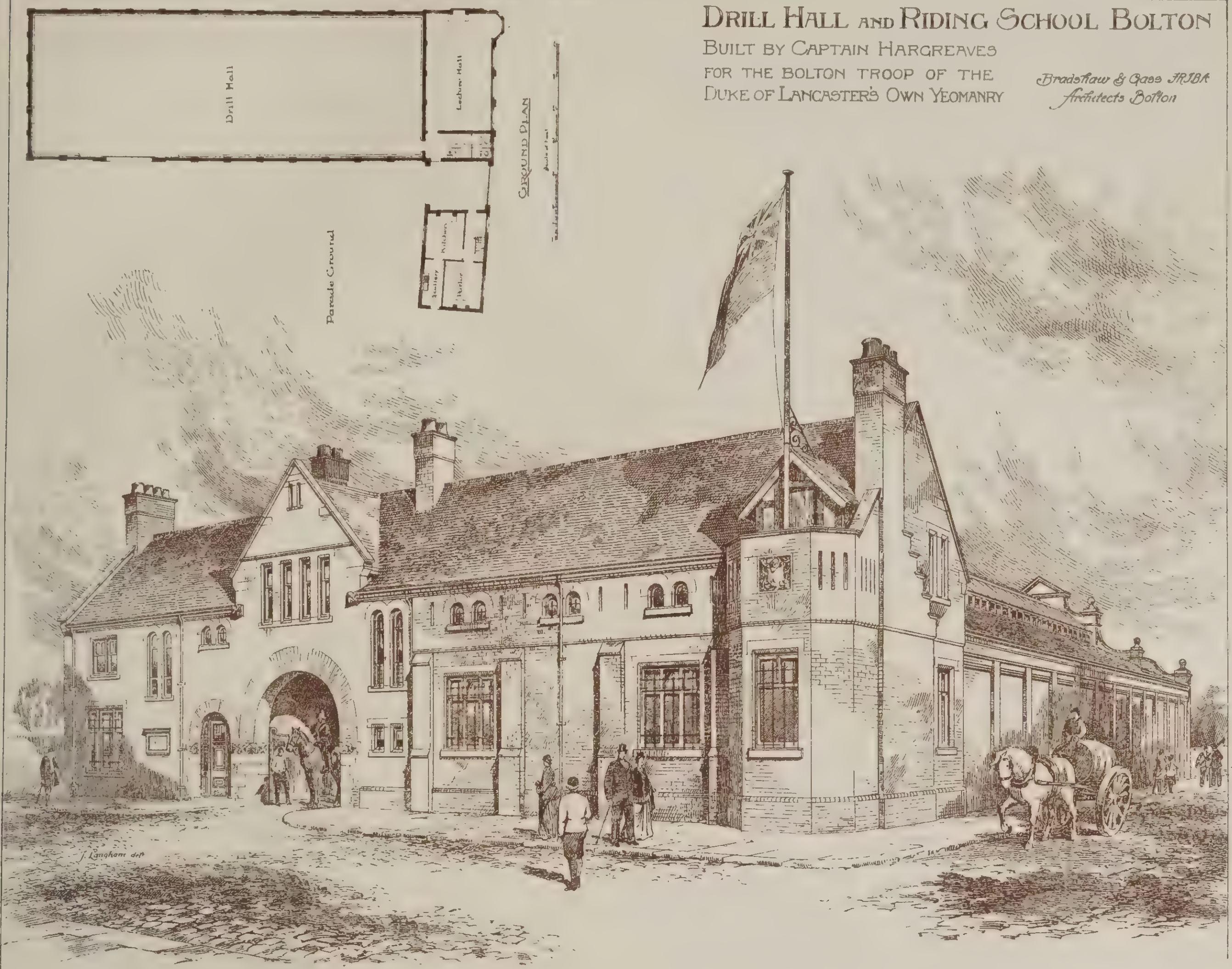
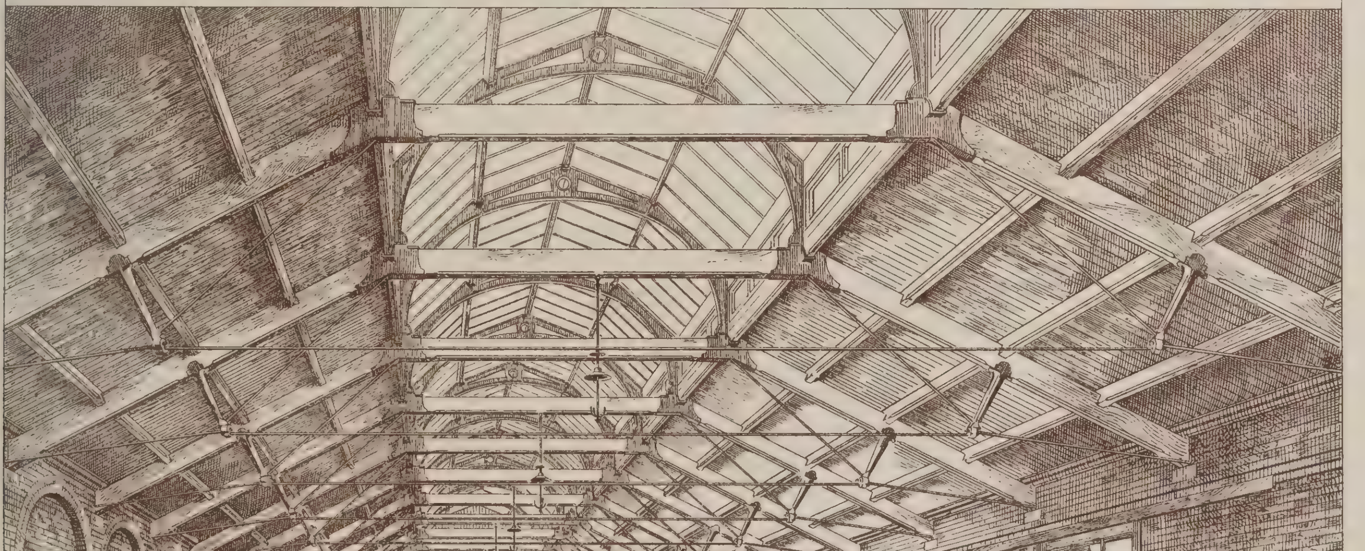
THE · LONDON · & · MIDLAND · BANK · BRADFORD · JAS · LEDINGHAM · A·R·I·B·A · ARCHT.



DRILL HALL AND RIDING SCHOOL BOLTON

BUILT BY CAPTAIN HARGREAVES
FOR THE BOLTON TROOP OF THE
DUKE OF LANCASTER'S OWN YEOMANRY

Bradshaw & Gass F.R.I.B.A.
Architects Bolton


J. Langham del.

DRILL HALL AND RIDING SCHOOL
BOLTON. INTERIOR VIEW

Photo Lithographed & Printed by James Akerman, 6 Queen Square, W.C.

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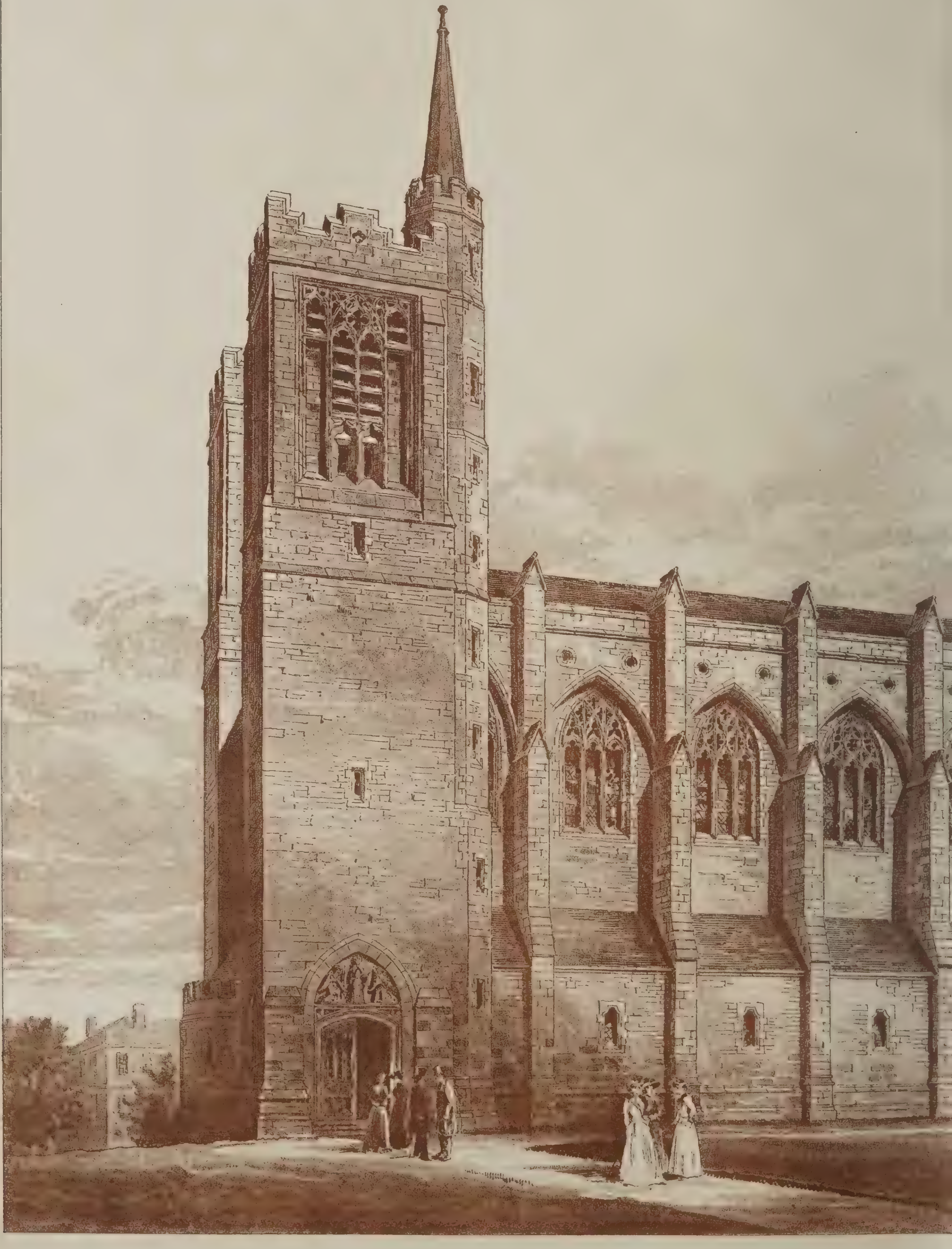
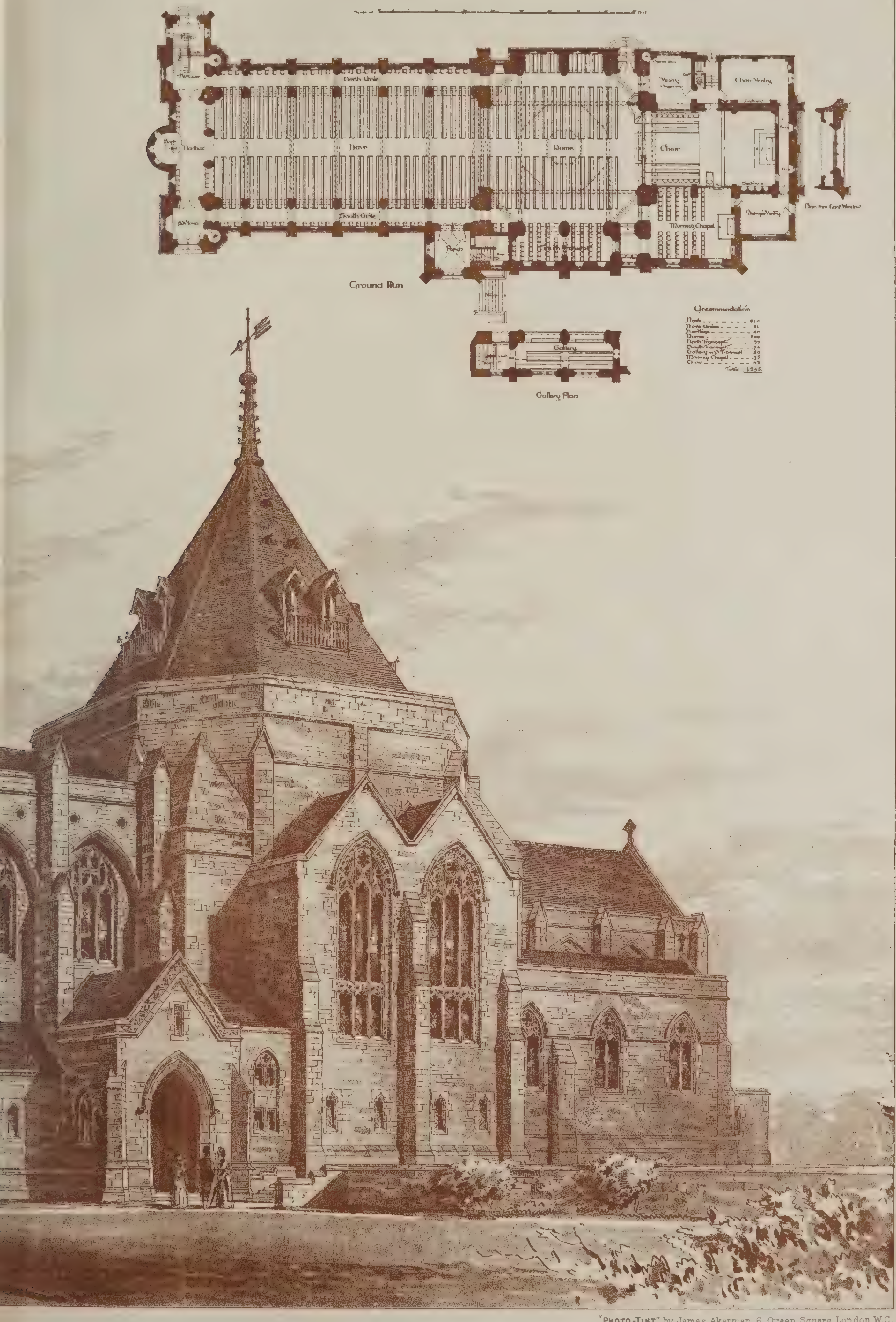
CHRIST CHURCH NEW CATHEDRAL, VICTORIA, B.C.

COMPETITION DESIGN BY "DUOMO"





Ground Plan

Gallery Plan

Accommodation

Nave	610
Nave Aisles	61
Narthex	20
Dome	200
North Transept	32
South Transept	74
Gallery in S. Transept	50
Morning Chapel	75
Choir	43
Total	1245.

"PHOTO-TINT," by James Akerman, 6, Queen Square, London, W.C.

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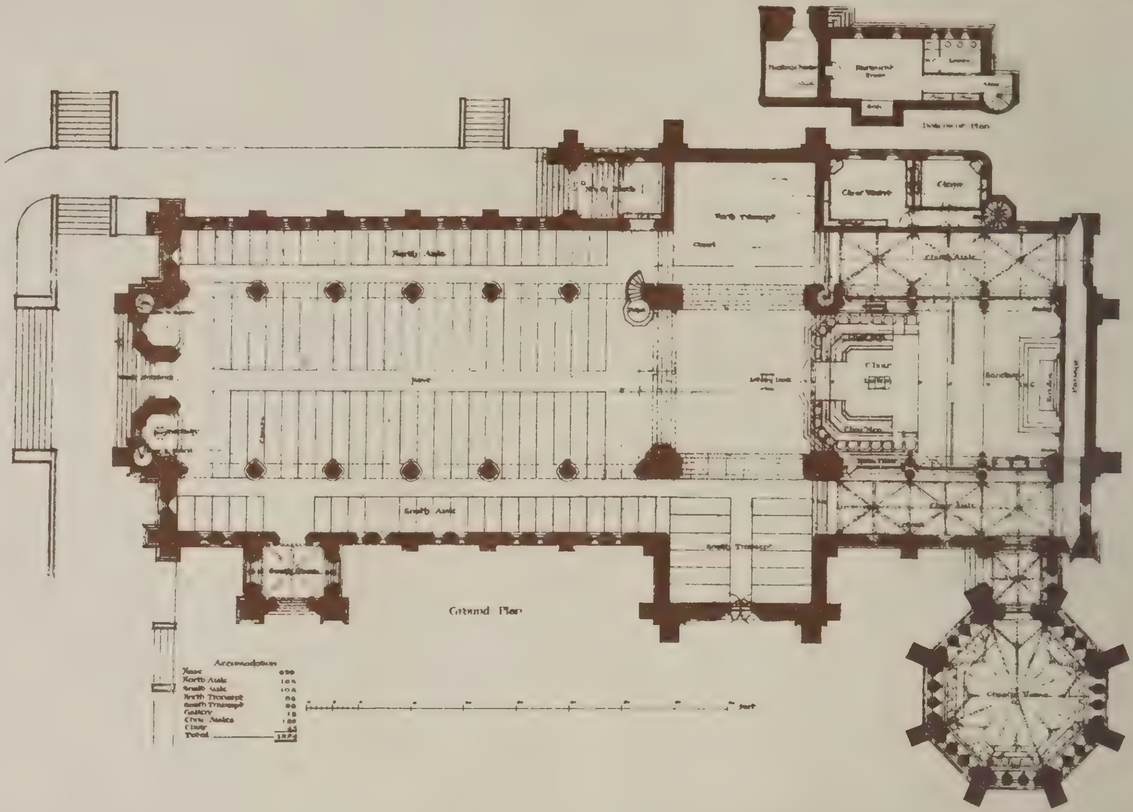
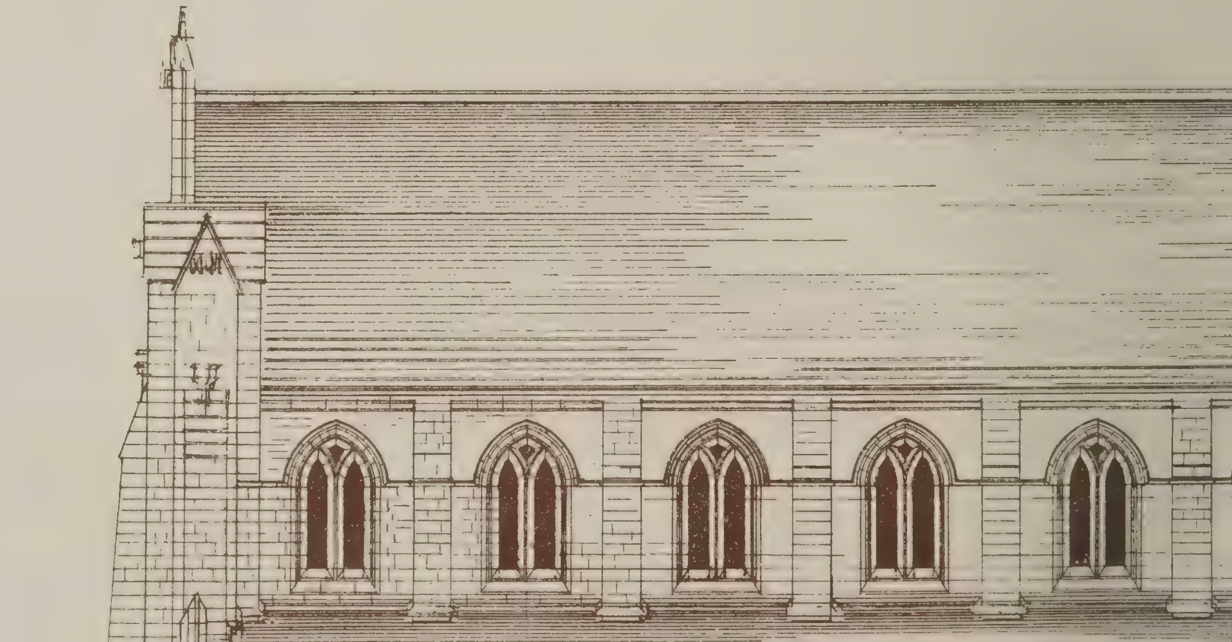
OF
UNIVERSITY [illegible]


Basement Plan
North Aisle
North Transept
Nave
South Aisle
South Transept
Choir
Choir Aisle
Sanctuary
Chapter House
Ground Plan
Accommodation
Nave
North Aisle
South Aisle
North Transept
South Transept
Gallery
Choir Aisles
Choir
Total



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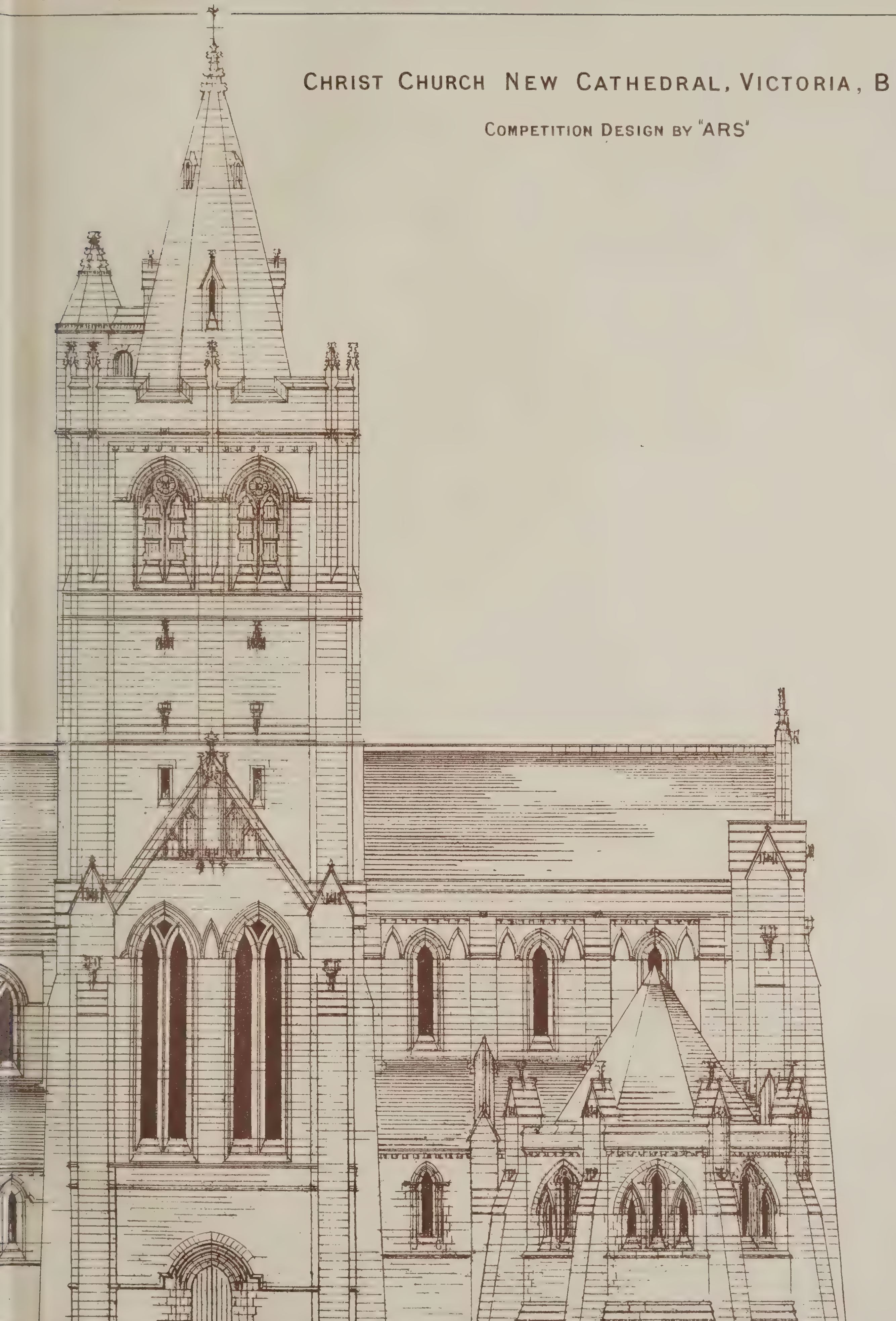
CHRIST CHURCH NEW CATHEDRAL, VICTORIA, B.C.

COMPETITION DESIGN BY "ARS"



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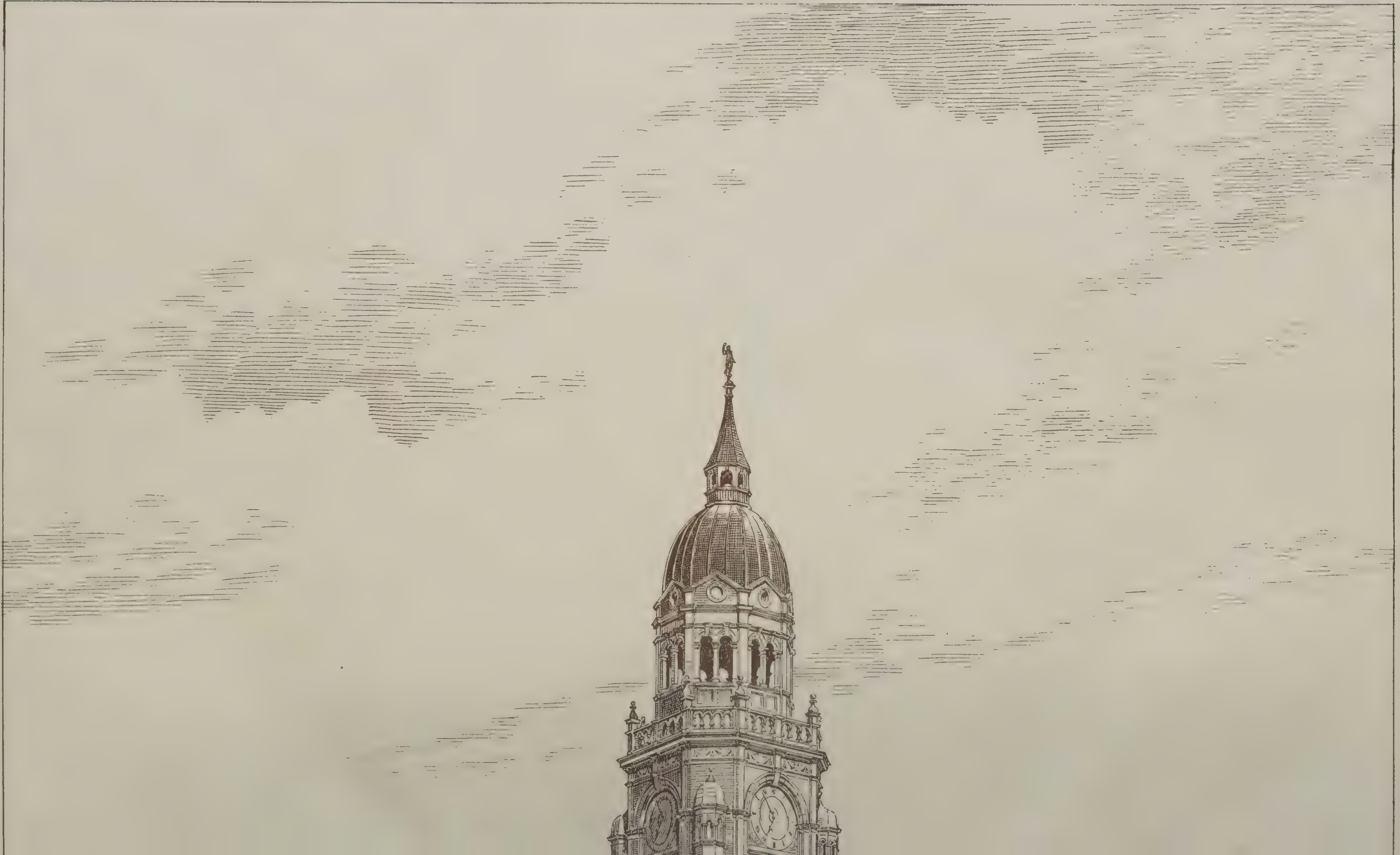

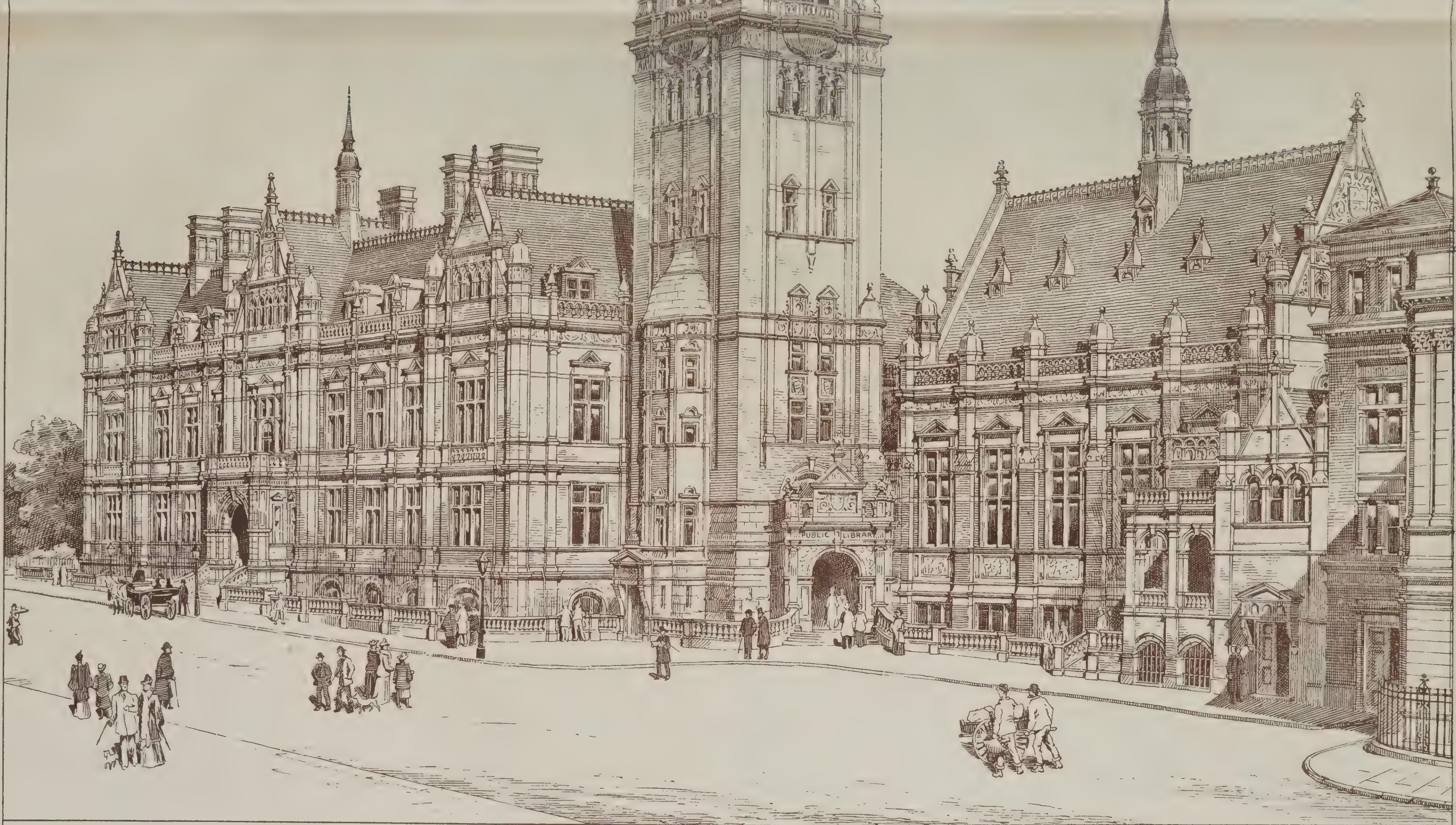

CROYDON MUNICIPAL BUILDINGS,

COURTS AND PUBLIC LIBRARY.

1892.

CHARLES HENMAN
ARCHITECT

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THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LXII.—No. 1953.

FRIDAY, JUNE 10, 1892.

ARCHITECTURAL "POT-BOILERS."

ONCE upon a time London possessed what was called an annual "Architectural Exhibition." That is to say, a great many views of new buildings were brought together —and the collection was not destitute of a certain sort of interest. But an architectural exhibition and an exhibition of architecture are two entirely different things; and for an exhibition of architecture we must look to our towns and villages. Works of architecture cannot be selected and put side by side, though works of painting and sculpture can be. Representations of them—necessarily partial and imperfect—are all that can be hung on the walls of a gallery; and yet an architectural work is not a mere sketch on paper, but a solid thing of brick or stone. Of such things—architectural and the reverse—we have an exhibition in every street. It is open free of charge, day and night. No man need leave his business to see it, for business itself takes him into it; in fact, there is no getting away from these exhibitions, better or worse, so that the goodness or badness of them is a matter which affects everybody.

On looking at the exhibitions of architecture which are thus on view in the streets of London and in those of every other modern town, the first thing that strikes anyone with a grain of artistic sensibility is this: that the bulk of the exhibits are mere "pot-boilers." It is not merely that a large proportion of them have not attained artistic success: it is that they have never even for a moment aimed at it. Obviously, and without disguise, their design is of the most careless and perfunctory sort, got through with a single eye to "£ s. d." Take, for instance, the Strand as it was a few years ago, and as most of it remains still. What is it, in the main? Only a double row of "pot-boilers" by architects whose pots have long since ceased to boil. "The evil that men do lives after them": and this is especially true in matters connected with building. A worthless book is soon forgotten, a worthless picture quickly passes out of ordinary view; but a worthless building may stand in the face of the sun for generation after generation. Perhaps, in reality, there is not more bad architecture produced than bad literature; but the one lasts, while the other perishes. There are plenty of literary "pot-boilers" turned out every day, but "they have their day, and cease to be." If there were no goods to be packed and no fires to be lighted—if waste-paper were as hard to clear away as brick rubbish—we should have plenty of literary parallels to the Strand.

The undisguised "pot-boiler," however, is not the worst variety of the species. A "long, unlovely street," like that which takes the name of the picturesque peninsula of Gower, may be trite and tedious enough, but it is not necessarily vulgar. Though there is no art in it, there is no affectation of art. One can see the good men who produced it, living their dull lives, without a thought of doing anything higher or better; and perhaps repressing, with conscientious self-approval, every tendency to overstep the straitest architectural Puritanism. An architect, in their idea, was a man who could judge of stock bricks and Baltic timber; who would not mistake 5lb. for 6lb. lead; who could set out a camber arch, and make detail drawings of sash-frames and boxing-shutters. Now and then it was laid upon him, as a great constructional effort, to design a king-post roof. If at any romantic moment he "dropped into poetry," it was in some such way as did the excellent practitioner to whom Sir Gilbert Scott was articled. That gentleman, as he confided to his pupil, had once been overcome by the charms of the Gothic style. In fact, he had gone so far as to try it; but the expense of the cement work (for the detail was cast in that material) soon convinced him that it would not do for modern purposes. He returned to four-panel doors and double-hung sashes, and felt no inclination to stray any more.

Sir Gilbert's master belonged to a nearly extinct type. If any examples of it now remain, they may be found in quiet towns and third-rate watering-places. Elsewhere the public expect, and obtain, some show of architectural style. Instead of the plain "pot-boiler," they get the bedizened one. Few of them ask for art, because few know it when they see it. What they do ask for, is respectability. They want to be as good as their neighbours. If Mr. Brown's warehouse has carving on it, and Mr. Smith's office has cornices and pilasters, then Mr. Jones feels that he, too, must have something of equal value, or he will make a very shabby appearance. So it comes about that while the plain "pot-boiler" was in vogue at the beginning of the century, the decorated one is in fashion at the end. It is not a change for the better. If Gower-street left people with a hunger for ornament, Queen Victoria-street and its like leave them with a nausea for it. In half an hour's walk they may see a greater quantity of decoration than sufficed, probably, for Athens in the age of Pericles; and yet a poorer quality of decoration than would have been endured by any civilised nation that ever lived. And poor as it is, it is made worse by being misapplied. Instead of emphasising the best points in a good composition, it far more frequently draws attention to the worst points in a bad one. For a successful disposition of ornament does not come about by chance, while skill and thought, and study are the very things whose absence makes "pot-boilers" what they are.

The public, as we have said, seldom know art when they see it. Yet at the picture exhibitions they pay a high price for good works, and a low price for bad ones. Why, then, do they act otherwise in the great exhibition of architecture which is always going on amongst us? There are tolerable designs, fair designs, admirable designs, here and there amongst the miles of architectural trash which make up modern London. How is it that their authors are not employed more, and the perfunctory producers of sham art less? Why, in short, do people not seek after good architecture as they do after good paintings? Why will they not give more for well-designed buildings than for badly-designed ones? The answer seems to be: because they cannot sell them for more; and they cannot sell them for more because architecture—at least, external architecture—cannot, from the nature of the case, be shut up and enjoyed only by the purchaser. If a rich man buys a picture he can put it in his private gallery, where only he and his friends can look at it. But he can hardly put a new house where it is out of everybody's view. He has no exclusive pleasure in it. He has paid for it, but all the world has as much access, or almost as much access, to its beauties as he himself. That is one reason; and the other reason is that pictures are portable, and buildings are not. If the owner of a picture wants to sell it, purchasers all over the world may bid for it, because any one who likes it, and can afford it, may soon have it in his own possession. But the man who buys a building cannot have it, as far as seeing and enjoying it goes, unless he comes and lives in it or near it. In this way the market for artistic pictures is world-wide, and the market for artistic buildings is very contracted. "Half-a-crown is at the bottom of everything," as one of the best of modern architects used to remark, and half-a-crown is at the bottom of the popular preference for the architectural "pot-boiler." Only by slow degrees is it losing, and will it lose, its present bad pre-eminence. Only when our civilisation grows real, and the appreciation of beauty becomes a common thing, will it finally pass away.

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THE BUILDING TRADES: THEIR POSITION.

WHEN professional competence and statutory qualifications in every calling are beginning to be recognised by the public and those who desire to protect themselves from charlatanism, it is of importance to consider all questions which bear more or less on the subject. The absolute need there is for technical qualifications amongst architects and art craftsmen has never been disputed, even by those who think that good artists and workmen will always be equal to the demands made upon them, and are ready like Minerva to spring full-grown and armed from the head of Jupiter. As a matter of policy, to equip our workmen with the means to hold their own against foreign competition is one of the clearest duties imposed upon a community, only second to that which will make them masters in their own trades. The desire of our large corporations and municipal authorities to give their contracts only to those who pay a standard rate of wages ought to make it more obvious that the workmen so employed should at least be competent in their several trades, if not "shining lights." For standard wages, a standard of competence or technical skill is demanded, and this must naturally lead to a selection of those men who are versed in their trade, and a gradual elimination of the rougher and less worthy hands. By this law of progress we may hope one day to see some limit to the numbers who enter building trades, to the undeniable advantage of both the men and the public. All building trades are suffering from the decline of apprenticeship, and the consequent intrusion of raw and undeciplined men.

The evidence taken by the Select Committee on the Plumbers' Registration Bill, to which we briefly adverted last week, brings into prominent notice a few questions which possess far-reaching consequences to the other trades connected with buildings. With regard to operative plumbers, Mr. Coles, the clerk to the Plumbers' Company, says that about 5,000 out of a total of 37,400 as returned by the census of 1881 have been registered under the 19th rule, some without and some through examinations; while a large number have applied for registration. He also affirms that many workmen are disposed to press for compulsory examination as a means of insuring the employment of only qualified men. One reason why registration is demanded by working men capable of judging of their own interests is the falling-off of the apprenticeship system. The apprentice does not, as he once did, board and live with the master, who has therefore little control over him. The youth who wishes to learn a trade has now the opportunity of going to anyone who calls himself a builder. He gives his services for picking up a very indifferent knowledge of the trade. The jerry builder has created a demand for youths, as for all unskilled labour, and therefore a course of apprenticeship is no longer desired by young men who desire to learn a trade with ease to themselves. It is needless to say how pernicious this has been for the building trades, and how those who are endeavouring to retrieve the fortunes of the trade are anxious to introduce a system that will check the admission of unskilled men into their ranks. It is thought that registration will revive the apprenticeship system; it will, at any rate, substitute a course of study for a desultory and unmethodical and often profitless career. As to the general consensus of opinion among the trades, we may assume that there would be as little hesitation to introduce registration amongst other branches as there has been amongst the plumbing craft. That movement in its origin, as pointed out by Mr. W. H. Bishop, the Master of the Plumbers' Company, was a voluntary movement, and is so still, and the request for statutory powers comes from those who have joined in it. The plumbers have really asked for legislation. They have seen the inroads made by all kinds of incompetent men, often those who have never learned the trade; they have watched the "down grade movement" which resulted from the practice of ironmongers, jerry builders, painters, and undertakers executing plumbing work, and in taking several apprentices to learn as many trades; and they have come to the conclusion that statutory registration is the only remedy. So it is with bricklayers, plasterers, carpenters, joiners, masons, painters, and other operatives. Each one of those trades can show a very similar "down grade movement," and owing to similar causes, the chief one being the decline of the apprenticeship system and the demand for "slop" work among speculative builders. It was, for example, elicited from the president of the United Operative Plumbers' Association of Great Britain and Ireland, by Mr. Lees Knowles, chairman of the Select Committee, that jerry builders, ironmongers, tinkers, painters, and others, seeing that a good trade could be made out of plumbing, added it to their other work. We know, for example, that small builders undertake every trade; "slop" carpenters and bricklayers and masons are engaged by these middlemen, while the properly-trained carpenter, bricklayer, and mason can find employment on a few superior class of buildings only. We see, in fact, that while the well-trained workman of the apprenticeship era remained loyal to his one vacation as a bricklayer, carpenter, or plumber, he is now ready and willing to do other trades than his own, as the small carpenter often does brickwork, plumbing, and other things. Thus the plumbing trade has been split up amongst other branches. The ironmonger takes to the fitting up of apparatus, ventilators, soil-pipes, and other plumbing items; the bricklayer lays drains, and does a number of things that properly belong to sanitary work; so also the plumber often does work that rightly belongs to the bricklayer and ironmonger. How many sanitary ware manufacturers undertake plumbing and ironmongery. They employ hands to fix apparatus, to lay drains, to ventilate. Again, the joiner undertakes a variety of other trades, and we know that his versatility and skill often make him a good clerk of works. The mason, too, from his training, often aspires to the general builder's position; but this merging of trades has been inimical to good workmanship in every branch. It has encouraged a slipshod mode of execution, and has to this extent lowered the standard of workmanship. Architecture has suffered from this merging of the trades, for it has been one cause of low tendering. From what we can gather of the evidence brought before us, all competent craftsmen are anxious to preserve the identity of their several branches, and the idea of separate branches is necessary for any real progress. In France, in Scotland, and other countries the separate contract system has promoted the separation of the trades, and we must all admit that the system has benefited the workman.

The evidence taken before the Select Committee has shown to what a large extent sanitary work has been done by men who know very little about this special branch of building. For instance, it was mentioned by the chairman that out of 50 drains laid or repaired, not two are done by plumbers, but by handy-men and tinkers. We hear of a retired 'bus conductor undertaking paper-hanging and plumbing work; retired policemen and drapers setting up as sanitary experts. So it will be till each trade is taught as a distinct function, and those who practise it are made skilful, when it will be no longer possible for plumbers to do a little gas-fitting, hot and cold water work, in addition to their legitimate trade. To such a degree has this mixing of trades been carried, that an ironmonger, in giving evidence, declares that a man who follows several trades is better able to do plumbing work than a man who has followed that trade only. He owns that a large amount of sanitary work is done with other than lead-pipe, as with galvanised iron pipe and brass fittings and other materials, and that a man trained as an ordinary whitesmith, and has had experience in plumbing, is better able and more competent to carry out efficiently the whole of the plumbing work in the erection of a house. In other words, an ironmonger is alleged to be more capable of doing the work of a plumber than one who has been specially trained in the use and manipulation of lead. This thesis might do in speaking of a general supervisor or clerk of works, but it will not hold for the work of a skilled artificer. A similar argument might be used of those general workmen who undertake a variety of work, where special training and education count little. No doubt a general business man can organise and arrange, generally set out and supervise; he may know when a pipe or a cistern is properly fixed, but he cannot be expected to know the technical details of an apparatus or a connection so well as a skilled plumber. The same remark applies to the trades of the joiner, the smith, and the engineer. The material used is important, of course. An ironmonger may understand better than a plumber certain qualities of iron pipe, and even methods of jointing; but we take it that the latter would know quite as well, if not better, the requirements of fitting up for sanitary work. In short, we should say the smith and brass-worker would be the proper judges to decide in the matter of galvanised-iron pipe and brass fittings, and not the ironmonger as a vendor of hardware. Material and workmanship for a particular trade must be taken together; thus for all kinds of iron fitting, such as stoves and ranges, rolled iron joists, ventilating and heating apparatus, and galvanised ironwork the smith and founder are the persons to whom the public would go; but for the constructive work, the engineer, like the hot-water or gas engineer, is properly consulted; so also in sanitary fitting, in which iron and brass largely enter, the sanitary engineer or plumber appears to be the right person to consult. A man who works in a particular metal, as a plumber does in lead, and as a coppersmith does in copper, is the individual to whom such labour should be intrusted. The modern ironmonger, especially in country towns, undertakes these different trades, and for the purpose employs plumbers and smiths, like a builder undertakes various trades—it is a combination of capital and labour that is convenient; but it does not follow that the necessity of training and registering these separate workers no longer exists.

In short, the combination or merging of the several crafts connected with building in the general contractor has been prejudicial to the identity and independence of each trade; we do not dispute that it is one of the developments of modern society, yet it is perfectly clear that the tendency has been to create a demand for a class of workmen who possess little technical skill—men who have never served as apprentices, and who have no qualification whatever. The "three-branch" hands who do a little of gas-fitting, hot water and stove work, and lead work to roofs, &c., answer the requirements of those employers of labour who are always advertising their experience, and who object to registration apparently for commercial reasons. The employers of unskilled labour are, unfortunately, found to be injuring the skilled operatives in every building branch, and to resist this multiplication of contractors' hands, the operative has himself to blame for not protecting his position by national registration.

COST *VERSUS* VALUE IN BUILDING.

An unfortunate reputation has been attached to the profession of architecture in the matter of cost. Other callings, it is true, share with it in some respects the allegation that they have an interest in adding to the expenditure, as in the case of law, and we cannot shut our eyes that both these professions must plead guilty to the charge—one in running up legal costs, and the other in adding to the actual requirements for building. One thing can be urged for architect's expenses—namely, that the increased expense is not thrown away upon fees and officials, but goes towards the improvement of the estate, and that the employer receives all the benefit of the extras in a better and more complete building. What is expended is visible in the greater accommodation, or the more architectural display. The owner of the building obtains certain advantages, better foundations, drier and thicker walls, larger and more commodious rooms and halls; the fittings, doors, and windows are of a superior quality and finish; there are better floors and ceilings; the wall-papers and decoration are more artistic. Or the cost may mean parquetry instead of deal for the floors, panelled plaster instead of flat ceilings, costly relief decoration to the walls in lieu of paper. In law or medicine hundreds of pounds may be thrown away without the slightest benefit; but the same expenditure in building means so much more actual value acquired. Law costs and doctors' fees are often unremunerative; there is no return or recompense in case of failure, but the fees paid to the architect represent so much money actually invested. The money spent on decoration is returned in gratification to the eye and mind, in so much enjoyment, not only of the occupier, but of all who see it and are brought within its influence. Emerson has cleverly put it, "Virgil is a thousand books to a thousand persons," so we may say good architecture appeals distinctly and separately to each person. Each individual will find something in it which another does not. Even an artistic wall-paper or painted panel will give delight in different ways, as one person sees pleasure in the grand melody of colour in a Turner or a Cecil Lawson landscape, another in its infinite suggestiveness.

But cost means also commission, and it is in this sense that the public "fight shy" of architects. Unfortunately, the connection between expenditure and architects' fees gives some complexion to the charge that the profession like to encourage extravagance. Only the other day in a morning contemporary a letter appeared from some clergyman, in which, in rebutting the popular notion that the clergy are extravagant in their modes of living, the writer casts much blame on architects, who invariably manage to design large and expensive parsonages which necessarily entail expense in keeping up. The bishops and clergy would prefer less palatial and costly residences if they had their way, but the matter is referred to the ecclesiastical architect. We do not deny there is a good deal in this kind of officialdom. An architect holding an official position designs beyond the means of the poor occupant. It would be meanness no doubt to do otherwise. A large rectory looks imposing, and it would never do to build anything mean. Anyhow, the architect possesses the credit of ambitious schemes, and of spending more money than there is real need for, and all to add to his commission. The profession have to fight against this popular notion; it is this idea that has frightened many people from going to architects. They are afraid to incur extra expense and fees. As in other judgments, there is something to be said on both sides. There are many people who are not very particular as to what they get; they are satisfied with what the builder can do for them, and if they get what they want they do not care about incurring expense for refinements and luxuries. Others are not so easily pleased: they desire the best they can get; the house or business premises must be fashionable or up to the time, and they do not mind spending money. It is to this class the architect appeals. The builder, on the contrary, gives only what is wanted, seldom more; his client wants accommodation and substantial building, and cares nothing for a moulding or a detail. To him art has no other interest than that it is a mark of gentility; he therefore values quite as much a few new pictures in gilt frames as he would canvases by the Old Masters. But this measure of architectural work does not satisfy every one; meanness and cheapness do not represent economy. When the public learn that a substantial and well-constructed building is really worth more than that in which the minimum of those qualities are obtained, they will begin to see that the greater cost is equivalent to efficiency, and does not necessarily imply expensiveness. But it is hard to make this understood in these days of cheapness and competition. The profession may do more to show that cost does not imply extravagance. They must, if possible, overcome the temptation of giving more than is wanted, and confine themselves strictly to the actual wants of their clients. Till they learn this lesson of moderation the public will continue to regard their services as tending to cost. Everyone likes to have a building which is handsome, attractive in elevation and detail, though he does not always bargain to pay the cost; so if an architect makes a design which will cost a few hundreds of pounds beyond the sum intended to be spent, he is really tempting his client to expend more money than he is warranted in doing. After the building is finished he may complain that he has more than he wanted—ornamentally, at least—at greater expense. This surely is not the policy of the profession. Greater skill and ability would be shown in designing a building in which all the wants are complied with in an architectural manner at the specified cost, if possible. If not possible, the architect would be acting more professionally to inform his client, so that the requirements may be reduced if necessary. By so doing he would not lay himself open to the taunt of incompetence in estimating, or of adding to the expenditure for the sake of increasing his commission. At any rate, if the work of the architect be evidence of intrinsic value, if it be well planned, substantial in construction, evince skill in the appointments and fittings—if these notes of good art be apparent, he need not fear the comparison with less thoughtful buildings however less costly they may be. Let the value of the artist's skill and greater knowledge at least be made apparent on every portion of the design, instead of, as it sometimes is, be all expended in a showy elevation.

"BUILDING NEWS" DESIGNING CLUB.

A DRAWING-ROOM CABINET AND A SUMMER-HOUSE.

WE are unable to publish to-day more than one of the illustrations which we have made of the chosen designs for these subjects; but so soon as space will allow they shall appear. The conditions issued for the instruction of competitors were as follows:—"G.—A Rosewood Drawing-room Cabinet, for the display of works of art and china. The piece to be one of a pair to stand at the end of the room on either side of a central doorway. The upper part is to be glazed in front and partly so at the ends for light. The lower part to have glazed cupboards about 15in. high, measuring down from the 'table-top' level, which is to be 3ft. 6in. from the floor. Below the cupboards the cabinet legs are to be free from any inclosure. The greatest depth of the piece is not to exceed 1ft. 6in. The width is to be 4ft., and the greatest height 7ft. Scale, inch to the foot, and full-size details of mouldings, &c. Elevations and plans and sketch. H.—A brick-built Garden or Summer-House, 14ft. long by 8ft. wide, inside measure, with an open front, suitable for a site at the end of a walk in a gentleman's garden. Roof to be covered with red tiles. Seats to form part of the structure on the three sides of the interior, and an oaken-panelled dado rising from the back of the seats to be carried up 5ft. high above the floor. Over the dado the walls to be treated in stucco-duro plaster, with a frieze 2ft. deep, and a barrel-arched ceiling running from end to end. Floor to be three steps above path, and laid with black and white marble tiles in simple pattern. Steps to project outside building the whole width of opening, which may be 10ft. wide. Height left to designer. Scale, half-inch to the foot. Plans, two elevations, and sketch."

For the Drawing-room Cabinet we have placed "Smilash the Goth" first; "Vulcan" second; and "Nil Nisi Bonum" third. We illustrate the leading design to-day, and commend the author for his good mouldings, about which there is much freshness, and for his power of reserve. The design is quiet and suitable; but it is, of course, not perfect. Leaded glazing is not adapted to pieces of furniture, particularly when used, as we notice here, for filling in the whole leaf of each door, because in course of time the ordinary wear and use will damage the leadwork, and the glass will become broken or loose. A decorative effect, too, in this design is obtained by inserting patterns in colour on the roundels or shaped panes, which would hardly tell satisfactorily in execution, for the simple reason that they will, for the most part, never be seen against the light as in an ordinary window. In the side glazings, even, they would scarcely tell in a room with a usual amount of light. The recessed bracket shelvings on the top of the cabinet would be very much out of sight, and while supplying a sort of finish, cannot be said to do so satisfactorily. The piece looks a trifle too slight about the legs—an effect which might very readily have been avoided by either a somewhat deeper verge-moulding at D, or some shaped pieces inserted between the legs. This latter has so often been done that possibly "Smilash the Goth" thought it best to leave such things to more commonplace designers. "Vulcan" gains little by introducing the two figures right and left of his cabinet, and the vertical lines of the upper part seem needlessly numerous. It is a commodious piece of furniture, but would be more useful if another shelf had been introduced for the display of small articles in the principal cupboards. For rosewood there seems a little too much timber in the design. "Nil Nisi Bonum" divides his upper part into three compartments, the end bays being finished with broken pediments. The glazings are in shaped patterns, after the 18th-century mode, and at the angles the uprights of the inclosing frames are carved with acanthus foliations, which prettily terminate into moulded heads gracefully introduced. The legs of the piece have claw-feet, and fret-cut brackets are introduced under the lower cupboards in a way which would have improved the outline of the composition awarded the first place. On the whole "Nil Nisi Bonum" runs "Vulcan" very closely; but he has lost points by rather overdoing his design. "La Cigale" comes fourth with a canted cabinet, by no means equal to the merit of the first three. The shelf below the middle part between the legs, with its balustraded verge, is very ugly, and was specially provided against in the regulations. "Black Prince" gives us the bandy legs with claws so familiar in Old English work; but the upper portions of the design hardly accord with them, particularly the central part with the gabled roof over it. The brackets which support the top body are awkward, and certainly not pretty. "Don Quixote," as the last man calls himself, has a curious idea of furniture, and shows little taste in the ways in which he draws it. For roughly-made Wardour-street new antiques this proposal might pass muster, done in darkly fumigated oak, as it is crude and inconvenient enough for the people who usually buy such productions.

As to the designs for the "Summer-House," we may express our disappointment at the result furnished by the plans sent in, for none realise our intention as expressed in the conditions. However, we place "Vulcan" unhesitatingly in the post of honour, awarding "Smilash the Goth" the second place, and "Nil Nisi Bonum" third. We thought a more monumental type of treatment would have suggested itself to the contributors, and we asked for a brick-built building. The selected design, however, is really mainly in half-timber, and picturesqueness, which comes of quaintness, has been the idea of the author. The summer-house which he has sent us would make a comfortable addition to any garden without being overdone or too fantastic. The frieze in plaster over the dado is all right enough, of course; but here again "Vulcan" might have exhibited some originality, and availed himself of a favourable opportunity for vigorous ornamentation. The square-patterned panels, if delicately moulded, would doubtless look well, and not too assertive; but a good flowing, broad handling of foliations adapted to plaster is what we looked for. "Smilash the Goth" has, at least, given us this; but we cannot congratulate him on the manner adopted for the roofing of his building. The brick columns would be expensive, and cut brickwork is not very durable. The windows seem unnecessary. Dutch shutters would have been much better. The Chinese ridge-poles running out at the ends, with dragons on, are trivial. The cornice and treatment over the entry is very prettily managed. The steps should have been solid. The third design is a clever one, with several good points about it; but it is very much overdone with the tool-house and pigeon-house above in a tower, a glory-hole for pots, a verandah at the other end, a projecting hood over the entrance, and a sundial on the built-up parapet masking the roof in front of the building. There is considerable merit in much of the detail, and the wide arched opening is what we proposed to the contributors—indeed, the author has spared no endeavour to furnish us with an original composition, which he has drawn well; but we think he has tried to incorporate too much in so unambitious a building as was asked for. No plaster treatment is set out inside in the way of a frieze, and the vaulted ceiling is, perhaps, too deep and narrow. "Unitate Fortior" we place next, for his gabled structure placed against a stepped pediment in the garden boundary-wall. The façade is treated in the upper part with brick and timber pilasters, quietly managed, but wanting in projection, for shadow's sake, in such a design. The barge-board ought to have projected much more. The trifling balusters to the dwarf wall on either side of the entrance are meaningless, and worthy only of the house-furnisher style of treatment and the "twiddle"-monger. The swags to the plaster frieze in the interior are commonplace enough, and a V-jointed coved ceiling is entirely out of accord with a plaster treatment. The perspective, with its barren stumps of trees, represents the summer-house in what presumably must be mid-winter. "Pastime" is great at little windows peeping out this way and that, as if intended for a jealous rival to watch unseen the flirtations of a more favoured swain. At any rate, they would furnish a favourite haunt for spiders in which to spin their webs, while the gable lights would convert the shelter, by admitting the sun, into a sort of hot-house. "Pastime" does endeavour to realise plaster ornament, however much he shirks its careful delineation. "Koh-i-Noor" is poor both in drawing and design; but of all the contributors, he has kept to the lines laid down for their guidance. His building is in brick, with a Dutch kind of feeling about it, and paltry as his drawing of the plaster-work really is, if we must speak our mind, he has an inkling of what we meant.

The ceiling, too, if done on the curve as stipulated, would look very well. Hardwick Hall, Derbyshire, the Feathers Hotel, Ludlow, and South Wraxball, Wiltshire,* furnish examples, to mention none less familiar, to which "Koh-i-Noor" should go for inspiration and suggestiveness of treatment. The old house in the Butter Market at Ipswich is too coarse to be followed. The vase-topped piers and balustraded wall inside the front opening of this summer-house are very much out of place. "Sphinx" puts the entrance at one end of his building, and oriel bay windows at the two main sides, with casements to open. There is no section. The drawings are fairly well done, with clear printing. "Hardwick" sends a design with gables at the two ends, as well as in front, but the windows are unnecessary in such a building. Here they are made segment bays of. His plaster ornament is very indifferently drawn, and the perspective is extremely rough. "Wit" shows little in his many-shaped timber summer-house, which, however, has one good feature not seen in many of the others—viz., a moulded frame inside the main opening, in which a shaped and arched timber pleasingly gives a contour where most needed, and that in a way which will stand wear. The tie timbers of the roof and king-posts are not required, and would only harbour dirt and insects. The cusped panels above the seats ill accord with the rest of the design. "North Pole" contributes a plain commonsense garden house with little in it to admire or condemn. "Perseverando" throws out angle-set gablets, and with clustered shafts aims at a Gothic fancy for which we cannot praise him. The canted angles on plan only lead to needlesss bothers in the roof, and add a fussy effect, which is always best avoided. "Black and White" also arches his opening in wood, with timber uprights in the reveals as in "Wit's" design already mentioned. The six windows are not wanted. "Udolpho" adds nothing to his chances by such a fearful perspective as that here given. "Sector" has several points of merit in his plan, one of which is the way in which the ribs of the ceiling rise above the mural compartments over a cornice which emphasises the divisions by breaking forward at the springing of the ribs. The plaster elaborations are thin and weak, without *motif*. "Old Postage Stamp" sticks to his work. He forwards an original kind of thing with arched shaped gables, curved roof-line, and big finials at the hips. In the middle is a sundial "flèche," to use a fine word. "Excelsior" comes last with lancet openings to the front windows and entrance way. At the ends the windows are square.

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LAND SURVEYING AND LEVELLING, AND THE TESTING, ADJUSTMENT, AND USE OF MATHEMATICAL INSTRUMENTS.

By G. W. Cobham, P.A.S.I.,

("Crawter" and "Special" Prizeman of the Surveyors' Institution.)

(*Continued from page* 693.)

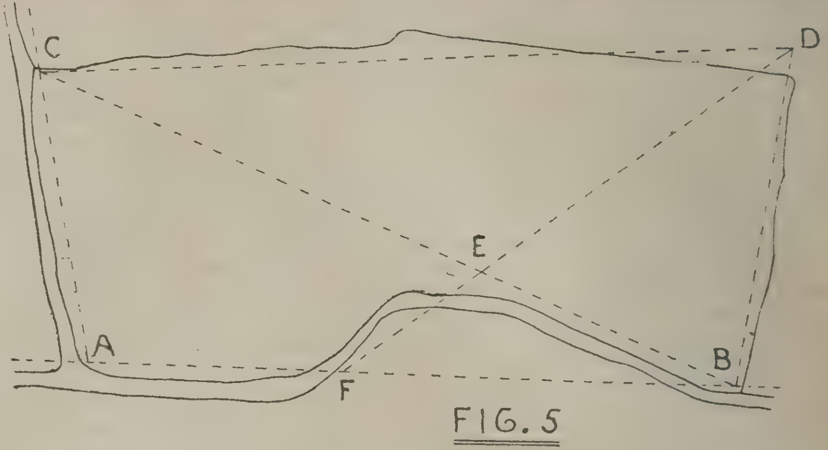

FIG. 5

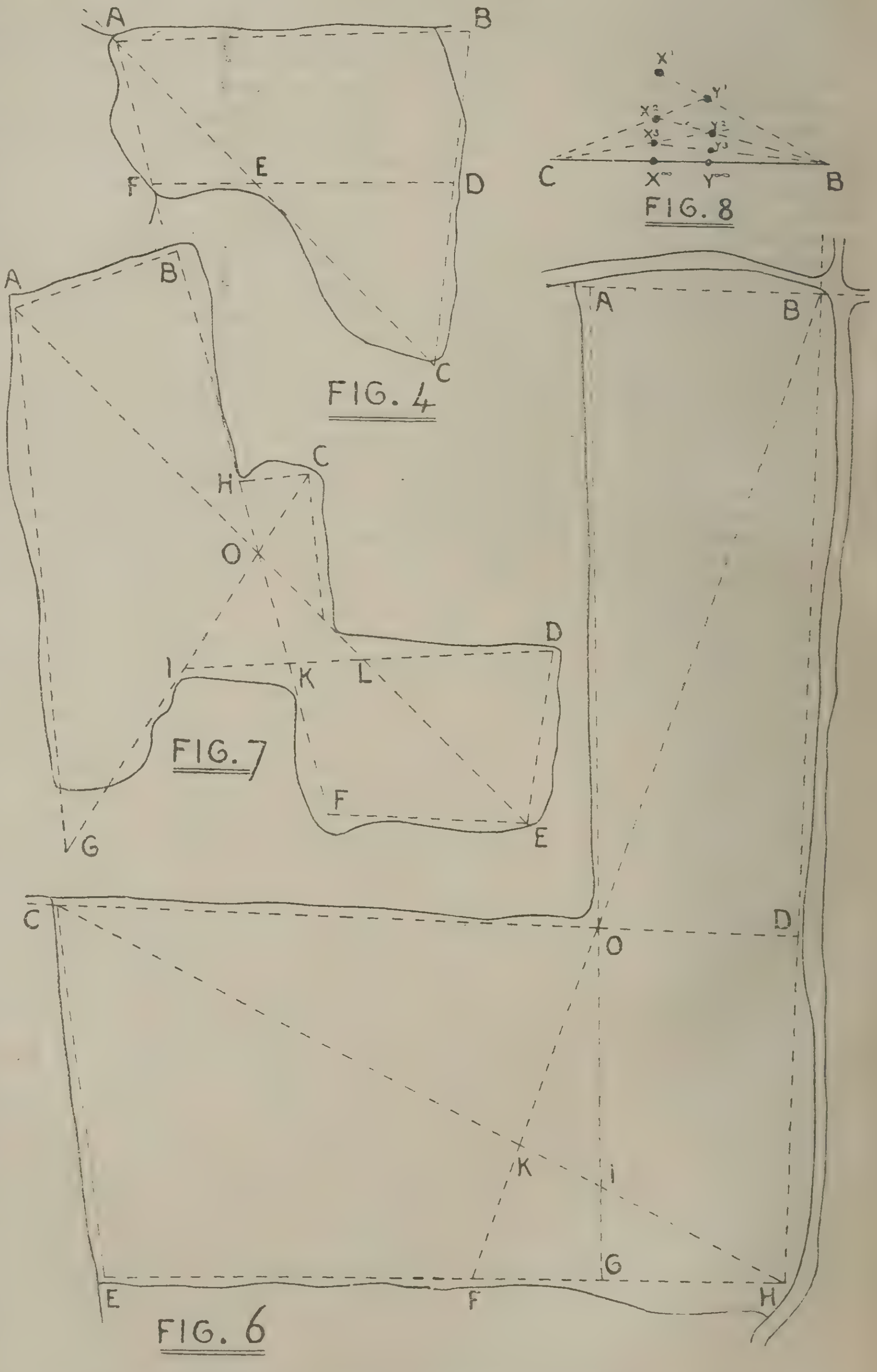

FIG. 4

FIG. 8

FIG. 7

FIG. 6

ARRANGEMENT OF LINES.—As we have seen, to determine a point relative to others with the chain only, it is necessary to measure the triangle formed of the two known points and the unknown point. Any two of these three determined points can then be used as base points to find the position of another unknown one. It will be seen that when we have determined the direction of a line by means of two points through which it passes, we can then determine any other point on that line, either between the two points or on either side of them, by simply measuring its distance from one or other of the known points. A line should not be produced far beyond the determining points, or the positions become liable to error, as a comparatively small error in the position of one point becomes exaggerated when the line is produced far. In addition to the lines absolutely necessary for the determination of a point a few others should always be measured, and then when the point is plotted by means of the lines necessary, the lengths of the extra lines scaled from the drawing show by comparison with the measured length whether the work is accurate. To begin a survey a long line should be chained right through the country to be measured; this is called a base line, and should be measured with care. It is usually best, if the field is four-sided, to set this out from corner to corner. Leave a good many stations as you go along it. It is by no means necessary that all the stations so left should be utilised, but it is very little trouble to put them in, and at this stage you probably do not know exactly where the other lines will come in, for of course you do not usually have a plan on which to set out the lines. The construction lines should always be made, if possible, to pass something that will have to be measured, as it is a waste of time to have to run a lot of secondary lines to pick up detail which might just as well have been measured from the main lines with a little care in setting out. We shall not give illustrations of many arrangements of lines for different fields, as it is a branch of the subject that can be much better taught verbally and by illustration and practice in the field; but we give a few to show the general idea of the subject. In the figures the boundaries are shown in full lines, whilst the chain lines are dotted and the stations lettered. All these diagrams are from actual fields; they are not fancy boundaries drawn round the construction lines.

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* See Building News, Aug. 12, 1887.

Fig. 4.—The triangle A B C is first measured, then D E to serve as a check line. This is produced to F to determine A F, necessary to get the detail of the boundary without long offsets. It will be noticed that A F E D C form a double triangle, having the sides A E E C, and also F E E D, in the same straight line, and therefore the angles A E F and C E D equal. (Euclid I. 15.) This is a very useful form for lines, as it is self-checking; for if C D E be plotted, and D E and C E produced to F and A, the comparison of the length of A F scaled from the drawing with its length measured in the field serves to detect any inaccuracy in the survey or plan.

Fig. 5.—This is a very ordinary shape for a field. Having measured A B, B C, and A C, we can plot A B C; and then, having measured C D and D B we can plot D. We can thus plot A B C D, but we have no means of telling whether it is correct or not, so D F is measured, and if its length on the plan is equal to its measured length, both the survey and the plan are correct. This tie line, as it is called, is very commonly measured from D to A; but in this case, taking it to F enabled the road to be measured without having to take any line other than the construction line (an illustration of the saving that can be effected by running the construction lines where they can be used for taking offsets). It is by no means necessary that lines should begin or end at stations, and it will be seen that A B and A C are produced beyond A, B, and C for the purpose of taking offsets to the roads shown. To plot, A B C should be put on first, then D, and lastly, D F should be measured. In measuring D F in the field, when E is reached it is very likely that there will be no station left on C B, C and B being a considerable distance off.

Fig. 8 shows a useful method of finding an intermediate point on a line without going to the end of it. Let the surveyor put a staff X^1 somewhere near the line, sending an assistant with another staff, Y, towards B, and sighting it in a lin with X B. Y then puts X in a line with Y^1 C; X puts Y in a line with X^2 B, and so on. After a few movements the change necessary will be found to become smaller and smaller, until in a very short time C X Y B will be found to be (practically) in a straight line. Of course, a station should be left in C B somewhere near where E will come, so as to prevent having to go through this process, which, however, takes longer to describe than to do.

Fig. 6 is an L-shaped field. To plot, lay down F H B, mark D and C, and produce H F to E; put in the triangle E C H by means of the lengths E C and H C, draw C D and mark O; A B O is next put in by means of the lengths B A and O A; if A O and B O produced cut E H in C and F, the survey and plan are correct. The distances F K, K O, C I, I O, and K I serve as additional checks.

Fig. 7 shows an irregular field. It will be seen that it is surveyed by three double triangles with their apices at O, all self-checking, together with one other double triangle, half of which is completely determined by the other lines, and so perfectly checked. To plot, A B O would first be laid down, A O and B O would be produced to E and F, and checked with K L and E F; in the same way A C O and C L O would be plotted, then H C O and I C O, I K L would be produced to D and checked with E D, thus completing the plan. It will be seen that I C, K H, and A E are the only lines not used for taking offsets. When several lines cross one another it is always better to let them cross all in the same spot, as at O, for this forms an additional check on the accuracy of the work.

ERRATA.—On page 693, column 2, line 7, for *Last* line read *Each* line; last line, same column, for *length* read *lengths*; column 3, line 37, for *lines* read *line*; line 58, insert *is* between "fence" and "drawn," and a comma after *in*.

(*To be continued.*)

FELLOWSHIP OF THE INSTITUTE.

FOR some time past a dead set has been made by a small clique, forming a sort of self-elected committee of exclusion, working secretly against the election to the Fellowship of the Institute of qualified applicants—of such an architect, for instance, as Mr. Seth-Smith, the President of the Society of Architects, who, however, in spite of the endeavours of the clique referred to, was recently elected. In May last year a committee was appointed to report on this matter, and suggest steps for the amendment of the anomaly complained of. The report of this committee will be presented at the next general business meeting on the 13th inst., when several memorials on the same subject will be read from members in the Metropolis, at Leicester, Nottingham, Dublin, Birmingham, and Leeds. Besides these, further memorials are announced from the Birmingham Association, Leicestershire Society of Architects, a large number of architects in Manchester, and others acting independently in London. The names thus brought together amount to about two hundred signatures.

The committee recommends that when a candidate is a member of an allied society, his candidature shall be made known to such society, and confidential communications invited thereon. The name and address of every candidate is to be suspended in the Institute public room and published in the official Journal before the nomination papers have been finally examined by the Council, in order that objections, if any, may be made within the next following fortnight after the candidate's name is issued. The nomination having been approved and signed by the chairman, it shall be exhibited in the meeting room until the day of election, and be printed in the notice paper convening the meeting for elections. Unless a written notice by three subscribing members be sent, demanding the vote to be taken by papers, the election shall be determined by a show of hands. In the event of voting papers being used, they shall be sent to all members resident in the United Kingdom, and one negative to four affirmative votes shall exclude from election. The committee comprise the names of Messrs. Baggallay, Brooks, Rickman, Ridge, Spiers, Waterhouse, Boyes, Hall, Henman, I'Anson, Noyes, and Woodward.

Mr. Charles Barry, F.S.A., will propose a resolution to the effect that after a given date, say two or three years, every candidate for the Fellowship shall be an Associate or have passed an examination qualifying him for Associateship, except in such cases of age, merit, or distinction as shall justify the Council in dispensing with such examination. Mr. H. D. Searleswood will also propose a very similar resolution in accordance with section 3 of the Charter of the Institute. The more important of the memorials bear immediately on this view of the question, it being the reasonable opinion of a very large class of efficient members "that the rank of Fellow should not as at present be open to architects just over the prescribed age of thirty years, who can evade the examination for Associateship, and yet present themselves for admittance to the class of Fellows, thereby lessening the dignity appertaining to the title, and removing the stimulus to young men to qualify for the class of Associateship." It is urged that no architect should be elected to full membership otherwise than by examination, save by special circumstances of established repute or professional ability.

BOOKS RECEIVED.

Dangerous Structures: a Handbook for Practical Men. By GEORGE H. BLAGROVE (London: B. T. Batsford.)—Some very suggestive and practical remarks may undoubtedly be found in this little book on the methods for the strengthening of foundations when walls or piers sink, and when invert arches at the corner of buildings push out the angle pier, also on walls and piers. Mr. Blagrove avoids abstruse mathematics in dealing with piers, and his diagrams and remarks will be readily understood by a practical man who would scarcely care to be given an equation, as of the moments of pressure and weight in a pier or wall. "Roofs" form a separate chapter, in which the author shows the conditions of weakness in a roof. The calculations and examples given are easily understood; as, for example, the mode of computing weights and thrusts, and the remedies against them by buttresses, &c. The stability of arches is demonstrated by simple geometrical means, and some useful remarks will be found on lofty structures, stone lintels, timber beams, struts, &c. We recommend this book to all young architects and students of building. Some useful tables of the strength of fir beams and struts are given.——*The Essex Review* (Chelmsford: Durrant and Co.; London: T. Fisher Unwin), in its second number gives an obituary of well known inhabitants of the county. Among these we find notices of Canon Last, who died at an advanced age, the Roman Catholic chaplain of Chelmsford Prison, and of Charles Haddon Spurgeon. The birthplace of the eminent preacher, and a good portrait from a photo. are given. The Right Hon. Sir Henry Cotton, late Lord Justice of Appeal, is also the subject of a brief sketch, of whom also a portrait appears. Of Essex churches a descriptive account is given of St. Michael's, Woodham Walter, by Mr. Fred Chancellor, F.R.I.B.A., illustrated by a small sketch and plan, which is of local interest. The Parish Registers and Notes and Queries contain a few particulars of antiquarian value and interest.——*Some Notes on the New Public Health Act for London*, with an appendix on London Fog and Smoke, &c., by HARRY G. ASSITER, Professional Associate of the Surveyors' Institution (London: Crosby Lockwood and Son), is another handbook for professional and general readers of the Public Health (London) Act, 1891. The pamphlet is a digest of the Act, amplified from a paper read by the author on the subject, and will be found of service to all interested in house property, factories, and workshops. We cannot think, with the author, that the London fog has existed from time immemorial, or that it was worse when vast forests reached to the river's bank on either side. On the contrary, we should say that the destruction of the forests has assisted to create the mists, as the cutting down of trees has done in various parts of America. Physicists have shown the cause to be the deprivation of woods, for in places where the natural forests remain the atmosphere is comparatively clear. The author's remedy for the smoky fogs is a good one, viz., that no factory or business in which a furnace is used should be established in the metropolitan area. The result would be that a large portion of the working population who dwell in crowded neighbourhoods would be moved beyond the area, much to the benefit of the community.——*Brick for Street Pavements*, by M. D. BURKE, C.E. (Cincinnati: R. Clarke and Co.), is an account of tests made of bricks and paving blocks, and the method of constructing them. The author's pamphlet is practically an amplification of a report made to the village authorities of Avondale, and gives the tests of bricks and other materials to be used in paving. Bricks are advocated when they do not absorb more than 2 or 3 per cent. of their weight of moisture, and will withstand the wear of street traffic; and for streets mainly occupied by residences brick is said to be in every way superior to stone and other materials, such as asphalte and wood. The tables showing the results of experiments on the absorption, transverse strength, crushing resistance, and resistance to abrasion and impact are of interest.——*New Holdings in Essex*, by PERCY LINDLEY.—A second and revised edition of the well-written handbook by Percy Lindley has just been published describing the little-known country between the Blackwater and Thames extensions recently opened out by the new Great Eastern lines to Southend, Burnham, and Southminster. It is published at 6d., at 123, Fleet-street, and is well illustrated by engravings from sketches and photographs and an up-to-date map showing the new railways.——*Redress by Arbitration*, by H. FOULKS LYNCH, solicitor (London: Effingham Wilson and Co.), is a digest of the law relating to arbibrations and awards, which contains the Arbitration Act for 1889 and the decision of the Courts thereon. In this second edition Mr. Lynch has given in a small compass all the points of an arbitration as settled by Act of Parliament. The articles and definitions are clear and concise, and an illustration is given under each point. A list of cases cited, and the forms of affirmation, amended award, arbitrator's demand for documents, &c., will be found of practical use. Mr. Lynch's book will be found of value to all architects, surveyors, solicitors, students, and others who desire to know the law on the subject in a concise form.——*Gas and Gas Works: Their Construction and Management.* By SAMUEL HUGHES, C.E., and

William Richards, C.E. (London: Crosby Lockwood and Son).—This is the eighth edition of a well-known and useful manual, comprising all recent improvements in the manufacture and distribution of coal-gas. It has been largely rewritten, and is well illustrated, showing retorts, appliances, and various improved forms of gas-holders, with specifications and descriptions of recent erections, &c.——*New Chapters in Greek History*, by Percy Gardner, M.A., Litt.D., with illustrations (London: John Murray, Albemarle-street), is a valuable contribution to the general literature of Greek history. The author's aim is mainly to call attention to recent explorations in Greek lands at Mycenæ, Olympia, where the excavations of the last quarter of a century have thrown much new light on our knowledge of Greek civilisation. Many of the chapters have been reprinted from the *Quarterly*, *Contemporary*, *Fortnightly*, and other reviews, though a large portion of the work is new. There is a want of sequence in these chapters, which are quite independent of each other, though they will be read as valuable side-lights by the general student of Greek history, for whom, rather than for archæologists, Mr. Gardner writes. In Chapters II. to V. an account is given of recent discoveries in Asia Minor. Herodotus and Thucydides say little about the Phrygians, from whom we have a few mythical legends about Midas, who turned all he touched into gold, and Marsyas, who challenged Apollo to a trial of his skill in music, but Apollo won and flayed his antagonist. The worship of Dionysus was common to the Phrygians, and many of those orgiastic forms of religion which favoured sensual excesses and self-mutilations are due to the same people. Mr. Gardner discusses Mr. Ramsay's views, that the semi-Greek races of Asia Minor were an invading aristocracy, to whom the royal tombs of Lycia and Phrygia belonged. The inscriptions are of Aryan character; the reliefs represent armed warriors, and so the theory of Ramsay is supported by other archæological discoveries. The late Dr. Schliemann's researches are also noticed. The author says, "It seems to every visitor that the little citadel on Hissarlik, which was but some 330ft. in diameter, cannot have inclosed the noble palace of Priam." Other difficulties are pointed out to show how far the Iliad corresponds with discoveries. The author thinks that the Homeric poetry sought to magnify and exalt everything, turning farmhouses into palaces, bronze into gold, men into heroes, just as our old English ballads, Spenser and Milton, did the same. We cannot enter any further into the evidence adduced to show that no definite conclusion can be arrived at respecting the Trojan war. Fresh archæological evidence is wanted to make the Iliad fit actual facts. The author refers to James Fergusson's theory of the lighting of the Parthenon, and to Dr. Dörpfeld's opinions respecting the lighting and warming of the hall of the Palace at Tiryns. These chapters are well worth careful reading, as throwing light on the Homeric Poems. Mycenæ and its tombs, illustrated by plate and vessels of gold and silver, is an important chapter. The Excavations of the Athenian Acropolis, with plan; the reliefs and inscriptions of Athenian Tombs; Eleusis and the Mysteries, with plan of Eleusis, are other interesting parts of Mr. Gardner's work, which will be of special interest to all students of Greek history and archæology.——*First Principles of Mechanical Engineering.* By John Imray and C. H. W. Biggs, illustrated (London: Biggs and Co., Salisbury-court).—As an introduction to the mechanical principles of engineering, the book before us will be found to supply a want among students who are desirous of learning the rudiments of their profession without a previous mathematical training. The authors explain in a clear and concise manner the principles of mechanical drawing, stresses of materials, mechanical powers, heat, and other matters. The chapter on materials and stresses explains in simple and scientific language the stresses to which beams are subject exposed to transverse strain; the theory of the bent lever is intelligibly applied to elucidate the manner the fibres act in resisting the load of a beam, and this reasoning is illustrated by numerical examples. In ordinary treatises, the student is supposed to be acquainted with equations in considering the relation of the bending moment to the moment of resistance, and numerous formulæ are given for this purpose. Messrs. Imray and Biggs show in plain language the mathematical principle, and their diagrams are well selected to this end. The different positions of beams and loading, cast-iron girders, calculations for transverse strength, with examples, are described in a way that any beginner may understand. We can recommend the work to all students as an elementary textbook.——*The Drainage of Habitable Buildings*, by W. Lee Beardmore (London: Whittaker and Co., White Hart-street, Paternoster-square), is a reprint of articles which appeared elsewhere. Mr. Beardmore describes the main principles of drainage as applied to houses; he discusses the English and American practice, and argues in favour of the value of a "stoneware siphon trap" to cut off the sewer gases from the house-drain, which some American sanitary engineers say is objectionable. The author gives a section of a disconnecting manhole and the form of siphon-trap; he also draws a distinction between the house-drain and the "connecting-drain," the latter being defined as the drain from the siphon-trap to the main sewer. The remarks on the main house-drain are sensible; the author advises the house-drain to be laid to a proper fall—say 1 in 30 or 1 in 40—and the connecting-drain at whatever fall may be left between the manhole and main sewer, provided, of course, it is not too small. Some useful suggestions are given about selecting glazed stoneware pipes, joints, &c., the "Stanford joint" being mentioned. Socket and spigot pipes jointed with Portland cement are recommended. Drains under houses are described, and the mode of treating branch drains, which should never be connected under the house or without a manhole, and other useful suggestions are given as to changes of direction of drains and the manholes required at these points. Automatic flushing is illustrated by one of Mr. Rogers Field's siphons and Messrs. Doulton's flushing tanks. Other chapters deal with joint pipe connection, w.c. apparatus of different kinds, disconnecting, and different types of trap urinals, sinks, lavatories, and remarks on stable drainage, disposal of sewage. The illustrations give all the required information as to details, and the book will be useful for reference.——*Land: Its Attractions and Riches.* By fifty-seven writers. Edited by C. F. Dowsett, F.S.I. (London: The "Land Roll" Office, Lincoln's Inn-fields.) The object of this compilation is to win back capital to the soil, and to show that country investments are deserving of more attention. The subjects discussed are various. The attractions and advantages of country life, on the use of pastoral and arable land, bubble investments, legal questions affecting land. The peasant proprietorship of land is thought to be inimical to advanced farming by more than one writer, because the unmethodical system of working does not compare with exact knowledge and scientific rule. In another paper, Mr. C. F. Dowsett discusses the question for rating ground rents and vacant building land. Referring to Mr. Saunders's pamphlet, who proposes that land should be taxed on its capital value, the editor adduces arguments on the other side, to show that ground rents are already taxed, because the rates paid for every house are paid in respect of the land and building together, not of the latter only. Again, he says of ground-rent reversions the lessee and his successors get the advantage of the increase of rental value called the "unearned increment" during the lease, and not the landlord. One of the objections to land being valued as building land, capitalised at 4 per cent., and then rated, is that such a proceeding would flood the market with building land, and overcrowding be increased. Fruit-growing by Principal Bond, tenant right, small holdings, improving farms, reclamation, land and house investments, land and stone, clays, lime, coal, are treated, the latter by Professor J. Logan Lobley. Those who wish to read both sides of a very important question will derive much information from Mr. Dowsett's work. The arguments against rating vacant land as if it were developed for building purposes are worth considering. There is this one objection to the proposal: that it would compel owners of residential or vacant land to sell, as they could not afford to pay a high rate for residential purposes, and large estates would at once come into the market and be built over, to the ruin of other properties.——*The Hampshire Antiquary and Naturalist*, Vol. II. (London: Elliot Stock), is the second volume of local notes and queries, and reports of meetings of the Hampshire Field Club, and other archæological matters, reprinted from the *Hampshire Independent* of last year. The book contains a fund of varied notes on the archæology, natural history, and folk-lore of the county. Many of the notes are contributed by well-known local antiquaries, and relate to old buildings, ecclesiastical and domestic, ancient remains, vestiges of old Southampton, Isle of Wight, &c. To residents of Hampshire, and to all students of antiquity, this volume, with the former contribution, will be of interest.——*A Guide to Electric Lighting*, by S. Bottone (London: Whittaker and Co.), is an elementary guide, describing the general principles of the subject in a manner that cannot fail to instruct the general reader. All technical phraseology is avoided, and the mathematical principles are explained without formulæ. The cost of the various modes of lighting will be found useful to many of our readers and those who are thinking of introducing the electric light. The illustrations are numerous.

PLUMBERS AND FIRE FITTINGS.

We have received the new illustrated catalogue issued by Messrs. Hayward Tyler and Co., hydraulic engineers, 90 and 92, Whitecross-street, London, E.C., relating to water works and sanitary appliances and fire fittings. This catalogue, or List "A," is quite up to date in the various branches, and is replete with examples of plumbers' brasswork, fire fittings, closets, baths, lavatories, &c., clear illustrations being given of every fitting and appliance, with descriptions and prices. Many of these are admirable in design, and show various improvements. We may note Hayward Tyler and Co.'s barrack stand-post and drinking fountain, as supplied to Colchester Barracks, with 2½in. outlet, screwed brigade gauge with blank caps and chains, and spring drinking tap with ladle and chain. The self-closing taps prevent waste of water, and the fitting is well adapted to the yards of every public building or factory. The patterns of cast-iron stand-post 101 f, and street pillar with union for hose, are compact and ornamental.

Several forms of hydrants are illustrated, including an improved frost hydrant, which can be fixed below ground, also patterns of fire-cocks, Metropolitan Brigade fire fittings, fire-escapes, house fire-engines, garden engines, which can be worked by hand. This firm's model garden-engine, or portable fire-pump, which stands on a foot, is a capital form of garden-pump. A large variety of patterns of high-pressure taps for waterworks is represented, and we see Hayward Tyler and Co.'s "East London," New River, Southampton, and other patterns of high-pressure bib and stop taps. In the plumbers' section, every kind and size of brasswork, such as washers and wastes, unions, ferrules, grates, are illustrated and priced according to size and shape. Hayward Tyler and Co.'s "extra-quality valve-closets" combine the latest improvements; the basins are well shaped for flushing, with rims and large outlets. The "new A. B. C." pattern is an improved closet, and very strong, being used for the Aërated Bread Co.'s retiring-rooms. Other well-known closets are the "Whitecross" and the elastic valve, with improved equilibrium after-flush regulator. Various pedestal closets of handsome design, with traps in one piece, are illustrated. The "Tylerox," a full-flush, pedestal, valveless closet, is a very clean and sanitary variety. We note also some excellent, enamelled, cast-iron hoppers and traps, slop closets and sinks, lavatories with improved arrangements, suitable for offices, schools, &c. Baths and fittings, hot-water apparatus, cisterns, &c., will be found in this comprehensive list, which should be in the hands of every engineer, architect, and builder.

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The rural sanitary authority of Runcorn have adopted a scheme of water supply for Frodsham, prepared by Mr. Timmins, water engineer, of Runcorn. The estimated cost is £3,800.

On Saturday the foundation stone was laid of a new hall in course of erection for the Free Presbyterian Church at Pilbig, near Leith. The hall is being built behind the church, and, like it, is Gothic in style. The cost will be £1,600. On the ground floor will be a suite of rooms for the session, while on the floor above will be the hall, which is to be seated for 500 persons. The architects are Messrs. Sydney Mitchell and Wilson, Edinburgh.

CONTENTS.

Architectural "Pot-Boilers" 789
The Building Trades: their Position 789
Cost *versus* Value in Building 790
BUILDING NEWS Designing Club 791
Land Surveying and Levelling, and the Testing, Adjustment, and Use of Mathematical Instruments 792
Fellowship of the Institute 793
Books Received 793
Plumbers and Fire Fittings 794
The BUILDING NEWS Directory xv
Our Illustrations 795
Competitions 795
Archæological 795
Wayside Notes 804
Architectural and Archæological Societies 814
The Ulster Unionist Convention 815
Architecture of the Thirteenth and Fourteenth Centuries 815
Obituary 815
Building Intelligence 815
Engineering Notes... 816
Correspondence 816
Intercommunication 817
Legal 817
Legal Intelligence 817
Our Office Table 818
Meetings for the Ensuing Week 818
Trade News 818
Tenders 819

ILLUSTRATIONS.

DESIGN FOR THE NEW CATHEDRAL, CHRIST CHURCH, VICTORIA.—A DESIGN FOR A ROSEWOOD CABINET.—MESSRS. HONEYMAN AND KEPPIE'S DESIGN FOR THE GLASGOW ART GALLERIES AND MUSEUM.—PRIESTS' STALLS, ST. CUTHBERT'S CHURCH, PHILBEACH-GARDENS.—ADDITIONS, TODENHAM, GLOUCESTERSHIRE.—FOUR HISTORICAL CHURCHES OF NORTHAMPTONSHIRE.—"THE CLYFFE," MOUSEHOLD, NORWICH.—ALLOTMENT COTTAGES AT WIMBOLDSLEY, CHESHIRE.

Our Illustrations.

CHRIST CHURCH NEW CATHEDRAL, VICTORIA, B.C.

THIS sheet illustrates the last of the four designs which we have photographed from those submitted in competition for this church, and it gives an exterior view with plan of the scheme, signed by "Hope," whom we believe to be a well-known church architect in London. His plan we have already fully described on page 620 (May 20 last), and the three other designs referred to were illustrated in our issues for May 27 and last week. We propose to publish some interiors of these designs, in order to do each of them equal justice, so far as the merit of the original drawings will permit. Some of the perspectives in this competition were quite unworthy of the occasion. We have reason to believe that the design we placed first, and which was marked by the motto "Ars," and "New and Old," which we described as the third best design, are two of the three plans chosen by Sir Arthur Blomfield, A.R.A., in the final award of the Building Committee in Victoria, and that the plans have now been sent to British Columbia. The third design is, we are told, by a Canadian architect, and we now know that the authors of the other two are practitioners in London.

"BUILDING NEWS" DESIGNING CLUB: DESIGN FOR A ROSEWOOD CABINET.

(SEE description on page 791.)

GLASGOW ART GALLERIES, KELVINGROVE PARK.

ALL the other designs of the five selected architects taking part in the final competition for these buildings, including the chosen one, have already been illustrated in the BUILDING NEWS (April 15th, 22nd, 29th, May 6th and 20th), and to-day we give the plans and perspective views of the design by the last remaining hitherto unrepresented competitors—viz., Messrs. John Honeyman and Keppie, architects, Glasgow. The central hall, with its arcade of two tiers, has galleries or corridors on each side, and at one end is a big orchestra platform and organ-stage adapted for grand musical entertainments. The school of art is placed to the left on the plan, with a separate entrance-hall, and besides the several classrooms are two good lecture theatres. Five large staircases communicate with the first floor of the building, which is exclusively devoted to museum and picture galleries. We shall give a detail drawing at an early date illustrating, somewhat more clearly than is possible in a general perspective view, the style adopted by the authors.

PRIESTS' STALLS, ST. CUTHBERT'S CHURCH, KENSINGTON.

OUR illustration of this well-known church at Kensington shows the priests' stalls on the south side of the choir, recently executed by Messrs. Jones and Willis, of London and Birmingham, from the designs of Messrs. H. Roumieu Gough and Roberts, of Carlton Chambers. The stalls, with the traceried canopy, are of oak, the workmanship of which reflects great credit upon the firm employed. The figures of St. Cuthbert and of the angel above are particularly worthy of notice as excellent examples of wood-carving.

TODENHAM HOUSE, GLOUCESTERSHIRE.

THE sketch, now in the Royal Academy Exhibition, shows the new garden front and alterations to the old house behind. The walls were built of lichen-covered stones from old buildings on the estate, as well as the stone slates. The low building on the left is the old billiard-room, but with a new parapet added. The work was carried out in 1890 by Mr. Geo. Wiltshire, of Swindon, from designs by Mr. E. Guy Dawber, 22, Buckingham-street, Adelphi, W.C.

FOUR HISTORICAL CHURCHES.

FEW counties in England can boast, as Northamptonshire can, of four such interesting churches as form the subject of this sheet of sketches, each in its way an almost unique specimen of its style. At All Saints', Brixworth, are to be found traces of the Roman, the church being built on the site of a former Roman temple, the bricks of which have been employed in the present church. During the restoration, which took place in 1866, a base of a circular column was found, which was believed to have also formed part of the earlier Roman temple. At Earl's Barton is to be found a nearly perfect specimen of a Saxon tower, unfortunately surmounted by a 14th-century parapet. The tower consists of four stages, and shows the long-and-short work peculiar to the Saxon style. The church of the Holy Sepulchre in the county town is a fine specimen of the circular churches built by the Crusaders on their return from the Holy Land. It was built by Simon de S. Liz, Earl of Northampton. The church consists of a Norman round nave (the original part), with chancel aisles partly semi-Norman and partly Decorated. In the centre of the round is a cupola supported by eight cylindrical pillars of considerable height disposed in a circle, from which spring plain-pointed arches. These pointed arches are obviously a substitute (14th century) for the original clerestory. Over the columns the walls assume an octagonal shape, and in this respect it differs from the other round churches in this country. At the west end stands the fine, broad, embattled tower, surmounted by a spire of eight sides, built about the 14th century. The Church of St. Peter, situated near the site of the old castle, is a perfect specimen of enriched Norman architecture, and may be ranked as one of the most interesting antique ecclesiastical edifices in the country.

HERBERT NORMAN.

"THE CLYFFE," MOUSEHOLD, NORWICH.

THIS house has just been erected for Mr. C. Hurn by Messrs. Scarles Bros., contractors, of Norwich, from designs, and under the supervision of, Mr. Albert C. Havers, architect, Norwich. It stands upon a hill commanding a fine view of the cathedral and city. The garden front is faced with half-timber work, fitted in with herringbone pattern brickwork and rough-cast stucco, and the roofs are covered with Broseley tiles. The contract, with extras, amounted to a little over £600.

ALLOTMENT COTTAGES, WIMBOLDSLEY, CHESHIRE.

A NUMBER of cottages in pairs have been erected on various parts of the Wimboldsley estate to the design given; each cottage has several acres of land, and a good large garden attached. These cottages have been erected with a view to induce farm labourers to settle in the country near the farms, and to meet the present-day ideas of preventing the migration of country labourers to the towns. Every convenience has been made in the arrangement of the house and outbuildings, to enable the occupier (with the smallest amount of labour) to keep a cow or two, or a cow and a couple of pigs. The walls to the lower story are built with a 2in. cavity, and each room has air-flues constructed to provide a constant flow of fresh air to the interior, and special flues for the exit of vitiated air in the chimney shafts. The living-room walls are lined to a height of 4ft. with brown glazed brick, the upper portion being plastered; the walls of scullery and milk-house are lined with white glazed bricks, and all ground floors are laid with 4in. Ruabon best red tiles; all interior woodwork is stained and varnished. The plans are by Mr. J. Holland, Northwich, and the work has been done under his supervision by workmen employed on the estate.

COMPETITIONS.

NEWCASTLE-ON-TYNE.—At the meeting of the City Council, to be held to-day (Friday), Councillor J. Baxter Ellis will move:—"That the Town Hall Committee be authorised to expend not exceeding £500 in prizes for competitive plans, by Newcastle architects, showing the best method of improving the present Town Hall and Municipal Offices, to meet the requirements of the city."

ARCHÆOLOGICAL.

CARDIFF.—An interesting discovery has been made at Cardiff Castle, where the site of the old Black Friars Monastery is being excavated, under the direction of Messrs. Kempson and Fowler, architects, of Llandaff. The first "find" was that of a number of small pieces of the ancient tile floor of the church. Following this up, Messrs. Kempson and Fowler unearthed many interesting tiles, bearing arms, including those of Lord Mansel, the Earl of Warwick, and John Pryce. All the tiles are red and yellow, and the date of the floor is about 1480. The floor is to be reproduced in new tiles, laid in the old way.

CHIPS.

Mr. J. L. Pearson, R.A., contradicts a statement which has appeared in a Church paper that he is about to be received into the Roman communion. The report is wholly without foundation.

In our paragraph respecting the surveyors to the school board under "Our Office Table" in our last issue, we named one of the surveyors Mr. Frederick Dunning. This is an error—it should be Mr. Frederick Downing.

Mr. Goodwin S. Packer was the architect for the new Temperance Hall, to seat 750, which was opened last Monday at Southport.

Out of twenty-one candidates, Mr. Herbert A. Adye, M S.A., junior partner of the firm of Adye and Adye, architects and surveyors, Town Hall-chambers, Bradford-on-Avon, has been unanimously elected surveyor for the town of Bradford, in the county of Wilts, rendered vacant by the resignation of Mr. J. Stansfield-Bruce, C.E. Mr. Adye has also been appointed by the Wilts County Council as assistant surveyor of main roads in the Bradford district.

The Shipston-on-Stour Rural Sanitary Authority have called in Mr. J. Edward Willcox, C.E., of Birmingham, to report and advise on the sewerage and sewage disposal of Blockley, Worcestershire, and also to prepare a scheme for a supply of water for the district.

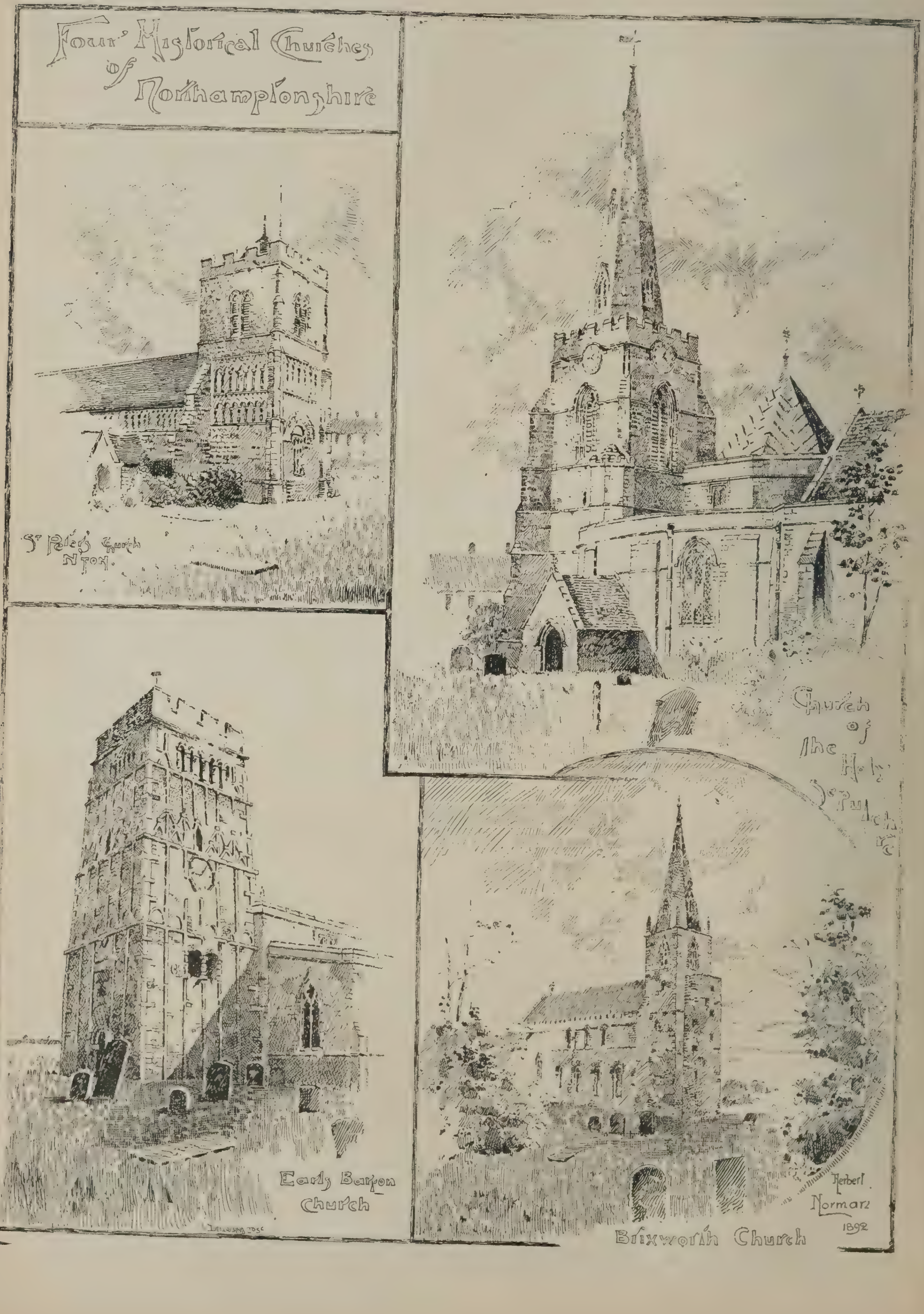
New co-operative stores have been erected at Birtley, and special attention has been paid to the ventilation, which is carried out on the Boyle system, the latest improved form of the self-acting air-pump ventilator being adopted for the extraction of the vitiated air.

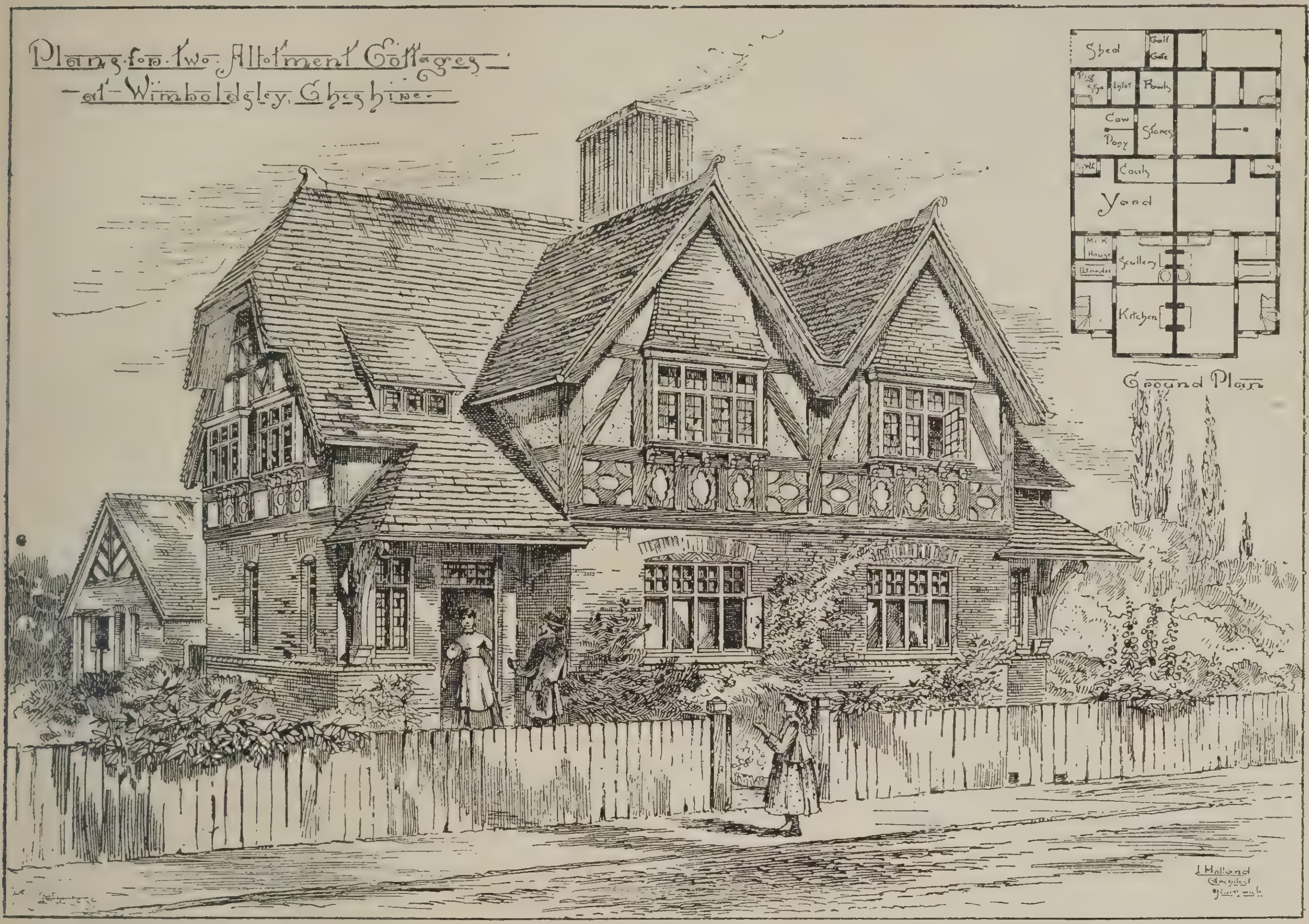
On Saturday last the foundation-stone of the mission church and schools of St. James's, Poolstock, Wigan, was laid. The building is of brick, with lancet-headed windows, broken up by brick gablets, and surmounted by flèche. The cost when completed will be £1,500; the accommodation about 250. Messrs. Heaton and Ralph, Wigan, are the architects.

The latest addition made to the National Gallery is numbered 1352, a bequest from Mr. Richard W. Cooper of a small "Landscape" by F. Moucheron. The subject is—on the left, the columns and entablature of a ruined pseudo-Classic temple; in the foreground a group of men, cattle, and goats, with a grove of trees behind; and to the right an extensive plain opens on to the sea, with a range of distant mountains beyond. The picture is, for the present, hung on the west wall of the Octagon Room.

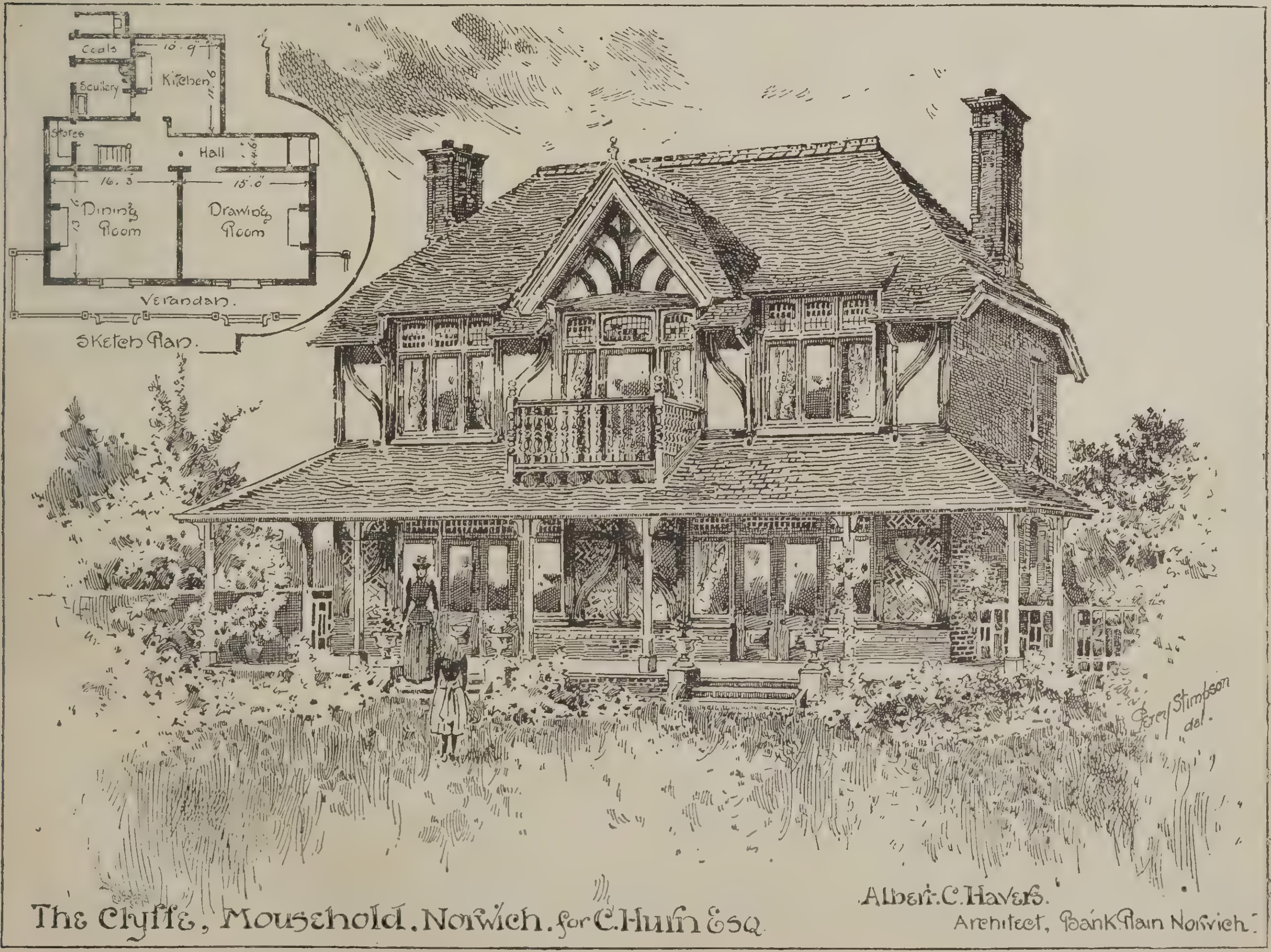
Mr. Frederick Taylor, a well-known builder of Evesham, committed suicide on Tuesday by hanging himself while suffering from delirium.

The Public Rooms at Hull are about to be rebuilt on an enlarged scale from plans designed by Mr. B. Jacobs, of that town.


Four Historical Churches of Northamptonshire
St Peter's Church N'ton.
Church of the Holy Sepulchre
Earls Barton Church
Brixworth Church
Herbert Norman 1892



Plans for two Allotment Cottages at Wimboldsley, Cheshire



The Clyffe, Mousehold, Norwich. for C. Hurn Esq.

Albert C. Havers. Architect, Bank Plain Norwich.

WAYSIDE NOTES.

THE new visitation of patented plans seems to receive as little encouragement from the profession as the first. All will have been glad to have seen the letters you published from your correspondents last week. They are, collectively, quite sufficient to show that the idea is not novel. Architecture and planning being such old-established concerns in this world, it is scarcely wise to hope for any really novel invention such as may fairly be patented. Those with a taste for patenting should embrace some younger art or science, such as electricity. They will then have some scope for the exercise of their ingenuity, and run less chance of spending time and money on ideas as old as the hills.

No worse subject for patenting could be thought of than that of plans. I much doubt whether the mere fact of their being plans would not cause the law to regard claims of this nature with a very dubious eye. A pattern for a tablecloth or design for a fire-grate is a different thing from the plan of a building. In the attempt to reserve to themselves the sole benefit of certain plans, the plan-patentees seem to aim at patenting the *principle.* I always understood that principles could not be patented, but only applications of principles.

It is such an easy thing to imagine that one has devised something hitherto unknown to the world when engaged on a plan. I recently gave an example of how, in my own case, I produced something—in my own estimation—bordering upon the marvellous. The merit of the scheme was so great, and the plan so abstruse, that no one could grasp it except myself. Friends came and looked and went away, saying nothing; chance acquaintances looked in, and some perhaps went straight away to Bedlam. I have seen people look at the plan and grow anxious of countenance with the anxiety that comes to those who venture into the maze at Hampton Court. It was, indeed, a wonderful production. People did not generally offer much comment upon it; they occasionally perhaps exchanged glances, as though passing the time o' day—evident signs of approval; and one old and respected friend admitted that it *was* a plan. How I did deeds and dreamed dreams in connection with this plan, all readers of "Wayside Notes" will know; and I daresay that there is scarcely a competition of any magnitude but what one or more of the competitors fancies that he has produced a perfect marvel in the way of novel planning. This, it may be supposed, is because planning admits of infinite variations on a few old, broad principles. Then come they who imagine this variety of detail to be a revolution in principle

Respecting the recent A A. election of officers, I suppose that we shall now have two distinct parties in the Committee. There will, on the one hand, be the art-ists, and, on the other, the profession-als. Perhaps the proper balance will be found between the two. It may sometimes seem a thing to be regretted that there should be two great divisions in a government, each apparently pulling affairs in an opposite direction; but the safe way seems to lie between their two endeavours. So we must hope that between the two parties—between the arts-and-crafts of the one side, and the examinations and studios of the other—the Association will find a safe course. Probably, as in another place, the obstruction will come from gentlemen who, like the old Irish M.P.'s, will shout "Repeal! Repeal!" in allusion to the unseen bond that connects the Association with the Institute. I should recommend that they be allowed to shout so long as their shouting does no one any harm.

I looked somewhat curiously to see if the "general tone" of *A.A. Notes* had in anywise altered this month. If at all, I should imagine the motion to be retrograde. Two or more pages of songs from the soireé play might have been left out. They may be good, but the large majority of members who take any real interest in the Association heard the lines at the soirée. Street's lectures are continued, and constitute a "leader." The place is better filled by a good article on topical events and matter of moment to the Association. Mr. Kotaro Sakurai's account of his tour as travelling student makes an interesting supplement; the opinion given as to the bad effect of towers at the west end of churches will not be cordially received by most architects. It would be rather late in the day to discover that all, or nineteen out of twenty, of our old parish churches are bad in composition.

I have had another pleasing outing among old villages—some new to me, others seen before. From Hastings we passed over the always pleasant road to Rye and Winchelsea, the Fairlight Downs on the right, and most beautiful glimpses of the distant town of Rye—a little low pyramid of red-tiled and red-brick houses standing all alone in the green marshes. I noticed that the church at Guestling—burned down some years ago—had been replaced by a new structure; and I hear that a new bridge is contemplated at Rye to allow of readier access to the sea-shore. On this visit to Rye I noticed more carefully the curious old red brick grammar-school opposite the George Hotel. It reminds me very much of a building in Little Queen-street, W.C. It is a very early and crude attempt at Classic architecture executed in brickwork. Old Winchelsea Priory I have never seen looking lovelier, with its new-leafed ivy brilliantly green in the bright sunlight, and a glorious sky overhead. I heard something about a proposal to build a battery of some sort at Winchelsea; if the idea be carried into execution, the quiet, old-world character of the place will suffer considerably.

The glory of Whit-Sunday evening will be remembered. The appearance of the old red houses of Rye, all aglow with the horizontal rays of the sun, and the great stretch of green marshland around, may be better imagined than described. Climbing Rye Hill, this picture presented itself to us—the sea bounding the view from Dungeness to Fairlight. From Rye we made our way to Tenterden for a second visit this year. Wittisham Church is being restored, the interior being given over to the builders' hands. The old 9in. red paving tiles are being torn up, and wood-block flooring put down in lieu thereof. The doors being fastened, I made the best of an examination through the windows, from which I perceived that one of the nave pillars leans out of the perpendicular to quite an unusual extent. From Wittisham the "steeple" of Tenterden appeared in view. Crossing a second offshoot of Romney Marsh, we arrived at a small hamlet at the foot of the Tenterden hills, and near some old half-timbered houses fround a strange-looking brick church of most doubtful age. It proved, however, to be Small Hythe Church, *temp.* Henry VIII., when the sea used to run up where now only is marshland. The verger, residing in a cottage hard by, offered to show us the interior, and—it being then dusk—with the combined assistance of a tallow candle and wax vesta, we managed to get an idea of the interior with its fine old oak screen and old font taken from another church the whereabouts of which has, for the moment, slipped my memory. On Monday we saw Rolvenden and Benenden, hastily passed at Easter. The former church is poor, and is not improved by the large old-fashioned pews and wooden galleries. The church at Benenden is better, and has a lovely churchyard. The top of the tower must command as fine a view as possible of this part of the country right away from the North Downs to the Hastings Hills, and the South Downs further west.

Goth.

The Princess Christian will lay the foundation-stone of the Pelham House Home for Working Boys in Spital-square, Bishopsgate-street, E., on Wednesday afternoon next. The home is being rebuilt from plans by Mr. W. H. Seth-Smith, P.S.A., F.R.I.B.A., at a cost of £5,000.

The new board schools, Carlisle, are being warmed and ventilated throughout by means of Shorland's patent Manchester grates, the same being supplied by Mr. E. H. Shorland, of Manchester.

The new cemetery at Witton, Northwich, is making good progress, the boundary walls being finished, and the entrance gateposts being up; the only thing wanting to complete the inclosure of the ground are the gates. Several burials have taken place in the new ground. The chapels are progressing fairly well, and should be ready for use before the winter. Several delays have occurred, owing to alterations having been made in the plan. Mr. Matthews, of Nantwich, is the contractor, and Mr. Holland, of Northwich, the architect

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

Edinburgh Architectural Association.—On Saturday, under the leadership of Mr. John M'Lachlan, a party of thirty-five members of the Edinburgh Architectural Association and friends visited Drumlanrig Castle, by permission of the Duke of Buccleuch, the occasion being the Association's annual excursion. Leaving Edinburgh at 9·20 a.m., the party travelled by the Caledonian Railway to Elvanfoot, whence they were driven in brakes through Dalveen Pass to Durrisdeer Church, in the tower of which are the famous "Queensbury marbles." These "marbles" consist principally of a statue of the second Duke of Queensbury, who was a prominent agent in connection with the Union negotiations between England and Scotland, and represent him looking on his dead wife. Both effigies are in white marble. The Rev. Mr. M'Kenzie, minister of the parish, drew attention to a small marble canopy on four columns beside the monument, and to the peculiar carvings on the inside walls of the tower. The party drove on to Drumlanrig, where they were received by Mr. Thomson, head gardener, and shown through the Castle, whose historical pictures and gardens were much admired. Here Mr. M'Lachlan read a paper, in the course of which he told the story of that palatial residence. A remarkable circumstance in the history of the Douglas family was that for four hundred years there was not a break in the succession. In 1810 the estates passed to the Buccleuch family. Describing the castle itself, Mr. M'Lachlan exhibited a plan, and said the external appearance of the castle was most imposing and picturesque. It occupied the commanding position in the whole valley of the Nith, and it was difficult to fancy any building which more fulfilled the requirements of the situation than did that building, with its Classic dignity and Gothic freedom of architecture. Its architect, Mr. M'Lachlan stated, was not known. The members drove back through Drumlanrig woods, along the picturesque banks of the Nith, to Menock Bridge, and through one of the narrowest and most striking gorges of the Lowthers, to Wanlockhead, and then on to Leadhills, where dinner was served. Mr. W. Wyburn Robertson, president, was in the chair, Dr. Rowand Anderson acted as croupier, and among the other gentlemen present were Mr. Augustine Birrell, M.P.; Mr. Gilbert Goudie, Society of Antiquaries; Mr. T. N. Paterson, vice-president of the Glasgow Architectural Association; Mr. Scott Morton, Mr. R. S. Lorimer, Mr. T. Croal, Mr. G. S. Aitken, Mr. J. Whitelaw, Mr. G. Washington Browne, Mr. J. M. Hendry, and Mr. T. Fairbairn, hon. secretary. After dinner toasts were proposed, Dr. Anderson giving "The Association."

Glasgow Architectural Association.—The opening meeting of the Session (1892-3) was held on Tuesday evening in the N.B. Station Hotel, George-square, the hon. president in the chair. Mr. Campbell Douglas, Mr. Barclay, and Mr. Gildard, sen., were also present, and letters of apology were read from Mr. T. L. Watson, Mr. H. N. Leiper, and Mr. Thomson. Mr. Alexander McGibbon delivered his presidential address, the subject being "Current Architectural Criticism." A few remarks by the hon. members present concluded the business meeting. The meeting then took the form of a smoking concert, during which Mr. Alexander McGibbon was presented with a handsome old Dutch cabinet and a set of silver plate from the past and present members of the association, as a mark of their esteem of his long and faithful services as secretary. Mr. W. J. Anderson made the presentation on behalf of the members, and Mr. McGibbon replied in an appropriate manner. Songs and recitations followed, and, with a vote of thanks to the hon. president and the presentation committee, the meeting concluded, all having spent a very enjoyable evening.

A conversazione will be given by the President of the Royal Institute of British Architects and Mrs. MacVicar Anderson at South Kensington Museum on Wednesday week, the 22nd inst.

Viscountess Falmouth laid, on Friday, the memorial-stone of the new building for the Rosewin Training School at Truro. The new premises, which are being erected by Messrs. C. and J. Harris, Kenwyn-street, Truro, from plans supplied by Mr. Swift, are 48ft. by 48ft., of local stone, with red brick dressing, and will cost £1,100.

THE ULSTER UNIONIST CONVENTION.

ONE of the largest buildings ever erected in Great Britain for political purposes is now nearly completed in Belfast, and is to be occupied by the Ulster Unionist Convention on the 17th of this month. It is designed to give fitting accommodation to 10,000 persons on a floor area of over one acre in extent, including the galleries. The time for its erection was limited, and the engineer in charge of the work, Mr. Robert J. Calwell, took advantage of the present carpenters' strike, and engaged one hundred picked men and four foremen, with the result that the work has only taken about three weeks to complete. The building measures 224ft. by 144ft., and is roofed in five bays by wooden bow-strung girders. Galleries run round three sides, and from any point of them the speakers on the platform can be seen and heard with ease. The building is entirely of wood, and is estimated to cost about £3,000. The above speaks volumes for the enterprise of the loyalists of the north of Ireland.

ARCHITECTURE OF THE THIRTEENTH AND FOURTEENTH CENTURIES.

A LECTURE on this subject was given by Mr. Alfred Waterhouse, R.A., at Toynbee Hall, Commercial-street, Whitechapel, on Wednesday evening. Mr. Aves occupied the chair, and explained that the address was the second of three to be delivered in that hall at intervals of four weeks by distinguished architects, in response to an invitation from the East London Antiquarian Society. The first, by Mr. Aston Webb, had treated of "The Architecture of the Eleventh and Twelfth Centuries," and Mr. T. G. Jackson, A.R.A., would carry forward the story into the fifteenth and sixteenth centuries in a paper to be read on the 6th July. Mr. Waterhouse, who illustrated his remarks by rapidly-executed explanatory sketches on the blackboard, said he proposed to deal in an elementary manner with the characteristics of English architecture after it had attained its full powers, and to trace those features in their development and decline. The builders of the eleventh and twelfth centuries, he must explain, were not swayed by impulse in the changes they introduced into their styles of building; they were, it was true, filled with enthusiasm; but in all their developments they were seeking to solve some definite problem. In passing, he would ask those present to dismiss from their minds the oft-repeated nonsense that the Mediæval builders sought to institute in their church roofs the interlacing of branches in a forest. When the Mediæval builders had once made up their minds that the buildings should be vaulted in stone, and lighted from the upper portion of the walls, everything else was subordinated to that requirement. The problem was how to cover a long and lofty building having low aisles with stone, and yet provide light from a clerestory above those aisles, and never was an architectural crux more perfectly solved than by these builders. The difficulty was to carry a great mass of stone in the air, with its outward pressure on the walls and the columns which supported them. In the earliest attempts the vaults were all barrel-shaped, and the walls and piers of immense thickness, so as to withstand the thrust. This was inwards in the lean-to aisles, and was there easily met by increasing the mass of the piers. The need for a counteracting support to the central vault led to the invention of flying buttresses from the aisle walls to the vault, and these open arches rested on buttresses projecting from the aisle walls. There was still a thrust on these buttresses, and this was reduced by weighting them by the addition of pinnacles. The barrel-vault gave no opportunity for piercing the nave walls for clerestory lights, and hence a transverse stone covering with diagonal ribs was devised, and to this we gave the name of the quadripartite vault. Mr. Waterhouse showed on the blackboard how these successive changes altered and improved the appearance of the church, especially in its internal aspect. The next problem, and one which affected the form of all openings, was the difficulty of keeping the narrow arches crossing the aisles of equal proportions to the wider one across the nave. This had hitherto been accomplished by stilting the smaller arches, but the effect was unsatisfactory, and, on a large scale, intolerable. The difficulty was eventually overcome by giving the arches pointed heads, and by degrees all openings were covered in by pointed heads. The lecturer then proceeded to describe the growth and development of the successive two centuries he was dealing with, citing as examples the Temple Church and Westminster Abbey, both of which buildings are shortly to be visited by the Toynbee students. The old nomenclature for the styles of Thomas Rickman was approximately correct, but he preferred to divide them into the Lancet, which prevailed in this country from 1190 till about 1245; its development into the Geometrical, c. 1245 till 1315; its decadence, known as the Curvilinear, 1315 till 1360, and then the recovery into the Rectilinear style, which lasted, with slight changes, for another two centuries. With the aid of sketches the lecturer lucidly demonstrated the successive changes in mouldings, carvings, windows, roofs, and other features of churches which marked the successive developments of English architecture, and closed an interesting hour's discourse by remarking that he trusted one result of the series of lectures would be to increase the pleasure of the audiences in seeing our Mediæval buildings, and to render them more disposed to insist on the preservation of what remained to us.

OBITUARY.

SIR JAMES BRUNLEES died on Thursday in last week at his residence, Argyle Lodge, Wimbledon. He was born at Kelso, N.B., in 1816, and was educated at Edinburgh University. In 1838 he became an assistant-engineer to Mr. Alexander Adie on the Bolton and Preston Railway. Subsequently, under Sir John Hawkshaw, he was occupied with the works of the Lancashire and Yorkshire Railway. He next constructed the Londonderry and Coleraine Railway, and then the works of the Ulverston and Lancaster Railway. This was about forty years ago. Since that time he has had a high rank as an engineer, his principal works being the Solway Junction Railway, the Clifton Extension Railway, the Mersey Tunnel Railway, and the Avonmouth, King's Lynn, and Whitehaven Docks, the San Paulo Railway, the Minas and Rio Railway, the Porto Alegre Railway, and the Central Uruguay and Bolivar Railway. He was also joint-engineer with Sir John Hawkshaw of the proposed Channel tunnel. He was knighted six years ago, and had received from the Emperor of Brazil the decoration of the Order of the Rose. Sir J. Brunlees was a past-president of the Institution of Civil Engineers.

CHIPS.

At the Rochdale town council meeting on Friday it was decided to apply to the Local Government Board for power to borrow £65,000 for extensions at the gasworks and for laying down another main, and £12,000 for the purpose of street widening.

The city council of Bristol have accepted an offer from Mr. W. H. Wills to present to the city a bronze statue of Edmund Burke, a replica of that in St. Stephen's Chapel, Westminster. It is proposed to erect the statue on St. Augustine's Bridge.

Damage to the amount of £900 was occasioned to the saw-mills of Mr. A. E. Hope, St. James's-street, Hull, on Saturday. A discharged assistant has confessed to being the incendiary, revenge for dismissal being the avowed motive.

The new Midland Railway station at Leicester, which has cost, with new lines, &c., about £150,000, will be opened on Sunday next.

The vestry of Battersea have accepted the tender of Mr. Walker, at £25,278, for the erection of a town hall and municipal buildings on Lavender-hill.

The Midland Company are carrying out extensive alterations and extensions at Sheffield, in order to cope with their largely-increasing goods traffic. The whole of the present buildings are to be swept away with the exception of a bonded warehouse, which was erected twenty years ago at a cost of £30,000, and larger ones are to take their place. The cost of these alterations will be £130,000.

David Cox, the landscape painter, is to have a statue at Birmingham, where the local Guild of Art and Letters has secured a suitable site. It is considered that the exchangeable value of the works produced in 50 years of active life by this artist would be rather under than over-stated at £100,000, of which he probably received at the utmost between £15,000 and £20,000.

Building Intelligence.

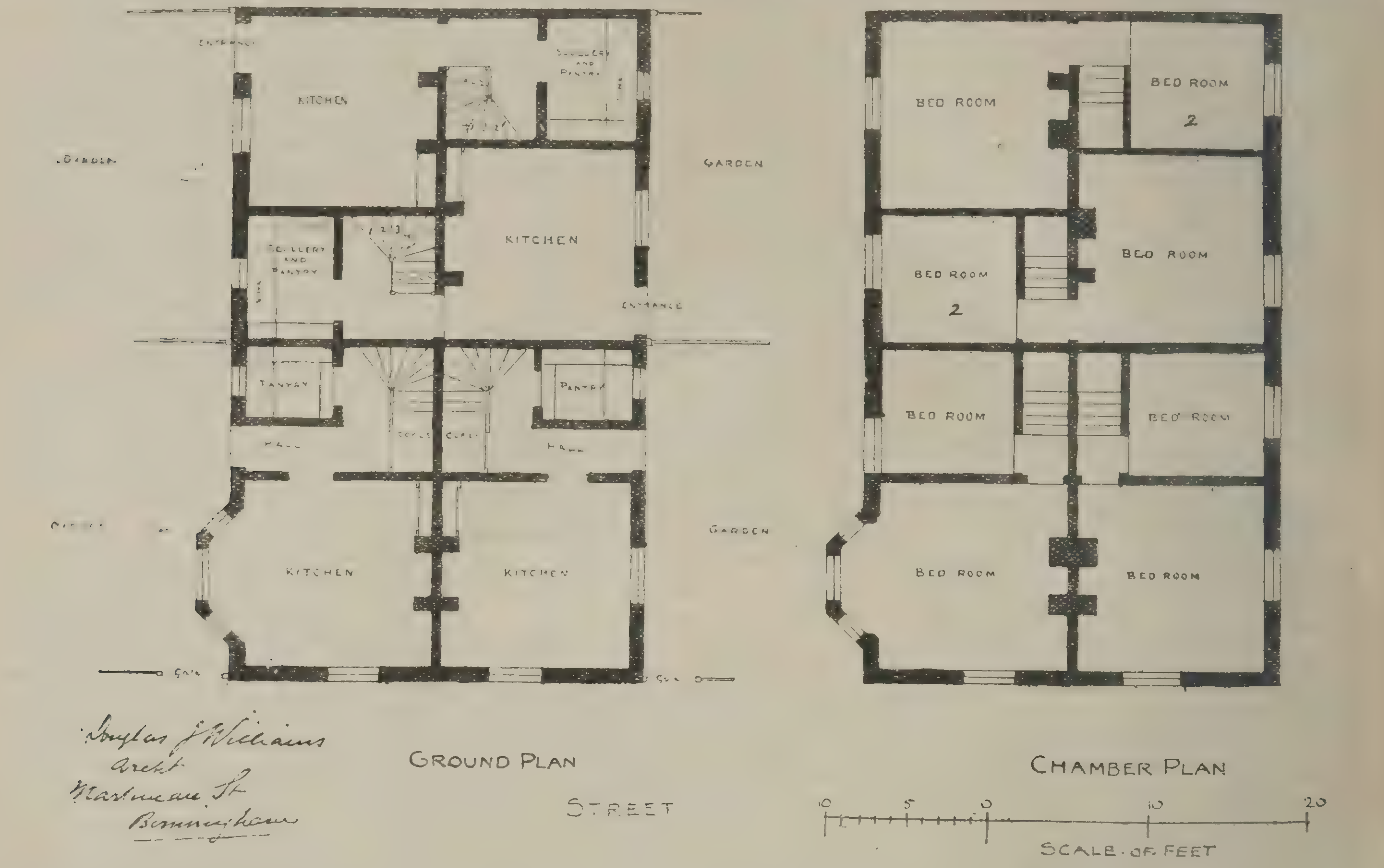
BRISTOL CATHEDRAL.—A public meeting is to be held in Bristol on Monday next, under the presidency of the Bishop, to consider what steps shall be taken to complete the restoration and beautifying of the cathedral. Mr. J. L. Pearson, R.A., the cathedral architect, will read a statement thereat setting forth the details of the work proposed and the probable cost. The money required is estimated roughly to amount to £18,400. The largest item of expenditure is £6,385 on the restoration of the tower, the smallest being £100 on the additional lighting of the interior. £3,000 is to be allotted to the new organ, which is an essential part of the scheme.

CUDWORTH.—Cudworth Wesleyan Memorial Chapel was opened on the 2nd inst. The chapel, which is in the Renaissance style of architecture, is 39ft. long and 35ft. wide inside, and capable of accommodating 200 persons on the ground floor. There are minister's vestry, class-room, &c., provided at the rear of premises. The works have been executed from designs of Mr. Charles T. Taylor, A.R.I.B.A., architect, 10, Clegg-street, Oldham.

DUNBLANE.—Dunblane Cathedral, Perthshire, N.B.—a building of the 12th and 13th centuries which would seem to have escaped the iconoclastic hands of the zealots of the Reformation better than many similar edifices in Scotland—has been, during the past three years, undergoing an extensive restoration, and will be reopened, it is expected, about September next. The four lower stories of the tower alone remain of the original 12th-century building. The whole structure consists of choir, 80ft. by 30ft., and nave, 120ft. by 58ft., the walls of the former being 00ft. in height, and the latter 50ft. The nave has been entirely unroofed for about 250 years, and the choir, with the chancel arch built up as a gable, has been used as a parish church until the present work was inaugurated. This part of the building was considerably restored about 20 years ago, but not sufficiently to prevent the continuous decay which threatened the structure. There will still remain many unfinished details, which must remain until the funds are sufficiently augmented to complete the work. A new organ, worthy of the restored cathedral, is to be erected in a chamber on the north wall of the choir, by Mr. Eustace Ingram, of Holloway, London. The fine oak case has been designed by the architect, Dr. Rowand Anderson, of Edinburgh. The whole cost of the restoration, exclusive of the organ, is estimated to be about £20,000.

HUNTINGTON, RADNOR.—The parish church was reopened, after restoration at a cost of £1,300, on May 25th. Mr. F. R. Kempson, of Hereford, was the architect. The work was originally divided into two portions. The first comprised the roof, the east window, heating apparatus, and masonry. The second portion consisted of the porch and heating-chamber. The special gifts included new oak seats, pulpit, altar and credence tables, and sedilia. The outer walls have been repaired, and their height has been slightly increased. There is a new oaken roof slated externally. The new tower, which is built on the same lines as the old one, is covered with oak shingles. The new seats are open, and replace straight-backed pews. The oaken chancel screen, pulpit, and lectern are the work of Mr. Cullis, of Hereford, the contractor for the restoration being Mr. Edwards, of Leominster. The aisles are paved, the flooring of the nave being of wood blocks on concrete, and the chancel floor being of tiles.

PETERBOROUGH.—The Archbishop of Canterbury attended Peterborough Cathedral on Thursday in last week, taking the principal part in services for the dedication of gifts which had been presented to the cathedral since its reopening in October, 1890, after restoration from Mr. J. L. Pearson's designs. These gifts consisted of a Bishop's throne and choir pulpit, the gift of the Dean of Peterborough; 18 richly-carved choir-stalls, presentented by different persons and public bodies; a Litany desk, given by Mrs. Rigg; and an elaborate and ornate Italian mosaic choir pavement, the gift of the Dean and Miss Argles. The works that have now been carried out for the preservation of the fabric of the cathedral have cost £31,371, but work estimated to cost £4,000 still remains to be done. It is also sought to reconstruct the organ, which is antiquated and worn out. In the restoration of



the choir £8,712 has already been expended, and to complete the work 12 stalls, costing £1,500, as well as a new reredos and choir screen, are required.

Salford.—The mayor opened, on the 2nd inst., the public baths recently erected by the Salford Corporation. The baths are situated at the corner of Regent-road and Derby-street, in the midst of a populous district, and have been erected from designs prepared by Messrs. Magnall and Littlewoods, architects, of Manchester, which were selected in competition. The design is Renaissance in character, the elevations being of red terracotta and pressed bricks from Ruabon. The principal entrances are in Derby-street, the manager's residence over them forming a central feature to the elevation in that street. The first-class entrance is at the right-hand doorway, which leads to the first-class swimming-bath, the first-class gentlemen's slipper-baths, and the ladies' slipper-baths. The left-hand entrance is for the second-class bathers, and leads to the second-class swimming-baths and second-class men's slipper-baths. The first-class embraces vapour-baths, cooling-rooms, and shower-baths. The bath-rooms are 8ft. by 6ft. 6in. There are ten first-class slipper-baths and eighteen second-class for gentlemen, and for ladies four first-class and eight second-class slipper-baths. The first-class swimming-bath has a water area of 58ft. by 25ft. The second-class swimming-bath has a water area of 75ft. by 28ft., the depth being 5ft. 9in. at the deep end and 5ft. at the shallow end in each case. The contractors were Messrs. Robert Neill and Sons, of Strangeways, and the total cost is about £11,000. We illustrated the baths by exterior and interior perspectives and a plan in our issue of Jan. 23, 1891.

Shrewsbury.—New premises are in course of erection in the High-street as a branch office of the Alliance Assurance Co. The street façade, some 26ft. in width, is Modern Renaissance in character, and is carried out in Grinshill stone, the pilasters and columns to ground floor being of polished Aberdeen granite. The principal floors are laid with mosaic by Messrs. Maw and Co., of Jackfield, and the walls are laid with Jaune Lumartine and Rouge Griotte marbles. The chief apartments are the public office, 32ft. by 26ft., fitted in mahogany; the board room, 26ft. by 16ft.; and secretaries' rooms, strong room, and lavatories, and on the upper floors are suites of offices. Mr. A. E. Oswald Lloyd, of Shewsbury, was the architect, Mr. Richard Price, of Coleham, the contractor, and Mr. H. L. Whittingham the clerk of works. The warming grates in the offices were supplied by Mr. J. Shorland of Manchester.

Engineering Notes.

Glasgow.—An extension of the Caledonian Railway Company's Goods Department has just been made at Glasgow, where a new goods shed has just been erected in the company's yard in Buchanan-street, at a cost of £18,000. The building was formally opened for traffic on Monday. The new shed is 430ft. by 150ft. at one end, and 80ft. broad at the other. It contains three platforms, varying from 340ft. to 400ft. long and 17½ft. wide, and has accommodation for 70 waggons. Above the platforms there is a store with a floorage of 18,500sq.ft. Attached to the platforms there are 25 hydraulic cranes, each with a lifting power of 30cwt.; three hydraulic cranes of 3tons lifting power; and two hydraulic hoists of 35cwt. lifting power. There is also a suite of offices. The building is constructed of white freestone, and cost £15,000, the hydraulic cranes costing £3,000. Mr. R. Dundas was the engineer, Messrs. Kinnear, Moodie, and Co. were the contractors, and Lord Armstrong's firm provided the hydraulic machinery.

The Lancashire, Derbyshire, and East-Coast Railway.—The first sod of this new East to West Railway was cut at Chesterfield on Tuesday. The new railway, which is 175 miles in length (of which 44 miles are branches and subsidiary junction lines), will form a connecting link between the eastern and western coasts, traversing the heart of the great Midland coal-field. Its starting point on the west will be from the Docks at Warrington, on the Manchester Ship Canal; thence it will run to Knutsford and forward through Prestbury, Macclesfield, Buxton, Cherterfield, Ollerton, Tuxford, Lincoln, and Alford to Sutton-on-Sea, on the Lincolnshire coast, where a new harbour and docks are being constructed. The line will obtain access to Stockport and Manchester by a branch from Walrington joining the North-Western at Cheadle Hulme, and the Midland and the Cheshire lines at Heaton Mersey. The cost is estimated at £43,000 per mile. Sir Benjamin Baker is the consulting engineer, and the contracts for the construction of the central section of the line have been taken by Messrs. Pearson and Son, of Westminster, and Messrs. Topham and Co., of Manchester and Westminster.

Correspondence.

PATENTED PLANS FOR ARTISANS' DWELLINGS.

To the Editor of the Building News.

Sir,—I inclose you a tracing showing a plan of artisans' cottages (an alteration to existing buildings) carried out by me in 1881, which has anticipated Mr. Hughes's patent as illustrated in the current number of your paper.

The original from which this tracing was prepared is registered and signed by the borough surveyor in April, 1881, and the work was carried out in the same year.—I am, &c.,

Douglas J. Williams.

County Chambers B., Martineau-street,
Birmingham, May 27.

CHIPS.

The Selby Abbey Restoration Committee report that the interior part of the work is completed; but that another £10,000 is required to complete the restoration—that is, the rebuilding of the central tower and south transept.

A Select Committee of the House of Commons has passed the Baker-street and Waterloo Railway Bill, which authorises the construction of an underground electric railway between the points named.

An exhibition of contemporary art is to be held at Amsterdam, open from September 5th till October, and perhaps three weeks longer if successful. Pictures will be received from August 4th to the 13th. Six gold medals will be distributed among the exhibitors.

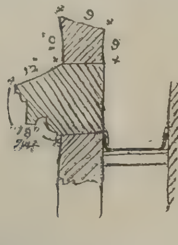
Mr. Rienzi Walton held an inquiry on Friday, on behalf of the Local Government Board, at the township offices, Breeze-hill, Walton, near Liverpool, into the application of the Walton local board for sanction to borrow £2,500 to build new offices for the board in Rice-lane. Plans were submitted by Messrs. Duckworth and Medcalf, architects, Liverpool. There was no opposition to the application.

The opening and dedication services in connection with the erection of the new reredos and pulpit erected as memorials in Bircle parish church, Lancs, took place on Saturday. The reredos is of English oak of Gothic design, and has been made by Messrs. Pearson and Bourne, of Pendleton. The pulpit is also of English oak. The alterations to the church include the raising of the chancel floor. The works have been carried out under the superintendence of Mr. C. H. Openshaw, of Derby Chambers, Bury.

Intercommunication.

QUESTIONS.

[10783.]—**Stone Cornice.**—Will some reader please inform me whether the following is the correct way of



measuring the labour to stone cornice and blocking course to a wall, say, 10ft. long?

ft. in.			Waste. ft. in.
10 0			0 10
2 4			0 9
	23 4	Labour plain face	0 9
10 0			
1 0			2 4
	10 0	Do. plain weathering	
10 0			
1 6			
	15 0	Do. moulded face.	

(Beds and joints not measured.)—PUPIL.

[10784.]—**Royal Academy.**—Would some kind exhibitor inform me what rules govern exhibitors at the above? May drawings be executed in any fashion, on any size paper?—E. A. B.

REPLIES.

[10775.]—**Hydraulics.**—The H.M.D. of a circular pipe sewer running half-full is ·25 the diameter; not ·125, which was a clerical error in my former reply.—FRED. W. NAGLE.

[10775.]—**Hydraulics.**—It would appear that the discordant results arrived at by the use of two different rules are due to a mistake of a decimal point, as ·125 should read 0·25. The "mean hydraulic depth in feet = area divided by wet perimeter = $\frac{D}{4}$ for circular section of pipe." It is not difficult to show that $\frac{D}{4}$ is the simplest form of the somewhat long equation given in your last issue, which I take as it stands—

$$\frac{Sa}{Wp} = \frac{\frac{1}{2}(24^2 \times 0{\cdot}7854)}{\frac{1}{2}(24 \times 3{\cdot}1516)}.$$

Striking out the common fraction, we have—

$$\frac{Sa}{Wp} = \frac{(24 \times 24 \times 0{\cdot}7854)}{(24 \times 4 \times 0{\cdot}7854)} = \frac{24}{4} = \frac{D}{4} = 6\text{in.}$$

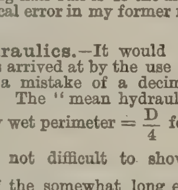
Since $\frac{Sa}{Wp}$ is constant for a pipe running full or half-full, the H.M.D. is the same in both cases. So also for a square pipe.—M. A.

[10775.]—**Hydraulics.**—Mr. Nagle is in error in stating that "hydraulic mean depth of a circular pipe running half-full is ·125 of the diameter." It is equal to $\frac{d}{4}$, whether the pipe be running full or half full, as the following process:—

$$\text{Hydraulic radius} = \frac{\text{area of section}}{\text{wetted perimeter}}.$$

∴ for a circular pipe running full it is $= \frac{\pi d^2}{4} \div \pi d = \frac{d}{4}$

and for the same running half full $= \frac{\pi d^2}{8} \div \frac{\pi d}{2} = \frac{d}{4}$. As Mr. N. does not show how he obtains the lengths of the chord and arc of his segmental section of sewage-flow from the data, I venture to give the following working out of his example:—



Data A E = 12″, C E = 8″,
whence A C = 4″, and fall 6·6ft. per mile.

(1) Find length of B C $= \sqrt{12^2 - 4^2} = 11{\cdot}3137$.

(2) Find angle B A C. Sin.$\angle$B A C $= \frac{11{\cdot}3137}{12} = {\cdot}9428$, the sine of an angle of 70·5288°.

(3) Find length of arc B E = 70·5288 × 12 × ·01745329 (the length of 1° in parts of radius = 14·7715in., ∴ arc B E D or the wetted perimeter = 29·543in. or 2·462ft.

(4) Find area of sector A B E D $= \frac{2{\cdot}462 \times 1}{2} = 1{\cdot}231$sq.ft.

(5) Find area of triangle A B D $= \frac{11{\cdot}3137 \times 4}{144} = {\cdot}315$sq ft.

(6) Area of segment B E D = 1·231 − ·315 = ·916sq.ft.

(7) Hydraulic radius $= \frac{{\cdot}916}{2{\cdot}462} = {\cdot}372$ft.

By Eytelwein's formula—

$V = 55\sqrt{{\cdot}372 \times 13{\cdot}2} = 121{\cdot}87$ft. per min., or 2·03ft. per sec.
—F. E. GAY, Bath.

Legal.

FUSSY OFFICIALISM.

THE growing tendency of officialism to interfere with the rights of individuals has been very recently shown in two recent cases in our courts, where officialism was badly beaten. In the first, of "The County Council v. Pearce" (*Times*, May 5), it has now been solemnly decided by a Divisional Court that a builder's pay-office on wheels is not a structure within the meaning of s. 13 of the Metropolitan Buildings Act, 1882, in respect of which it is necessary to obtain a license of the London County Council. The section of the Act in question provides that no movable or temporary structure shall be erected without such license, except "any structure of a movable character erected by a builder for use during the construction, alteration, or repair of any building, unless it is not taken down or removed immediately afterwards." The magistrate had found in the present case that the thing was "a pay office on wheels, forming part of a builder's plant, and intended for use during building operations whenever required." In fact, this was one of the little wooden offices everywhere used by contractors and builders. The Court held that the magistrate was quite right in refusing to convict, and they intimated that there was nothing in the complaint more than this in point of law, and beyond the common sense of the thing, there was the caravan case as an authority which the Court must follow. So the County Council, or rather the ratepayers, will have to pay the costs of this perfect specimen of fussy officialism.

A similar instance occurred in the action taken by the Chorlton Waterworks in the case of "Evansand Gornell" (*Times*, 28th May), where the clause giving a penalty in case any person shall wilfully waste or use for a different purpose the domestic supply of water, was attempted to be put in for without any ground whatever. The defendant had, in fact, constructed an ingenious apparatus, by means of which the water he had already used for ordinary domestic purposes was used again to flush out a receptacle. This the company wanted to construe into the "wilful waste" of their water, instead of being, as it was, the using of it twice over, to save its being wasted. Then they tried to make out that the thing flushed was a w.c., and so should have been separately paid for. Fortunately, both attempts failed, and a Divisional Court, saying there was nothing in it, as the sole object of the claim was to prevent real waste of water, dismissed their appeal with costs.

FRED WETHERFIELD, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

NOTE.—All questions for reply in this column must be headed "BUILDING NEWS," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

V. B.—FITTINGS.—LOSS OF PROFIT.—Your only remedy is by action for damages for breach of contract. But you cannot recover as damages the prospective profit you would or should have made upon the job. You can only get your actual loss upon goods prepared and the like.

H. C. R.—TITHE.—PLOTS.—The owner is liable, and must pay the whole to the vicar. He can then divide the total sum amongst the tenants in proportion to their holding, and include the road in this arrangement, though he might apply to the town council for their share.

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Mr. H. Hardwicke Langston, A.R.I.B.A., had a narrow escape when entering his office at 9, Great James-street, Bedford-row, E.C., on Whit Monday morning. A few minutes after he had passed along the pavement a large piece of brickwork from the second floor of No. 4, weighing something like half a ton, fell with a crash into the street. There are, he says, other houses in the street the front walls of which—four floors above the street level—are not perpendicular.

The first meeting of the trustees of the Lockerby charity was held in the Edinburgh City Chambers on Friday, the Lord Provost in the chair. A committee was appointed to go over sites in the neighbourhood of Edinburgh for the buildings, and report to a future meeting. Mr. M'Whannell, architect, Glasgow, was appointed architect for the almshouses. This charity is for the erection and endowment of almshouses for twelve persons in or near Edinburgh by the late Mr. Thomas Lockerby, brassfounder, Glasgow. The houses, which are to cost about £300 each, are to be "after the style of those in London and Croydon."

LEGAL INTELLIGENCE.

JERRY BUILDING IN SHEFFIELD.—At the Sheffield Town Hall, on the 1st inst., Samuel Marshall, builder, Broughton-road, Attercliffe, was summoned, at the instance of the Health Committee, that he, being the builder of houses in Stovin-road, Attercliffe, now in course of erection, "did not cause such building to be inclosed with walls constructed of good bricks, stone, or other hard and incombustible materials, properly bonded and solidly put together with good mortar, compounded with good lime and clean, sharp sand or other suitable material, contrary to the by-laws of the corporation." The deputy town clerk said the complaint had reference to twelve houses, four of which were built to the chamber floor level, and the foundation walls of the remaining eight were partly constructed. According to the borough surveyor, nearly the whole of the mortar was of an inferior quality, and in some parts almost destitute of lime. The party-walls were badly bonded, and were built of half-bricks and bricks of a very inferior quality. The bricks throughout the party walls and partition walls were bad, a great quantity of them being unfit for use. The foundation for the backs of the four houses had never been inspected, and the walls appeared to have been built on made ground. The cellar walls were chiefly built of Siemens' crozzles, in some cases mixed with rubble. These crozzles were of an inferior quality, and there was very little bond in them. Generally the materials and workmanship were of the worst kind. It would be difficult to remove the defective parts without reconstructing the whole of the building. The defendant had given the corporation much trouble in the past with respect to his buildings. Mr. White (the borough surveyor) confirmed this statement. The houses were the worst descsiption of building he had ever seen. Mr. Gibbs (Messrs. Flockton and Gibbs) stated that nearly all the walls were bulged, especially in the two houses where the superstructure had been erected. The defects could not be remedied unless the buildings were pulled down and re-erected. For the defendant it was admitted that some few alterations were necessary; but the cottages were built in the way that the bulk of this class of property was built in Sheffield. Everything complained of could be effectually remedied without reconstruction. Witnesses were called who deposed that the work was good and the material quite equal to what was generally used in this class of property. Mr. W. H. Lancashire, architect and surveyor, one of the defendant's witnesses, was cross-examined by Mr. Sayer as to whether he did not state in the borough surveyor's office and in his (Mr. Sayer's) presence that he told Mr. Marshall to pull the whole of the work down and rebuild it? Witness denied making any such statement. Mr. Sayer said he distinctly remembered it. The Bench considered the case fully proved. A fine of £2 and costs was imposed.

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CHIPS.

The foundation stones of a new Presbyterian Church have just been laid at Newington, Hull. Accommodation will be provided for 650 persons at a cost of £3,000.

Extensive additions and alterations to Hampstead Heath Railway Station were completed by the London and North Western Railway Company in time for their Whitsuntide traffic. The work was executed by Messrs Kirk and Randall, from the plans of Mr. Stevenson, the chief engineer of the railway company, with Mr. Holt as clerk of the works.

At the dispersal of the Wedderburn collection on Friday, Mr. Murray purchased for the National Gallery six studies of heads by Hogarth, the price paid being £162 15s.

A receiving order has been made in the case of William Benjamin Creigh, of Brompton-road, S.W., managing director of the Art Workshops, Limited.

The sale of the Barbedienne collection of pictures was concluded on Friday, the total amount realised being nearly £19,000 sterling. A crayon drawing, "Joshua Commanding the Sun to Stand Still," by Decamp, was sold for £2,160, the highest price ever realised in Paris for a drawing.

The first sod of the Epsom Downs Extension Railway, the Bill for which only passed through the House of Lords last week, and has not yet received the Royal Assent, was turned on Monday afternoon at Walton-on-the-Hill by Mrs. Bonsor, the wife of Mr. Bonsor, M.P.

Mr. Charles S. Smith, president of the Chamber of Commerce of New York State, has just presented a portrait of Mr. Carnegie to the Edinburgh Public Library, in accordance with a promise he made when in the city in 1890. The portrait is painted in oils by Mr. Thomas W. Wood, president of the National Academy of Design, New York. Mr. Carnegie is represented seated in a high-backed oak arm-chair, with gold cushion and arm rests. His head is set against a light grey background.

Our Office Table.

The early termination of the Session has proved fatal to the chances of the second reading of the Architects' Registration Bill. It is to be regretted, because, with the promises given to its supporters in the House, and the rapidly-growing appreciation of the real objects of the measure, it is almost certain the second reading would have been gained, and the Bill referred to a Select Committee, if a day could have been obtained. The fate of the Bill, however, unfortunately, is only that of much other desirable legislation which is at a standstill owing to present political exigencies.

The tenth annual exhibition of the Royal Cambrian Academy of Art was opened on Saturday. The number of works hung is 252, and the show of 1892 bids fair to be as fully attractive as its nine predecessors. The president, Mr. Clarence Whaite, sends five water-colours, chiefly, as usual, of subjects in the Snowdonian range; the honorary secretary, Mr. W. Lawrence Bankes, shows a couple of landscapes from the Anglesey coast and Radnorshire. The mayor of Conway, Alderman Albert Wood, has lent for exhibition Burne-Jones's "St. George and the Dragon," which is hung in the reception-room. Mr. Charles Potter has six pictures on the line, and Mr. Walter Severn, the president of the Dudley Gallery, shows a sketch of Conway Bay as viewed from Denganway. Other exhibits are by Messrs. Peter Ghent, Joseph Knight, J. Jackson Curnock, Parker Hagerty, G. Cockram, Prescott Davies, E. A. Norbury, and B. S. Marks. Mr. Leonard Hughes, Holywell, has a portrait of Mr. J. Herbert Lewis, M.A., the first chairman of the Flint County Council. Mr. Arthur Baker, F.R.I.B.A., the honorary architect of the Academy, exhibits designs for municipal buildings at Oswestry and Rochester, and Mr. Robert Grierson, Bangor, shows plans for buildings in course of erection near Conway. The etchings of Mr. Alfred Slocombe are a feature of the exhibition.

An important improvement in the fitting of derrick cranes, which will save much risk and danger to the public, has been patented by Messrs. E. Lea and W. H. Thompson, of 147, Queen Victoria street, and Peterborough, and was publicly tried before a number of scientific gentlemen on the premises of the Royal College of Music (now being constructed on the Albert Hall Estate), South Kensington, last Wednesday afternoon. The appliance is very simple, and is confined to the head of the jib, the chain-pulley of which has a ratchet-wheel attached on each side of it, into which a pair of pawls or detents become engaged immediately the jib-chain breaks or fails, and thereby the jib and its load are immediately arrested. The action of the detents to catch into the ratchet-teeth is by means of a strong spring, which is attached to the end of jib-chain. A trial was made on both a small model crane, and also on one lifting three tons. Immediately the jib-chain was let go or cut, the ratchet was brought into action, and the heavy block of stone suspended at the end of the hoisting chain is instantly stopped in its descent, and with it, of course, the jib. The brake or catch acts equally the same with a heavy load or with a light load—in fact, the heavier the load suspended is, the quicker the arrest.

An Eastern Counties' district meeting of the Incorporated Association of Municipal and County Engineers will be held at Peterborough to-morrow (Saturday). The members will meet at noon in the Guildhall, where they will be received by the mayor, and the following papers will be read and discussed: "Notes on Municipal Work in Peterborough," by J. W. Walshaw, the city surveyor; "Peterborough Waterworks," by J. C. Gill, waterworks engineer; and "The Shone System of Drainage," by Isaac Shone, C.E. In the afternoon the sewerage works will be inspected.

The twenty-ninth annual meeting of the Incorporated Gas Institute will be held on Tuesday, Wednesday, and Thursday in next week, at the rooms of the Institution of Civil Engineers, Great George-street, Westminster, Mr. William A. Valon, the president, in the chair. The annual report, to be read on Tuesday, states that the membership roll now consists of 580 names, of whom 427 are ordinary members. Eight deaths of members occurred during the year, including that of Mr. William H. Bennett, the widely-known secretary from 1869 until 1888, to whose memory a tribute of appreciation is paid. The proceedings next week will include, on Tuesday, the election of officers, address by the president, and reading of papers. On Wednesday, in commemoration of William Murdoch and the centenary of gas-lighting, Professor Vivian B. Lewes, of Greenwich, will give a lecture entitled, "A Century of Work in the Development of Light from Coal-Gas." In the evening a reception will be given by the president at the Westminster town-hall On Thursday the reading of papers will be concluded, and on Friday an excursion will be made to Windsor, by special train from Waterloo at 8.50 a.m.

There was brought before Convocation at Oxford on Tuesday the offer of Dr. Fortnum to bequeath to the University the remainder of his collection of objects of art and archæology (with part of which he has already enriched the Ashmolean Museum), as well as his library, and to transfer the sum of £10,000 upon trust to the University, upon condition that the University expend £11,000 on the erection of a new Ashmolean Museum adjacent to the University galleries, another £4,000 on fittings, and augment to £600 a year the income arising from Dr. Fortnum's benefaction of £10,000. Dr. Fortnum also proposes to bequeath by his will an additional sum of £5,000. The offer was accepted, and a unanimous vote was passed, thanking Dr. Fortnum for his munificent gift.

The gallery at South Kensington Museum assigned to the large collection of wrought ironwork, which has for some time been closed for rearrangement, was reopened after rearrangement on Whit-Monday. The larger grilles and screens, including the gates from Hampton Court, are now placed in the arched spaces on either side, while the lanterns, cressets, signs, &c., are suspended along the gallery, smaller objects being shown in sloping glass cases. Among these last is a curious series of rush candle holders, tobacco tongs, and other domestic implements used in England, chiefly in the 18th century, collected and lent by Lady Dorothy Nevill. Examples of the locksmith's art, English, French, and German are numerous, including some chiselled steel locks and keys from old French buildings, but produced by "Johannes Wilkes de Birmingham" in the 17th century. Some of the more famous specimens of Mediæval work in English cathedrals have been reproduced in fac-simile.

MEETINGS FOR THE ENSUING WEEK.

Saturday (To-morrow). — St. Paul's Ecclesiological Society. Visit to Chesham Bois and Chesham. Train from Baker-street at 3.20 p.m.
Monday.—Royal Institute of British Architects. Business meeting. 8 p.m.
Society of Engineers. "Foreign Sewage Precipitation Works," by Alfred Wollheim. 7.30 p.m.
Tuesday.—Incorporated Gas Institute. Annual meeting at Institution of Civil Engineers. 10 a.m.
Wednesday.—Incorporated Gas Institute. Murdoch Lecture, by Prof. V. B. Lewes, at Institution of Civil Engineers. 11 a.m.
Thursday.—Incorporated Gas Institute. Papers, at Institution of Civil Engineers. 11 a.m.

The large west window of Christ Church, Clifton, Bristol, has been filled in with stained glass. The window is a triplet of lancet-headed lights, the central one being more than 25ft. in height, and the subject selected is the Te Deum. The central figure is that of our Lord, who is represented in majesty seated upon a rainbow. The window was designed and executed by Messrs. Joseph Bell and Sons, of 12, College-green, Bristol.

The Lincolnshire memorial to the late Sir Charles Anderson is to take the form of a restoration and redecoration of the Chantry Chapel of Bishop Fleming in Lincoln Minster.

A new peal of bells recently placed in the belfry of St. Nicholas' Cathedral, Newcastle-on-Tyne, was formally dedicated on Tuesday. There are nine bells, a tenor bell, and the major, or hour bell, the weights ranging from 6cwt. 2qr. and 5lb. to 5 tons 18cwt. They have been cast by Messrs. Taylor and Co., Loughborough, the cost of the peal being £2,500.

A faculty has been granted by the Consistory Court of Carlisle for the erection of a cross of Shap granite, which is to be 13ft. in height, over the grave of Bishop Harvey Goodwin. The cross has been designed by Mr. Ferguson, R.S.A.

Trade News.

WAGES MOVEMENTS.

Amalgamated Society of Engineers.—A conference of delegates of the Amalgamated Society of Engineers was opened on Tuesday in the Athenæum - buildings, Park-lane, Leeds, and is being continued during the week. The object of the gathering is to revise the Society's rules. About 80 delegates from all parts of the United Kingdom were present, and Mr. A. B. Childerson, of Leeds, presided. The chairman submitted three suggestions to the society for their consideration—First, co-operative workshops; second, labour representation; third, organising agencies in districts where the members of their societies were few. They had met to consider the most numerous suggestions of alterations of rules that had ever been brought before the attention of any delegate meeting, and he hoped that their work would lead to the rules being made more in conformity with the times, and possibly more beneficial.

Cardiff.—The carpenters' and joiners' trade dispute appeared on Friday to have been settled, as the men agreed to allow all questions of piecework and subcontracting to be dealt with according to their own rules, and resumed work at 8½d. per hour after the holidays. It is a question of how long they can continue in the absence of all other branches of the trades.

Carpenters and Joiners.—Mr. F. Chandler, the general secretary of the Amalgamated Society of Carpenters and Joiners, in his report for June, referred with gratification to the substantial reduction that had taken place in the number of unemployed and sick, an encouraging feature, almost leading him to believe that the majority of the members are now enjoying a fairly good trade. Unfortunately, however, this cannot be said of their brothers in Australasia, as for some time past their experience has been most deplorable, and the committee are assured by the district secretary that at present he can see no signs of improvement. Therefore, members will do well to bear this in mind should they be thinking of transferring their labour to that part of the world. Additional settlements of trade movements have been effected at Loughborough, Lincoln, Hereford, Sligo, Middleton, Stone, and Walsall. There is no intimation of any change in the position of affairs at Belfast, where the whole of the members engaged in the house-building trade are out in support of an advance of wages and other privileges.

Colchester. — The strike has collapsed, the carpenters and joiners having accepted the masters' proposal of a ½d. per hour rise as from Jan. 1, 1893, and an adoption of rules.

Kirkcaldy.—A meeting of the Kirkcaldy operative masons was held on Friday for the purpose of taking into consideration the present rate of wages. There was a large attendance. After some discussion it was unanimously agreed to wait upon the master builders and solicit an advance of ½d. per hour and weekly pay, to take effect on 11th June. The present rate of wages is 8d. per hour.

London Bricklayers.—The Central Committee of the Operative Bricklayers' Society have completed arrangements for carrying a general strike of the bricklayers in the London district into effect should the conference with the representatives of the Masters' Association, which is to take place to-day (Friday) not prove satisfactory. At the conference last week between the men's representatives and the Masters' Association, the employers could not see their way to make the concessions asked for, but intimated that they were not unwilling to receive a deputation of delegates representing all the branches of the building trade. Accordingly three delegates from each of the following trades—bricklayers, carpenters, house painters, masons, plasterers, gasfitters, and bellhangers—will meet the employers at the offices of the Master Builders' Association in Bedford-street, Covent Garden, and upon the result of this final conference depends the issue whether a general strike will be declared, involving the cessation of all building operations over the 600 square miles comprised within the Metropolitan area as defined in the rules.

Luton.—The bricklayers and carpenters on strike at Luton have been joined by the labourers, and building operations are entirely at a standstill.

Nelson, Lancs.—In consequence of the strike of masons and wallers in Nelson and district, about 200 labourers have been prevented from resuming employment. At the request of the workmen, a conference has taken place between representatives of the masters and men, but with no result, the masters adhering to their resolution not to concede the advance in wages from 8d. to 8½d. an hour until after the expiration of three months' notice, whilst the men were equally determined to adhere to the seven days' notice, which has expired.

North Welsh Slate Quarries.—The management of the Llanberis, Bangor, and other slate quarries in North Wales have intimated to deputations of the North Wales Quarrymen's Union their inability, in the existing state of the trade, to grant a standard daily wage of 5s. to skilled quarrymen as formulated at the recent labour demonstration at Carnarvon. No complications are anticipated.

NOTTINGHAM.—In connection with the Labourers' Branch of the Building Trade of Nottingham and its vicinity, established about a year ago, a code of working rules has just been issued. It has been mutually agreed to by employed and employers, and came into operation on June 1. By this code the standard rate of wages is fixed at 6d. per hour all the year round. From March to October 54 hours are regarded as a working week, and 47 from November to February. The rules also stipulate for walking and overtime, and in cases of dispute either party may require the question to be laid before a board of six persons chosen by the employers and six by the employed, whose decision shall be final.

PEEL, I.M.—Since Monday week the masons at Peel, Isle of Man, have been out on strike, demanding a half-holiday on Saturdays, without reduction in the wages paid. Nearly all building work is consequently at a standstill, both men and masters being determined to hold out.

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CHIPS.

On Saturday Mr. E. Holly, builder and contractor, of Nettlebed, who has just completed extensive alterations at the Bull Hotel, gave his workmen a dinner.

A Bill was issued on Saturday morning entitled "The Footpaths Preservation Bill." The object is to collect into one Act all provisions relating to the repair of footpaths, to make the county councils responsible for their enforcement, and to give to the county councils greater powers for the preservation and regulation of footpaths.

The 14th Hussars on Saturday vacated the cavalry barracks at Leeds, which are to be rebuilt at a cost of £100,000.

The Prince of Wales and the Duke of York paid a visit of inspection to the Imperial Institute on Wednesday. They were received by Mr. Thomas E. Collcutt, the architect, Mr. Arthur Carey, the engineer, and by Mr. John Burt, of the firm of Messrs. Mowlem and Co., the contractors. The first portion of the building, including the Indian art metal collection, the reading and writing rooms, will be opened to the public, at an entrance fee, on and from Wednesday week, the 22nd inst.

At a meeting of the Dundee Gas Commission on Friday, tenders for the work in connection with the buildings of the electric lighting station to the extent of £3,112 10s., and in connection with the electric works to the extent of £17,330, were accepted.

St. Lawrence's Church, Jersey, has just been reopened after restoration, at a cost of £4,000, from plans by Mr. John E. Trollope, A.R.I.B.A. The contractors were Messrs. Woodsford and Harris and Mr. S. Cuzner. Messrs. Harry Hems and Sons, of Exeter, carried out the carving.

The funeral of Mr. George Fownes, consulting engineer to the Bute Docks Company, took place at the new cemetery, Cardiff, on Sunday, with Masonic ceremony. Mr. Fownes only left Newcastle-on-Tyne for Cardiff two years since.

The late Right Hon. Sir William H. Gregory has bequeathed to the National Gallery, of which he was trustee, a picture in grisaille, by Jan Steen, two pictures by Velasquez, and a picture by Salvoldo.

A new temperance hall has been opened at Fenny Stratford. It is seated for 200 persons, and has been erected from plans by Mr. J. Thame Sloane, of Leighton Buzzard, Mr. Thomas W. Clarke, of Fenny Stratford, being the builder.

St. Augustine's Church, Brighton-grove, Newcastle-on-Tyne, is to be consecrated by the Bishop of Newcastle on Thursday next, the 16th inst. The nave alone, with side aisles, is at present erected, one bay being utilised for temporary choir arrangements. The chancel will have to come after, when funds allow. The building is very lofty, and of good proportions; but nothing has been spent on mere ornament, the pillars and window tracery being very plain. The woodwork is of pitch-pine, the floor being a block one of the same. The whole of the present work, including site, has cost a little over £5,000. The sitting accommodation is for about 540. The pulpit is one which stood in Morpeth old parish church for many years.

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TENDERS.

⁂ Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

ANDOVER.—For works, Biddesden House, near Andover, Hants. Mr. A. Purkess, Andover, architect:—

Beale, Andover	£1,2[illegible]9	0	0
Bailey, Burbage	1,190	0	0
Annett & Son, Andover (accepted)	1,175	0	0

BATTERSEA.—For the erection of proposed Albert Palace Mansions, for Mr. J. Halley. Mr. W. J. Chambers, architect:—

Martin, Wells, and Co.	£12,550	0	0
Higgs and Hill	11,640	0	0
Garlick and Horton	11,464	0	0
Lea, H. and E.	11,218	0	0
Prestige and Co.	11,060	0	0
Kirk and Randall	11,044	0	0
Holloway Brothers	10,914	0	0
Oldeney and Sons	10,900	0	0
Chappell	10,377	0	0
Turtle and Appleton	10,364	0	0
Nightingale, B. E.	10,218	0	0

BURWASH, SUSSEX.—For the erection of stabling, outbuildings, and greenhouse, for Mr. A. Jarvis. Mr. H. Percy Monckton, F.R.I.B.A., 32, Walbrook, E.C., architect:—

Lusted, S., and Son	£558	9	6
Piper, S.	520	0	0
Dray, T. (accepted)	448	5	0

CLAPHAM.—For several works in building new church-house and restoration to the church of St. Mary's, Clapham, for the Very Revs. John Bennet and Edward O'Laverty. Mr. J. Francis Bentley, architect. Quantities by Mr. A. G. Gate:—

Colls and Sons	£20,594	0	0
Lawrence	20,280	0	0
Higgs and Hill	19,890	0	0
Nightingale	19,300	0	0

CLAPHAM.—For proposed new drill hall, offices, &c., for Lieutenant Colonel A. A. Bowen, Commanding. Mr. R. A. Briggs, F.R.I.B.A., architect:—

Harrison and Spooner	£6,332	0	0
Balaam Bros.	6,[illegible]52	0	0
Holloway, H. L.	5 986	0	0
Holloway Bros.	5,886	0	0
Turtle and Appleton	5,872	0	0
Kirk and Randall	5,791	0	0
Nightingale	5,770	0	0

BOURNEMOUTH.—For furniture for the new municipal offices. Mr. F. W. Lacey, A.M.I.C.E., borough engineer and surveyor:—

Worth and Smith, Bournemouth—			
Council chamber	£328	2	0
Committee-room, &c.	190	2	6
Carpets, &c.	169	15	0
Total	687	19	6
Atkinson and Co., London—			
Council chamber	326	1	0
Committee-room, &c.	177	2	0
Carpets, &c.	148	18	4
Total	652	1	4
Spring and Sons, Bournemouth—			
Council chamber	271	13	0
Committee-room, &c.	193	0	0
Carpets, &c.	136	18	0
Total	601	11	0
Allen, J. J., Bournemouth*—			
Council chamber	204	19	2
Committee-room, &c.	151	8	6
Carpets, &c.	136	6	3
Total	492	13	11
Smith, C. A., and Sons, Bournemouth—			
Council chamber	297	4	0
Committee-room, &c.	167	15	6
Total	464	19	6
For cupboards, desks, counters, &c.—			
Worth and Smith, Bournemouth	345	1	6
Spring and Sons*	320	2	6
James, G.	266	19	6

For blinds—	A.			B.		
Smith, C. A., & Sons, Bournemouth	£32	1	8	£23	6	8
Sturt and Sons	31	15	1	13	19	2
Worth and Smith	45	15	9	25	2	4
Spring and Sons	36	5	11	19	10	3
Allen, J. J.	39	11	0*	18	1	9*

* Accepted. A.—Venetian. B.—Dominion.

CAMBERWELL.—For artisans' dwellings, Brief-street, Burton-street, Camberwell, S.E., for the Tenant Co-operation, Limited:—

Clarke and Bracey	£3,580	0	0
Nightingale	3,490	0	0
Stimpson	3,337	0	0
Dupont, Colchester	2,975	0	0
Dobson, Colchester	2,970	0	0
Co-operative Builders	2,896	0	0

DEPTFORD.—For erecting a technical room, laundry centre, covered playgrounds, and w.c.'s, and inclosing, draining, levelling, and tar-paving additional land, at Stanley-street school, Deptford, for the London School Board:—

Garrett, G., and Son	£3,309	0	0
Whitehead, L., and Co.	2,866	0	0
Higgs, F. and H. F.	2,804	0	0
Willmott, J., and Sons	2,733	0	0
Coxhead, F. J.	2,692	7	9
Smith, J., and Sons	2,655	0	0
Norris and Luke, Upper Holloway*	2,488	0	0

* Accepted.

[(*a*) Cost of technical room and laundry centre, £1,465; (*b*) tar-pavement and covered playgrounds, £374; (*c*) boundary walls and gates, £307; (*d*) w.c.'s for boys' department, £122; (*e*) works to existing buildings, £125; (*f*) extra depth of foundations, £95; total, £2,488]

FULHAM.—For alterations and additions at 438, Fulham-road, Walham Green, S.W.:—

Swan	£335	0	0
Storr	310	12	5
Knight	298	0	0
Marks, North End-road (accepted)	229	15	0
Bendon	221	14	0

GREAT YARMOUTH.—Additions to the Union Workhouse, Yarmouth. Mr. Arthur S. Hewitt, A.R.I.B.A., 10, Regent-street, Yarmouth, architect. Quantities by the architect:—

Beckett, Yarmouth	£3,522	0	0
Batchelor, Stalham	3,500	0	0
Howes. T., Yarmouth	3,360	0	0
Bray, F. W.	3,222	0	0
Davy, Yarmouth	3,218	8	6
Cork, Yarmouth	3,125	0	0
Hawes, J. H., Yarmouth*	3,025	10	0
Barnard, Yarmouth (withdrawn)	2,556	14	0

* Accepted.

HATCHAM, S.E.—For various improvements to the school in Kender-street, Hatcham, which was erected in the year 1874, for the London School Board:

Garrett, J., and Son	£3,157	0	0
Higgs, F. and H. F.	2,493	0	0
Willmott, J., and Sons	2,423	0	0
McCormick, T., and Sons	2,388	0	0
Coxhead, F. J., Leytonstone*	2,335	9	8

* Accepted.

[(*a*) Cost of school buildings and closets, £1,625 12s. 2d.; (*b*) tar pavement and covered playground, £260 5s. 8d.; (*c*) boundary-walls and gates, £210 17s. 9d.; (*d*) works to existing buildings, £198 16s. 4d.; (*e*) extra depth of foundations, £39 17s. 9d.; total, £2,335 9s. 8d.]

HYTHE, KENT.—For alterations, &c., to the Swan Hotel, for Mr. T. Elliott. Mr. H. I. Newton, 49, Victoria-street, S.W., architect:—

Martin, W. W., Ramsgate (accepted)	£471	0	0
For Pewterer's work:—			
Saunders and Son	£73	6	0
Heath, T., Goswell-road (accepted)	65	0	0

ILKESTON.—For painting and decorating, &c., at the chapel, Bath-street. Mr. H. Harper, Norton-street, Nottingham, architect:—

Holbrook, W., Ilkeston	£210	0	0

KENNINGTON.—For alterations, &c., to the King's Head, Upper Kennington-lane, for M. W. H. Sedgley. Messrs. Treacher and Fisher, architects:—

Magwell	£3,489	0	0
Holliday and Greenwood	3,435	0	0
Lascelles	3,228	0	0
Ansell	3,050	0	0
Downs	3,030	0	0
Burman and Sons	3,000	0	0

Kearsney, Kent.—For alterations and additions to house for the Rev. T. W. Ewing. Mr. H. Percy Monckton, F.R.I.B.A., 32, Walbrook, E.C., architect :—

	£	s.	d.
Adcock, W. T., Dover	£196	0	0
Chamberlain, T. J., Dover*	186	0	0

* Accepted.

London.—For new store-room at 22, Dorset-street, Baker-street, W., for Messrs. Day, Son, and Hewitt. Mr. W. F. Potter, architect :—

	£	s.	d.
Polden, London	£235	0	0
Evans, H. H., Marylebone	186	0	0
Dawes, F., Peckham Rye (accepted)	145	0	0

London.—For alterations at the Crown p.h., 179, Pancras-road, N.W., for Mr. B. F. Forster. Mr. W. Seckham Witherington, F.R.I.B.A., 79, Mark-lane, E.C., architect :—

	£	s.	d.
Larke and Sons	£664	0	0
Spencer and Co.	597	0	0
Courtney and Fairbairn	541	0	0
Rowe Brothers	500	0	0

London.—For rebuilding No. 16, Newman-street, Oxford-street, W., for Dr. Kirby. Messrs. T. W. Porter and Hill, architects :—

	£	s.	d.
Staines and Sons	£5,569	0	0
Perkins	5,430	0	0
Woodward and Co.	5,420	0	0
Rider, T., and Son	5,340	0	0
Bywaters, A. H.	5,220	0	0
Charteris, D.	5,185	0	0
Allen and Sons	4,920	0	0
Nightingale, B. E.	4,863	0	0
Worsley	4,813	0	0
Downs, W.	4,800	0	0
Morter, J.	4,784	0	0

London.—For alterations to the Pelican Hotel, Southwark-street, S.E. Mr. W. Seckham Witherington, F.R.I.B.A., 79, Mark-lane, E.C., architect :—

	£	s.	d.
Mills, J.	£2,190	0	0
Sheffield Bros.	2,[illegible]79	0	0
Courtney and Fairbairn	2,061	0	0
Spencer and Co. (accepted)	2,050	0	0

London.—For carrying out repairs to the head offices of the Board, so far as the buildings only are concerned, on the schedule of prices which has been prepared for repairs to schools, for the London School Board :—

Lilly & Lilly, at schedule prices adding		47½	per cent.
Hornett, W.	ditto	ditto 40	,,
Davis Bros., Fetter-lane, E.C.*	ditto	35	,,

* Accepted.

London.—For iron escape staircases at the workhouse, Old Gravel-lane, E., for the guardians of the parish of St. George in the East. Messrs. Wilson, Son, and Aldwinckle, 1, Victoria-street, Westminster, S.W., architect :—

	£	s.	d.
Cole, T. and W.	£654	0	0
The Lion Foundry Co.	620	17	6
Potter, T., and Sons, Limited	518	0	0
The St. Pancras Ironwork Co.*	510	0	0

* Accepted.

London.—For carrying out repairs to the schools of the London School Board, so far as the buildings are concerned, in the groups of divisions specified below, on the contract schedule of prices as revised, with an addition to, or a deduction from, these prices, as stated below; the contract in each case to be of a period of three years, but to be determinable at any time after the expiration of the first year, by three months' notice on either side. Accepted tenders :—

A.	B.		C.
City	—	Vigor and Co.	− 5 p. cent.
Chelsea	1	Clifton, H. C.	− 2½ ,,
	2	Polden, S.	At schedule.
	3 and 4	Humphrey, C.	− 5 p. cent.
Finsbury	1	Graham and Graham	+ 8 ,,
	2	Ditto	+ 9 ,,
	3	Stephens, W. H.	At schedule.
	4	Ditto	+ 2½ p.cent.
	5	Ditto	+ 2½ ,,
	6	Ditto	+ 5 ,,
Greenwich	1, 2, and 3	Stephens, H. J.	−10 ,,
	4	Smith, J. & Sons	+15 ,,
	5	Proctor	At schedule.
	6	Smith, J., & Sons	+15 p. cent.
Hackney	1 and 2	Davenport, W.J.	+ 7½ ,,
	3, 4, and 5	Britton, F.	+ 5 ,,
	6	Corfield, S. H.	+12½ ,,
E. Lambeth	1	Frampton, J.	− 7½ ,,
	2 and 3	Ditto	− 5 ,,
	4	Goad, W. V.	+12½ ,,
	5	Williams, H. J.	+10 ,,
W. Lambeth	1	Triggs, E.	− 2½ ,,
	2	Ditto	− 5 ,,
	3	Lathey Bros	+10 ,,
	4 and 5	Hammond, W.	+10 ,,
Marylebone	1 and 2	Eady, H.	At schedule.
	3	Graham and Graham	+ 7½ p.cent.
Southwark	1, 2, 3, & 4	Castle, W. & H.	+ 5 ,,
TowerH'mlets	1 and 2	Robey, J. T.	+12 ,,
	3	Vigor and Co.	− 5 ,,
	4 and 5	Gibb, D. & Co.	+10 ,,
	6 and 7	Peattie & Axtell	+10 ,,
Westminster	—	Ditto	+10 ,,
Brentwood Industrial Schl.	—	Hook, W. T., and Co.	At schedule.

A. Division. B. Groups. C. Percentage on, or off, the schedule.

London.—For the erection of new factories and offices at Messrs. Grindley and Co.'s tar and resin distillery, Poplar, E. Mr. H. Percy Monckton, F.R.I.B.A., 32, Walbrook, E.C., architect :—

	£	s.	d.
Briant, W. B.,	£1,384	10	0
Harrison and Spooner	1,189	0	0
Harris and Wardrop (accepted)	1,183	0	0
Ironwork :—			
Croggon and Co.	£506	10	6
Gospel Oak Co.	494	0	0
Braby, F., and Co. (accepted)	469	10	0

London.—For superstructure and finishings to Great Trinity-lane, E.C., for Mr. W. H. Gray. Mr. H. Cowell Boyes, architect :—

	£	s.	d.
Brown, Son, and Blomfield	£8,379	0	0
Smith, J., and Son	8,147	0	0
Nightingale, B. E.	8,122	0	0
Kilby and Gayford	7,934	0	0
Boyce, T.	7,890	0	0
Patrick, M., and Son	7,727	0	0
Colls and Sons	7 691	0	0
Grover and Son	7,680	0	0
Cubitt	7,620	0	0
Ashby and Horner	7,515	0	0
Patman and Fotheringham	7,363	0	0
Gould and Brand	7,258	0	0

London.—For alterations to The Harp, Chandos-street. Messrs. Wylson and Long, architects :—

	£	s.	d.
Green, T. L.	£999	0	0
Patman and Fotheringham	945	0	0
Eddy	927	0	0
Ansell	848	0	0
Kirk	800	0	0

London.—For the erection of proposed rectory house St. Olave's, Old Jewry, E.C. Mr. Ewan Christian, architect. Quantities by Mr. J. O. Abbot :—

	£	s.	d.
Dove Brothers	£4,390	0	0
Holloway Brothers	4,352	0	0
Charteris	4,330	0	0
Cornish and Gaymore	4,272	0	0
Ashby and Horner	4,160	0	0
Holland and Hannen	3,990	0	0
Nightingale, B. E.	3,893	0	0

Markinch, N.B.—For the drainage of the burgh, for the Police Commissioners :—

	£	s.	d.
Chalmers, W., Burntisland (accepted)	£228	0	0

Plashet.—For painting and repairs at the Industrial Schools, Plashet, for the guardians of the parish of St. George in the East. Messrs. Wilson, Son, and Aldwinckle, 1, Victoria-street, Westminster, S.W., architects :—

	£	s.	d.
Todd, G. E.	£638	0	0
Holland, J.	593	0	0
White, T., and Son (accepted)	473	0	0

Plumstead.—For the erection of a new police-station at Plumstead, for the Receiver for the Metropolitan Police District. Mr. John Butler, F.R.I.B.A., architect. Quantities by Mr. W. H. Thurgood :—

	£	s.	d.
Hart Bros.	£4,825	0	0
Nightingale	4,795	0	0
Holloway	4,696	0	0
Perry and Co.	4,695	0	0
Gardener	4,597	18	0
Ansell	4,500	0	0
Willmott and Son	4,440	0	0
Higgs and Hill	4,394	0	0
Garlick and Horton	4,253	0	0
Scrivener and Co.	4,237	0	0
Grover and Son	4,200	0	0
Chapell	4,170	0	0
Lathey Bros.	4,120	0	0

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Jamaica Level
Leyton, Grammar School
Leyton, Church Road
Newhaven
North Bow
Old Ford
Poplar, Byron & Bright Streets
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Southsea, Omega Street
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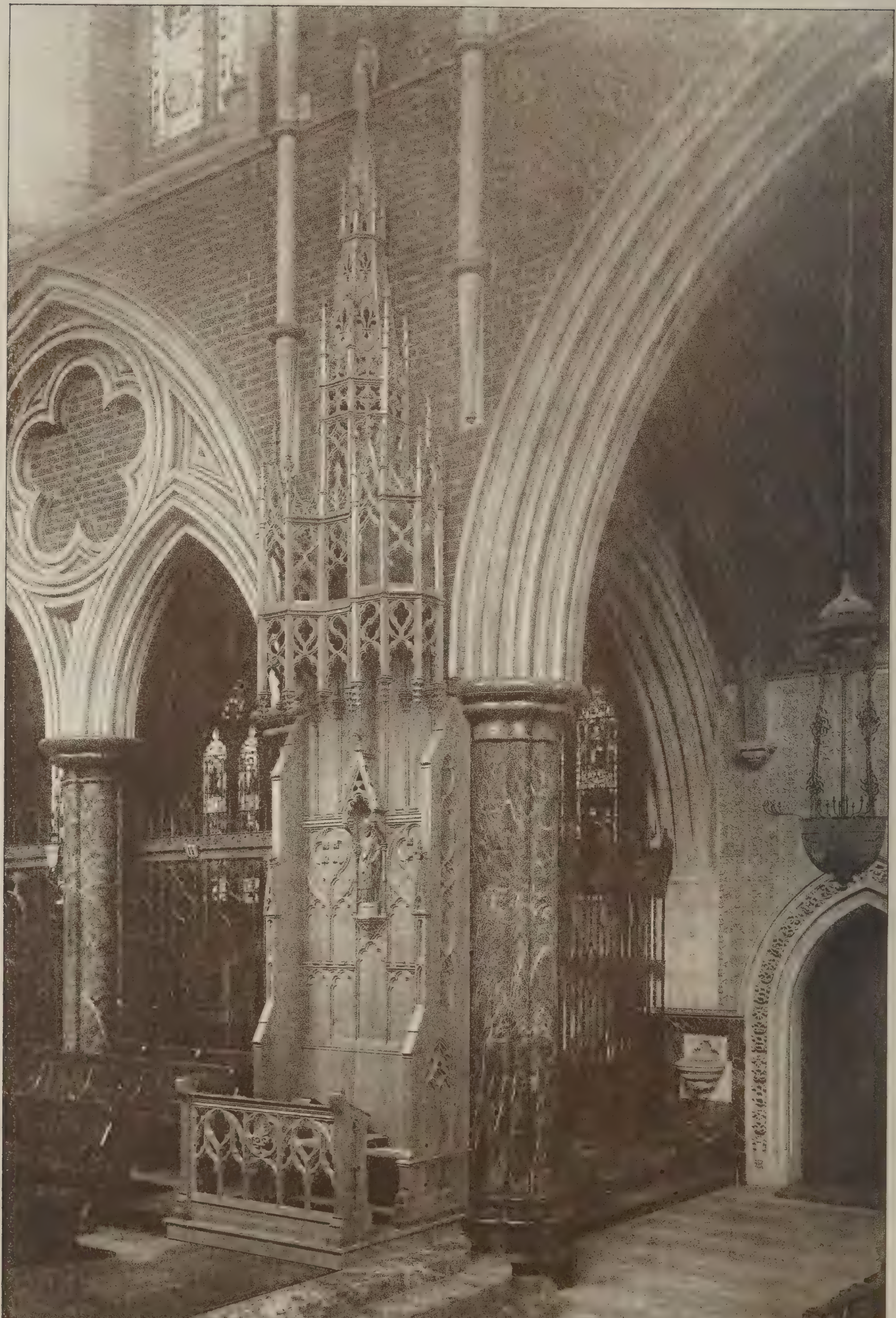

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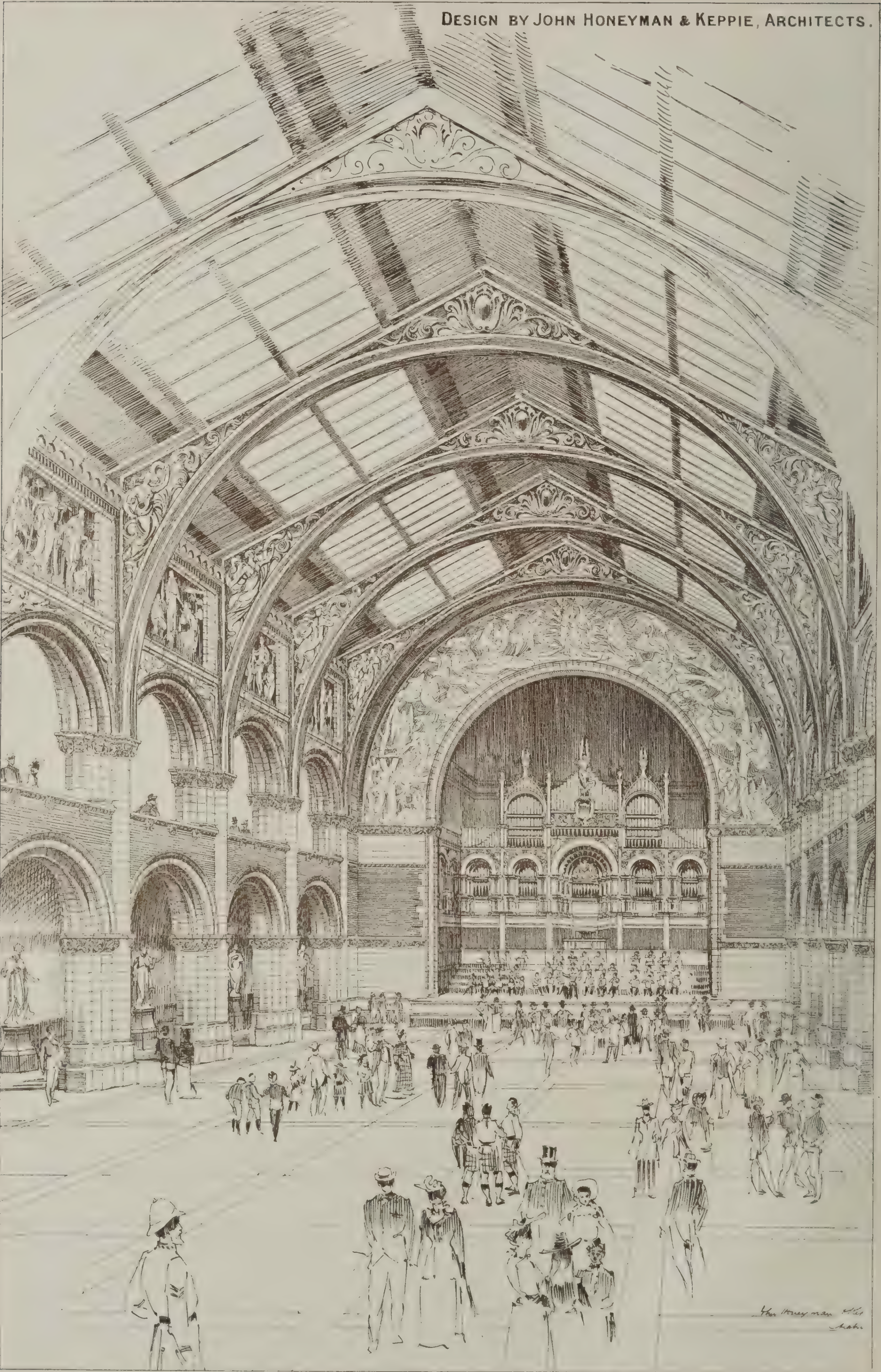

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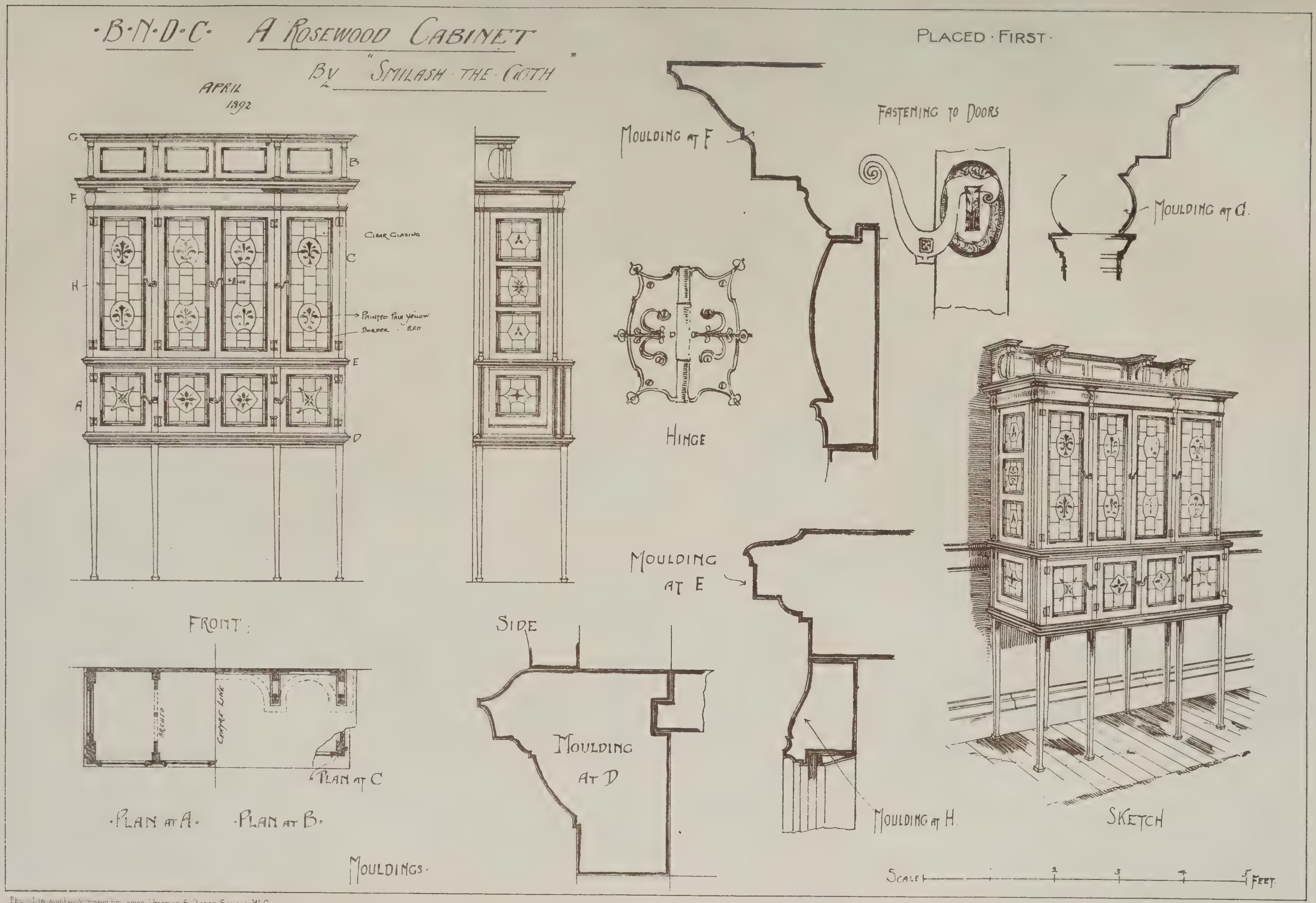

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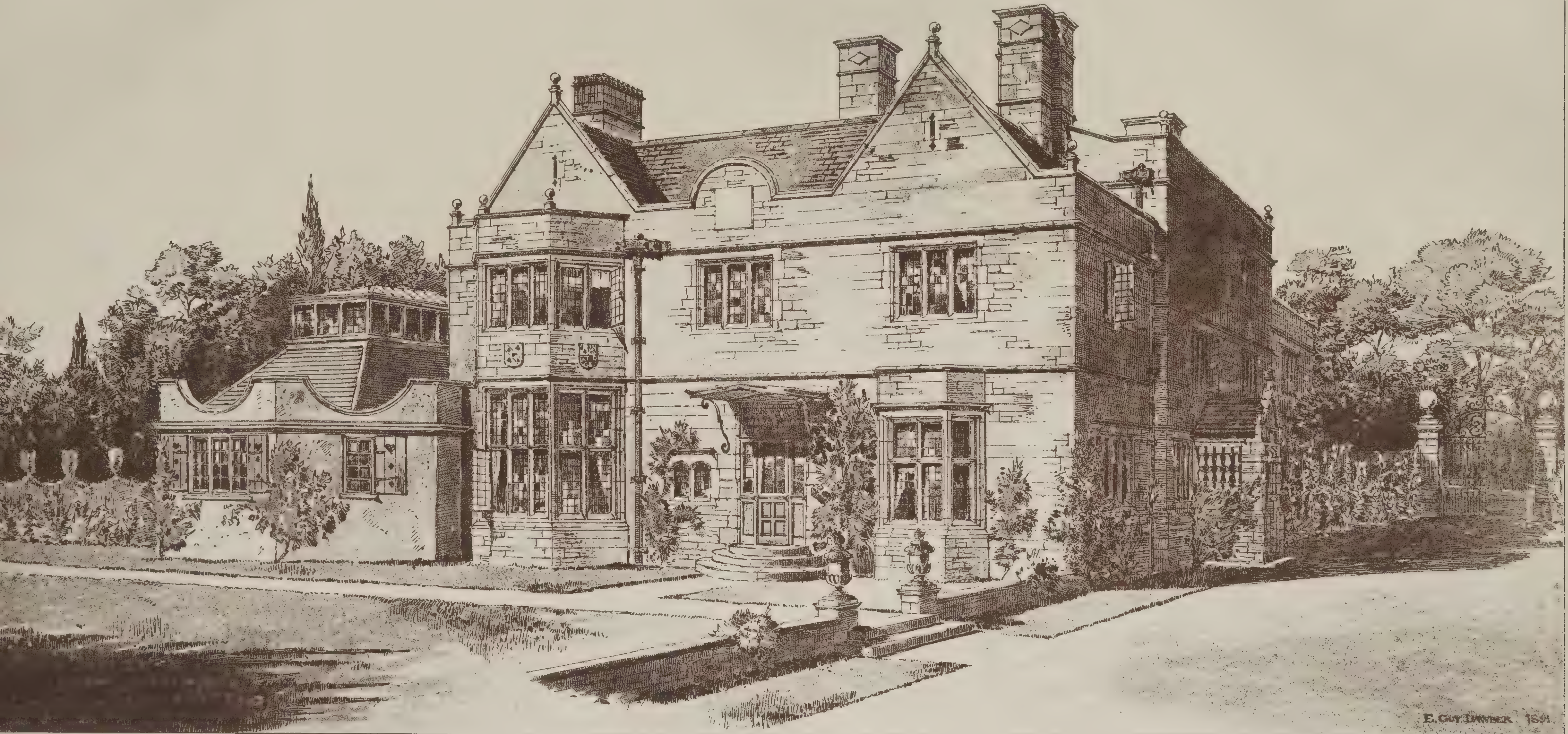

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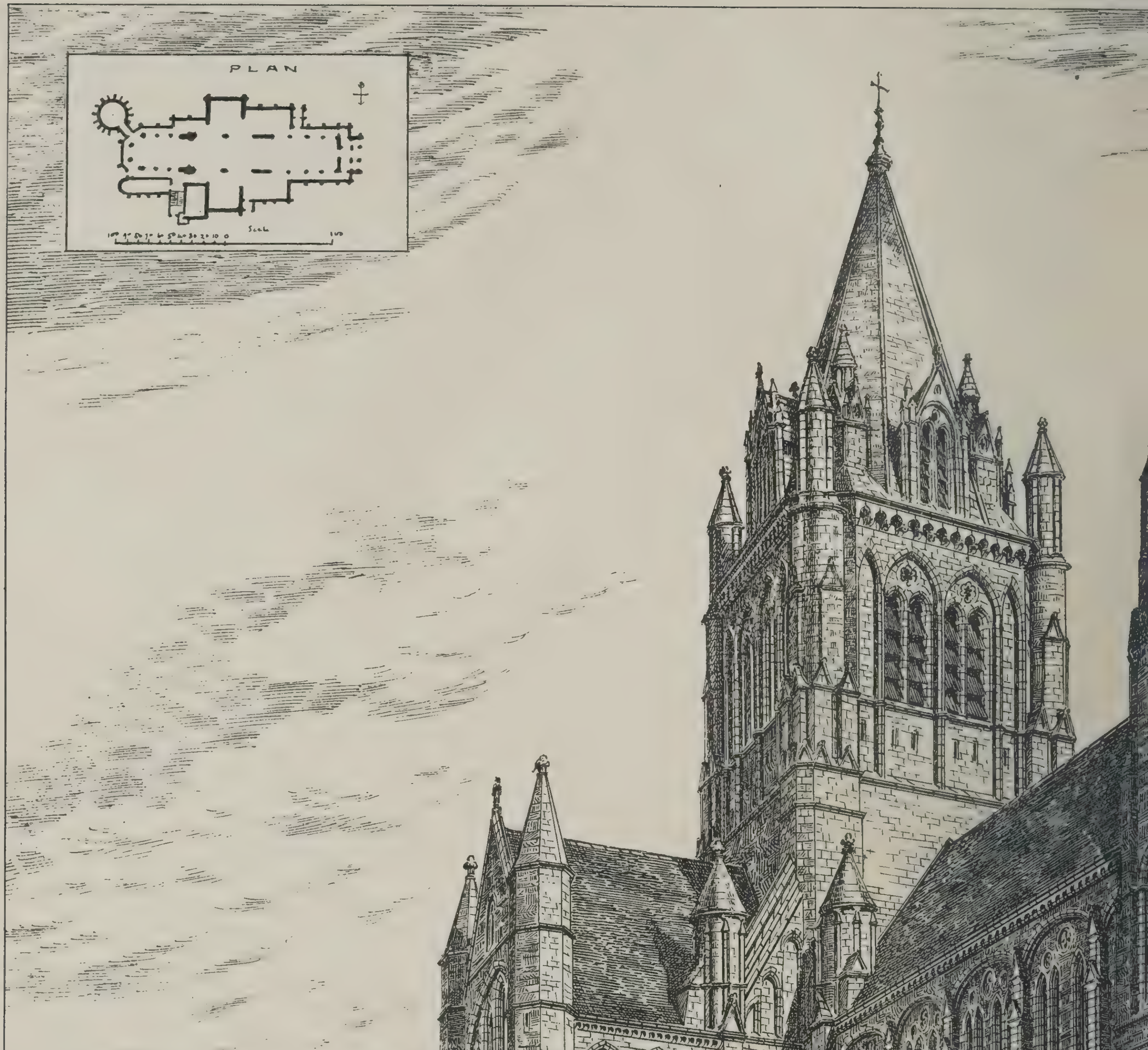
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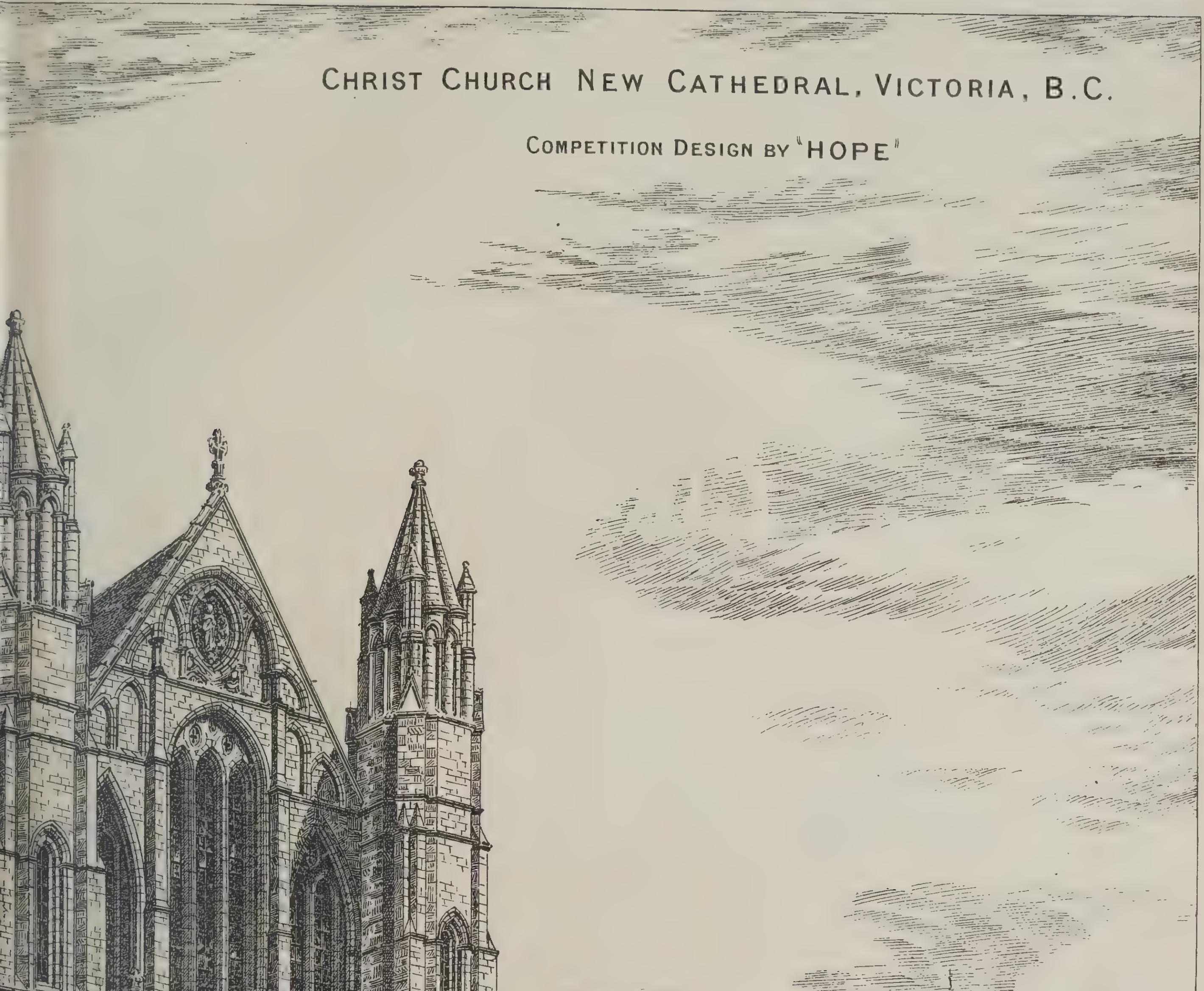

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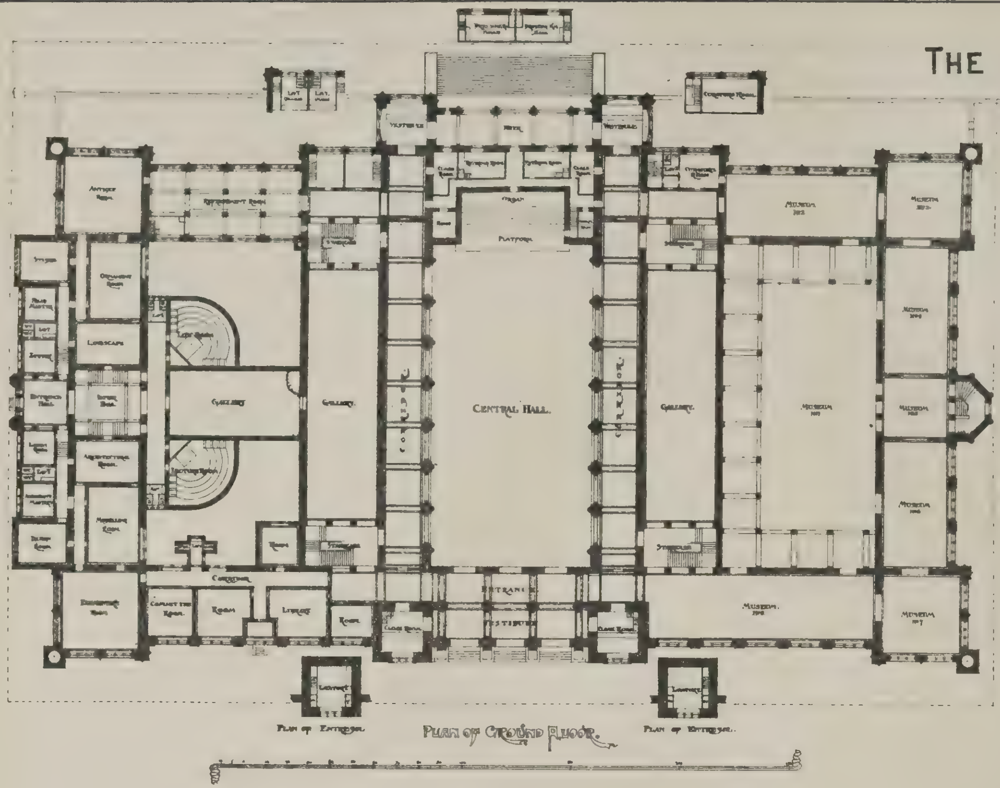
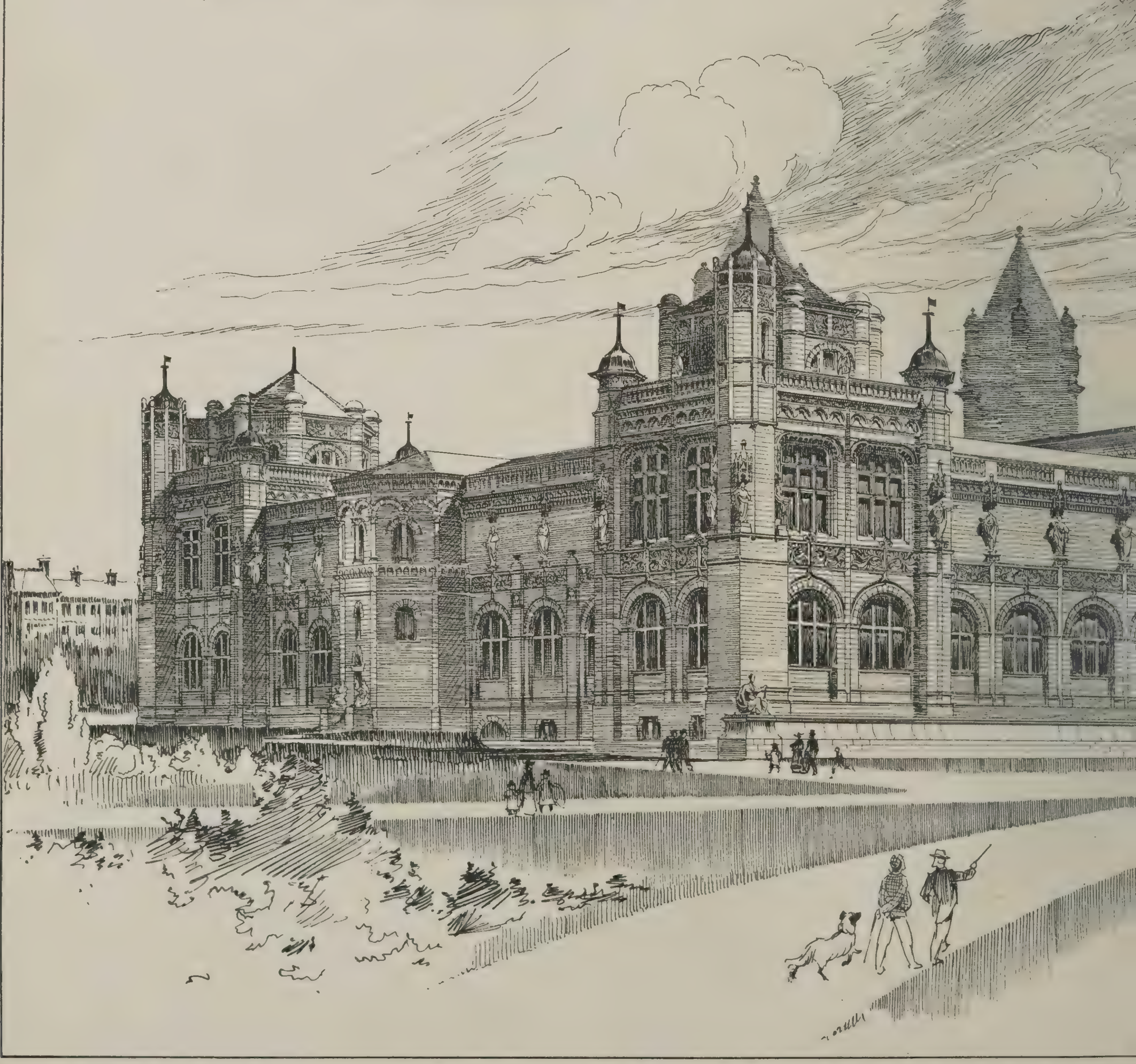


PLAN OF GROUND FLOOR.



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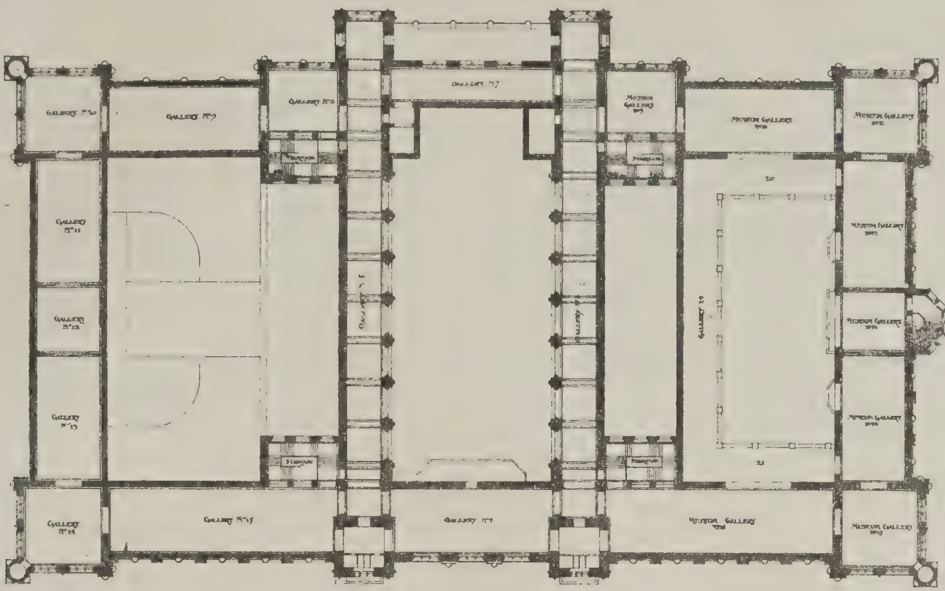
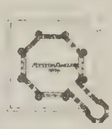
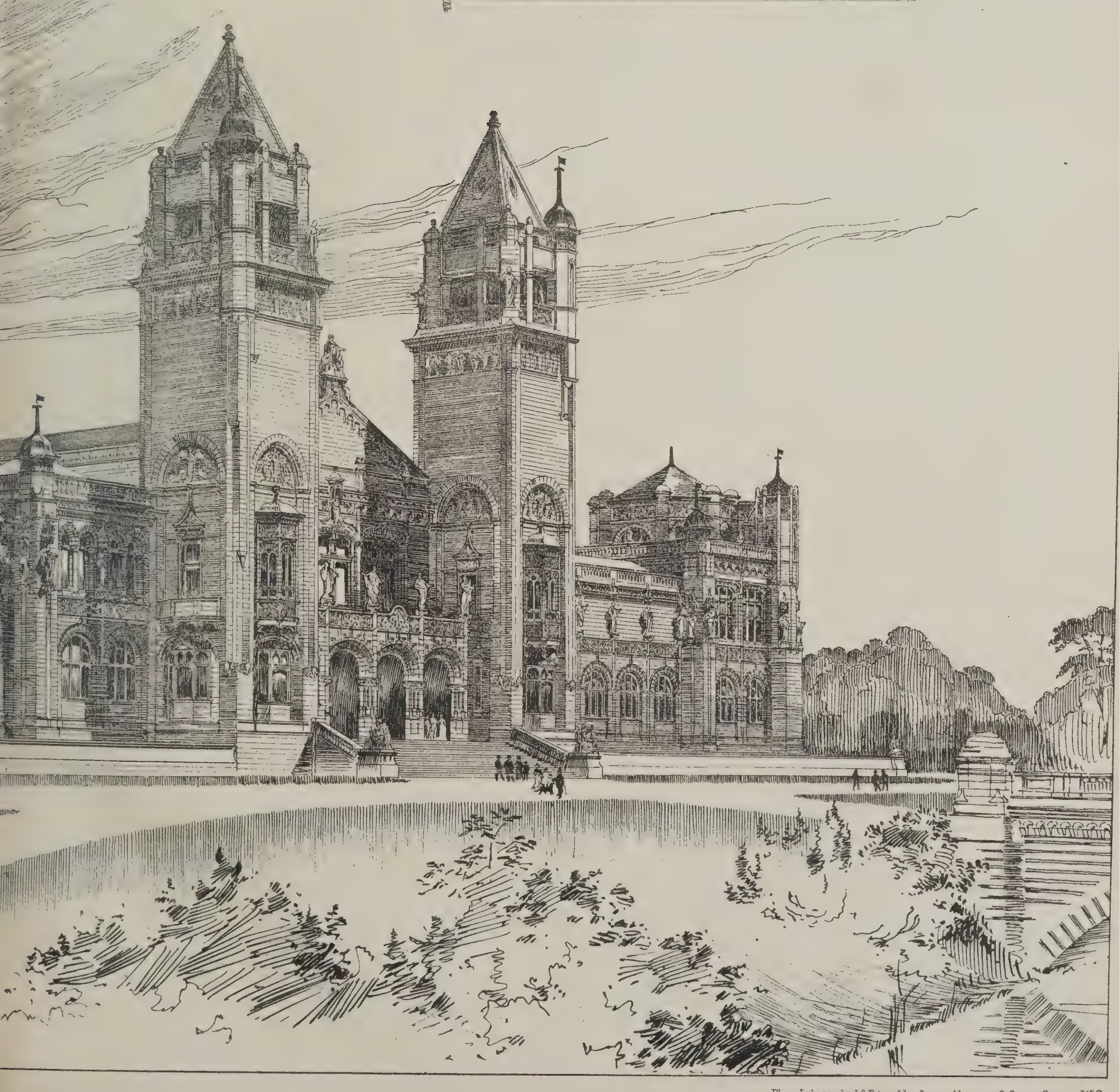




Plan of Second Floor of Corner Pavilions.

Plan of First Floor.



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FRIDAY, JUNE 17, 1892.

CONTRARIETY IN ARCHITECTURE.

THE architecture of our streets has an abiding influence on the popular taste. A new building makes a bid for the public favour just as does a new picture at the Royal Academy or a new play; and if it "takes" it wins itself and its author a certain popularity, more or less long-lived. If the work appeal to human sympathy, or if it be an audacious attempt to impose on the public by its extravagance or irresistible qualities of a sensational kind, its power of mirth, of funniness, or of horror, it will make a "boom" for a time, it will be copied and travestied till the public eye or taste is satiated, or till a new craze appears. With some the more bizarre or vulgar goes down, while the correct and classical receive scant notice and faint praise. The caterer for public tastes and entertainments is aware of this, and he provides accordingly. He desires something that will attract—nothing will do unless it is singular or makes a startling contrast. If it is a shop front, it must have a huge display of glass or ornament, if a theatre or hall of varieties it must be in some style that is not commonly met with—Greek, or Oriental, or Rococo. The law of opposites prevails in architecture as in other arts. Fifty years ago our principal streets and squares were built with a precision and uniformity which recalls to mind the architecture of Bloomsbury and Gower-street, and those other Cubitt-built estates, of which Belgrave and Eaton squares are examples. In them we can trace the influence of the Classic Revival under the hands of George Basevi, Hardwick, and Kendall, who designed these squares. On the other hand we see to-day a very different taste. Uniformity has given place with strange perverseness to contrariety. From quiet, sedate, Classic façades, we have all kinds of extreme diversions; regularity has been succeeded by disorder, the level skyline by peering roofs, excrescences, and gables; but we notice also that the characteristics of the architecture are entirely different: the vertical preponderate over the horizontal features, and this is a notable character of the Renaissance which has taken such a firm root amongst us. Our habits have changed, too. At one time the Philistinism of the Englishman could never have tolerated anything else than the plain prosaic Classic; but now we have people amonst us who can see charms in Italian campanili, in Venetian colour, and in picturesque blouses in ladies' and children's costumes. Italian, French, Flemish, and Oriental tastes and styles have rendered the English artist, as well as the cultivated public, more cosmopolitan and appreciative in their views; and though these may be set sometimes at loggerheads, they evince a growing desire to cast off conventional restraints, as well as to see art under various aspects. A recent writer compares Savage's church of St. Luke at Chelsea—an early attempt to give us Perpendicular—with the late Mr. Sedding's more recent and masterly church of Holy Trinity, Sloane-street: both examples of the same Gothic style, but representing two very different conceptions—one fettered and cramped by conventional purism, the other so free and so unrestrained as to leave us the impression of an art directed by genius, yet respectful of traditions. These two edifices respond to two different states of national mind and feeling, and we may find the same diversity in secular buildings of the same periods. Compare, for instance, Elmes' St. George's Hall, Liverpool, or Smirke's British Museum, with Mr. Waterhouse's Manchester Town Hall or Natural History Museum. In these, and in other instances of secular buildings, we find that architecture has expressed varieties of thought and sentiment as well as met utilitarian wants. But these varieties have not always been true or rhythmic. We sometimes see buildings that have the same relation to true architecture that noise has to music. We know that the distinction between these last is that musical tone is due to periodic, and noise to non-periodic, motions in the air; so in "noisy," exaggerated architecture we discover the same strange perversion, the same disregard of harmonic rule between the features: upright lines where horizontal ought to be, and sudden contrasts where gradation is looked for. It is the same in all the arts, and it does not need any Helmholtz of architecture to show us why Savage's St. Luke's, Chelsea, or Horace Walpole's Strawberry-hill, or Inwood's new St. Pancras Church is out of tune with the age. Those who followed pure Hellenism and those who adhered to literal Gothic at the Revival were both before their time, and failed, as a matter of course, just as the literal devotees of Queen Anne and Dutch are now giving place to a more sensible kind of Renaissance or neo-Grec.

In our new and reconstructed streets we find ample evidence of the same sudden transformation. Our commercial architecture is nothing unless it is unexpected or exaggerated. Contrariety appears a cheap, easy, and popular quality in the architectural market. The attraction goes down with a certain class of the public. The same difference of "note" is observed in nearly all our principal streets. If we take Oxford-street, it will not be hard to point to several new buildings that indicate the reaction from the vapid so-called "Classicism" of the "Fifties" and "Sixties." At the N.W. junction of Tottenham Court-road, where five roads meet, a considerable block of old houses has been cleared for new premises. At the present moment, alas! this junction is one of the ugliest in the Metropolis, being made up of public houses and very unsightly corners. On the north side, a little westward, we come to a large and pretentious red brick structure of glazed bricks, called the "Restaurant Krasnapolsky," the principal characteristic of which may be described as the marked emphasis of vertical lines. Situate amidst a row of dull monotonous houses, there is a violent assertion of individuality in this imposing building, its numerous piers and mullions being accented as vigorous, upright mouldings of red brick, giving them a rigid and severe appearance. The whole frontage, which is considerable, is composed of four bays and a narrow, recessed centre, in which projects a circular oriel window of two stories. The windows, divided by moulded mullions, have flat-headed lintels, the horizontal members of which mitre into the vertical ones, while a bold red sandstone cornice over the whole building similarly finishes the vertical members of the piers, these being continued through and broken at the cornice level, accentuated by terminal vases over each. The strong, arresting vertical lines has a touch of German Renaissance; the ground-story openings between the red-brick piers are filled in with effective shop-fronts and a centre entrance, which show a departure from the conventional style. A large amount of window aperture is obtained by the plan of concentrating the solid work in piers with narrow mullions between, and the dark, moulded brick gives variety which a plain brick wall surface cannot secure. At the corner of Berners-street another new building in a less severe Late Gothic style has been built for the London and Westminster Bank, of red and cream-coloured terracotta facing. The fronts in Oxford-street and Berners-street are gabled, and the corner is canted with a circular corbelled window over the entrance doorway. Variety in each front is given by oriel windows projecting in the gables. Towards Oxford-street there are two such oriel windows under an arch of relief, and the upper lights of these have cusped heads over the two-light mullioned windows. Pilasters of light terracotta divide the bays, and the end ones have flat, narrow lights. The gables are enriched by bands of relief ornament in light terracotta. Nothing can be more opposite in spirit than these two examples—one rigid in its severity of vertical expression, the other extremely free and playful in its variety of fenestration and features. Lines and windows play a very conspicuous part in our town architecture; but they are not always used with appropriateness. The material should, of course, be recognised; but not so entirely as to exclude the consideration of purpose. Brick and terracotta seem more properly used for arches constructed with small pieces. The voussoir is more suitably made of terracotta than the lintel, as it can be moulded into a small compact shape. On the other hand, stone disposes itself best in the lintel or trabeate style. With brick and stone, we can use the brick in the vertical piers, and the stone as window-heads and cornices; but the violations of this principle appear seldom to be governed by the higher law of purpose or destination.

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GALLERY DESIGN.

ONE of the chief characteristics of modern architecture, till very lately, has been its helplessness. It has only been able to do precisely what had been done before. It has just managed to walk, provided that a broad, well-trodden road lay right in front of it. But it has, in the main, been incapable of striking out new paths, no matter how urgently they may have been wanted. It has always demanded something to follow, something to copy, something to hang on to, and when it could not get these, it has ceased to be architecture at all. The fact is, that the architectural mind, for several generations, had too severe a schooling. The Five Orders lay heavy on it through many years. They were never to be altered or added to, on pain of universal displeasure; and this, as a punster of the period remarked, was the Sixth Order of the public. Then came the Gothic revival. Old Gothic work was full of freedom and invention: modern Gothic work, till very lately, has consisted of little but slavish imitation. The people loved to have it so. They, or, at least, the few of them who concerned themselves about the matter one way or the other, had no mercy on the architect who could not show a precedent for everything. But the time came, as it was sure to come, when human nature refused to stand this any longer. Architects heard, and then shook off the nightmare that was paralysing them. "If we must not do anything either in Gothic or Classic that has not been done before," they seem to have said, "then we will keep clear of both Gothic and Classic. Let us find a style in which there are no precedents, and then nobody can insist on our following them." This, more or less consciously felt, seems to have been one of the motives which have brought into use the mixed modes of design which are now so common. Good or bad, a man can at least work in them, and be himself. He has gained freedom to think, freedom to invent, freedom to act; and this great gain is enough to cover a multitude of faults in the fashion which permits it.

At last, then, it is allowable to deal with things required by modern life: to let them show themselves, and to try and shape them artistically. And when one begins to attempt this, it soon appears that some of them have long since been recognised and dealt with—if not in one style, then in another; and if not in England, then abroad. Now, the revolt against precedent is not by any means a revolt against the study of precedents. It is simply a revolt against the order to stop at them, and to make a servile copy of them—a copy which allows nothing for changed times and changed surroundings. To learn what has been done before in any line is the first step to doing something better; the word "better" meaning, amongst other things, more suitable to the practical wants of the day. Let us look, in this spirit, at what has been done at one period or another towards the architectural treatment of galleries, since galleries are amongst the things that have at last become allowable.

"Turn out the galleries" was a kind of battle-cry with the English church restorers of the last generation. And considering what abominations the galleries were which had been thrust into so many large churches, new and old, in different parts of England, the cry was reasonable enough. The usual thing was a shapeless structure of wood and plaster; or sometimes, more miserably still, of wood, cast iron, and plaster, cutting across the nave piers, and looking like a gigantic painter's scaffold. The gallery in town halls and concert halls, and in public buildings of every sort, was a contrivance of the same nature. The only question anybody ever asked about it was, "How many will it hold?" and the sole way of "beautifying" it which ever seemed to suggest itself was to put in a front filled with tawdry ornament and gilding. To this day, if the word "gallery" is casually mentioned, it is this that rises up before most men's fancy; but it is not by any means this that we mean by "Gallery Design." Let us see what galleries were like when something worth calling design was actually applied to them.

Leaving out of sight for the moment galleries of the "balcony" type, corbelled out from the wall, there are to be found, in good work, two principal ways of dealing with a galleried interior. One way is to treat it as a two-storied building with two tiers of piers and arches, or columns and lintels, one above the other. Of this type there are many picturesque examples. An early one is at Sta. Agnese, Rome, where on each side of the central nave there is a lower and upper arcade of Late Classic type, the lower arcade being considerably loftier than that of the gallery above it. The church of Flavigny, in France, has similarly, a double tier of nave arches; this time, of Early Gothic character. Here, however, as in most Mediæval specimens, the two stories are more or less bound together by a strongly-marked vaulting shaft, which runs from the ground to the groining, and which partly counteracts the horizontal character of the two-storied arrangement. The same thing happens at Limburg Cathedral, and at some of the larger churches on the Rhine, where aisles of two stories exist. But in spite of this vaulting-shaft, the design in all these buildings is avowedly and unmistakably a two-storied one. The architect knew better than to attempt the impossible feat which modern architects have often tried—namely, to retain the lofty effect of one tall nave-arcade, and yet to get a gallery full of people half-way up its height. He accepted the primary condition of having two rather low arcades one over the other, and then did the best he could with things on that basis. And he succeeded fairly well. Buildings so treated may be pleasing and artistic, if not sublime. People who want the highest degree of impressiveness—the impressiveness which results from soaring arches and unbroken verticality—must, of course, pay the price for it. That price includes, not only more money, but less accommodation: it means doing without galleries altogether.

It is not in churches only that galleries may be found; it is not in churches that they are most often necessary. What suggestions for the galleries, say, of a public hall, may be found in the central courts of very different structures! Even the galleries round the courtyard of an old English inn, such as the inns in the Borough not long since destroyed, had a beauty of their own. A few yet remain elsewhere—long may they be undisturbed! The memories of Shakespeare's time hang round them, and the jests of many humorists, from Falstaff to Sam Weller. But the English inn-yard is nothing, architecturally, to the Spanish *patio*. Wherever the Iberian race has gone, it has taken its *patio* with it, the most characteristic and nearly the most captivating features it has ever developed. Probably the origin of the central court, surrounded by arcades and galleries, and open in the centre, was Moorish. Its details, even when it has got as far from home as the Canary Islands, or Mexico, still have a Moorish flavour about them. It is just this touch of Eastern fancy that makes the earlier Spanish Renaissance so interesting. A few of its features, as far as they concern gallery-design, may be worth describing.

The principal court of the Archiepiscopal Palace at Alcala de Henares consists, like others, of a central rectangular area, open to the sky, surrounded by spacious two-storied cloisters. Each story is supported by elegant columns of white marble, of nearly Classic proportions. The capitals of the lower ones are modified by the Corinthian type, and the plan of their abacus is a concave-sided square, with the corners splayed off. These capitals carry semicircular, or, in some bays, quasi-elliptical, arches. The soffits of the arches are panelled, their faces are adorned by radiating flutings, such as are common in the Romaneque work of Southern France, and around all there are projecting archivolts or dripstones. These dripstones do not run down to the capitals, but meet at an angle above the middle of each column. Nearly touching the top of them runs a bold horizontal cornice, which divides the lower from the upper story. Between this cornice and the dripstones of the arches, therefore, a series of triangular spandrels exist, and each spandrel is filled in with coats of arms and elaborate carving. This is very effective, and very characteristic of Spanish work. So much for the lower story, or cloister. Above it comes the upper story, or gallery. Its height, compared to that of the arcade beneath it, is about as 2 to 3. It has similar columns, with very wide and curious capitals, or perhaps it would be more correct to say, with capitals of a semi-Corinthian type, surmounted by curious large consoles branching out right and left. The object of these is to carry the stone architrave or frieze, for the upper columns have a horizontal frieze in place of arches. The frieze is panelled, and over each capital, as well as in the centre of each bay, it bears a projecting head in high relief. Next comes the main cornice, with several enriched mouldings, and with a series of bold, upright flutings; and above this again, the projecting eaves of the tiled roof. The pierced marble parapet of the gallery stage is also a very conspicuous piece of detail. Its main lines form diamond-shaped spaces, like those of a trellis or of common quarry glazing; but the exact form of the perforations in them it would be difficult to describe intelligibly.

If we imagine the central space of such a building roofed over, what an admirable idea we have here for the courts of a museum, like the proposed ones at Kensington or Glasgow! The detail may be endlessly varied, and is so varied in Spanish work. In a cloister at Valladolid, for instance, the arches are segmental and boldly moulded. The upper story here is made the principal one, both in height and in richness of decoration. A very elaborate carved shield, with scrollwork, fits into the spandrel between the upper arches, while a simpler one occupies the same place with regard to the lower ones. The gallery parapet is panelled and carved, not pierced, and on it stands a light shaft carrying Late Gothic tracery. There is no similar shaft or tracery to the arches below. In other cases the segmental arches of the lower story carry a range of shafts, on which rest the upper frieze and cornice, and these shafts are so near together that three bays above are equal to one bay below. Where they are further apart, some form of the bracketed capital often comes in. Now and then, as at Alcala de Henares, the brackets are separate from the capital and above it; but elsewhere they are combined with it, and spring from the necking of the shaft. This economises height, and has a peculiar but very picturesque effect. The columns themselves, in rich designs, are adorned by heads and festoons projecting from and surrounding their lower part; and the plan of the abacus may be cruciform, or of many other unfamiliar shapes. Twisted columns, and twisted columns with the spiral lines enriched by ball-ornaments, also occur, and cornices of varied character, from Late Gothic to almost pure Classic.

So far, we have been dealing with cases in which the main columns and arches stop below the galleries, and support them; in which the internal composition comes, in fact, to a termination there, and begins over again with a fresh tier of columns and arches at the gallery level. But there is another type of gallery design to be met with—and a very suggestive type—though the examples of it are few, and though it seems to have been nearly overlooked, till lately, for something like a thousand years. This type is one in which the main piers go up above the gallery, and in which the gallery-arcade is a slight and secondary thing, like that of a screen, standing between them. Now, where this gallery-front is straight on plan, it is very difficult to keep it a secondary thing. Unless the piers between which it stands are enormously large, or unless they are part of a polygon, and not of a continuous range, the horizontal line of the gallery will overpower them. If there is the slightest danger of this, it is better to accept at once the first- or two-storied type of interior. For any galleried building consisting of a nave and aisles, the two-storied treatment is, perhaps, the only satisfactory one. Anything is better than an attempt at keeping the lofty, one-storied effect, when that effect will really be destroyed by a heavy horizontal mass, like that of a gallery, abutting against the upright lines of the piers, and cutting them in two. But suppose the gallery could be planned so as to fall back from the piers instead of abutting against them? Suppose its straight, horizontal front were no longer straight, and, therefore, as seen by the eye in perspective, no longer horizontal? This is the idea that seems to have struck the architects of San Vitale, Ravenna; of Sta. Sophia and St. Sergius; of San Lorenzo Maggiore at Milan, and of some other very Early churches. It is an idea that can be best applied to a polygon or an apse: it has one that has never been fully worked out, and certainly never put into a shape which can be borrowed bodily for modern purposes.

But now that the public interdict is being removed from original invention—now that designers are allowed, and may soon, perhaps, even be expected, to strike out unfamiliar ways of dealing with practical difficulties—this second type of gallery design deserves more attention than has ever yet been bestowed on it.

DUDLEY GALLERY ART SOCIETY.

SCARCELY equal to some of its forerunners, the summer exhibition of water-colours at the Egyptian Hall, Piccadilly, contains a few works of merit. One of the first pictures we notice is by a new member, F. Marjoribanks Hay, whose ability is assured if one takes "The Side Lamp, Pittenween" (2), and "Scene on the Fife Coast" (13) as examples. The former shows a dark, stormy night on a pier-head; under the beacon light a group of sailor-folk are gathered, who are anxiously looking seaward. This has been painted with much power, and there is much colour in the grouping and the flicker of lights. The Fife coast scene also represents a stormy night with heavy sea, and a crowd of fisher-folk watching some vessels in distress. Other works, as a "Galloway Moor" (74), "Stormy Day, Pittenween" (250), are masterly impressions of colour and breadth of treatment. The president, Mr. Walter Severn, sends five subjects, the most important of which is "Dundonell Peaks, Ross-shire" (97), a very cleverly depicted range of snow-clad mountains, in which the drifting and streaky lines of luminous snow are shown with much realistic power. The next work of importance is "White Arch, Anglesea" (212), a remarkable rocky headland, a portion of which is worn away, and forms an arch. Mr. Severn has boldly painted the rock from a near standpoint, and the light on the limestone rock and its stratification are depicted in a manner worthy of the President's pencil. Views of "Loch Lomond" (10, 378), are also characteristic of the painter's *penchant*.

A charming study of foliage and colour is Lexden L. Pocock's "In the Park," the fringe of a finely-timbered park, the noble trees of which throw a delightful shade over the ground. Against a wooden pale fence stands a young lady, enjoying the sylvan shade and quietude. The light on the fence, and the breadth of handling and colour, render this the most pleasing of the painter's works. Several very able studies and sketches are contributed, as usual, by W. Rupert Stevens. His "Maldon, Essex" (73) is delightfully broad and delicate in colour. The old church in the distance, with its river-side road and boats, make a capital subject for Mr. Stevens's handling. The painter relates in a note that Maldon was so named on account of the destruction of the Danes, of whom many were murdered here under Ethelred II.; also that there is an old law, stil unrepealed, which gave to any man who married one of the maidens of Maldon, whom tradition declared very ugly, the freedom of the city and various privileges. A little further on is one of those views on the Scheldt which have a charm of their own for their quiet, sleepy tideway and craft. Mr. Stevens's colour is rich and varied. But, to our mind, the strongest of this painter's works is No. 281, "March"—a hillside sketch, we believe a study of a part of Hampstead Heath near the artist's residence, with its lines of leafless trees and sheep on the slope; a subject which breathes a freshness and a natural power on the artist's part to give us the suggestion of coming spring. The colour and treatment are both good. The same hand also gives a pleasing sketch of "Old House in Essex" (167), once the abode of Dick Turpin, who is said to have sallied thence to Tiptree Heath on his marauding expeditions. Helen O'Hara sends one or two of her dexterous sea studies—"Under the Cliffs" (47), "Toward Evening" (346)—both inimitable studies of her sea swells and surf. R. Warne's coast views—"Waiting for the Tide" (182), "Anglesea Coast" (158), "Summer Clouds" (84)—are strong and fresh in colour, the dark headlands and smooth reflecting laving seas, the boats and reflection on beach, show direct study of nature. F. Burgess's "Foggy Morning from Waterloo Bridge" (118) and his sketches in Worcestershire (207), &c., are pleasing, the former a harmony in brown. Hubert Medlycott contributes one or two drawings—"Old Gravesend" (83), "Rouen Cathedral" (279). "Canterbury Cathedral," by Patience E. Bishopp (79), notwithstanding a little weakness in the drawing of central tower, shows artistic feeling; another lady artist, Maud Peel, gives us some nice light and colour in "Quiet Waters" (31), and in some appreciative work in other drawings. Harry Goodwin's "Oriel-street, Oxford," is careful and neat; Howard G. Stormont's "Richmond Hill" (110) is a pretty study of river and woodland; there is pleasant colouring also in Berenger Benger's "Tintern Abbey." F. J. Aldridge's "Over the Bar" is a clever piece of sea-painting and craft, and there is breeziness and some nice colour in "Entering Harbour" (215). Lord Windsor's views of "Ben Wyvis" and "Ben Laws and Loch Tay" (173-174) have a delicate sense of colour in the drawing of hills; the former is marked by breadth and atmosphere and simplicity of manipulation, but the latter is rather stiff and hard. Another sketch, "San Dominico, near Fiesole" (249), has also a nice feeling for colour. A few brilliant sketches, clever and crisp in drawing, are sent by T. A. de Moleyns (185, 187, 176). W. P. Nicholl has a sketch of "The Porch of St. Maclou, Rouen," and John Evans's "View of the Choir of St. Mark's, Venice" (224), the last an effective drawing of the screen. N. E. Green's "Old Houses, Chiddingstone, Kent," with their overhanging half-timber gables, is conscientious. A pleasing harmony of colour is Miss Mary Helen Carlisle's graceful portrait study, "A Letter," in pastel—a lady in yellow dress reading; another by her is "Fair Nineteen" (255). Rose Barton does not exhibit. Claude Hayes sends a clever drawing, "Gipsy Life," a gipsy party on a country road, and snow on the ground (272). On the screen, we must also mention Nora Davison's "By Sea and River," three small sketches (346); Mildred A. Butler's "Open Country," a study of cattle in meadow, admirable in drawing and colour; also "Springtime" (335), and "Waiting," by the same lady; S. Roope Dockery's "Old Inn, Milton" (308), a deftly-handled sketch of old building, sharp and transparent; a drawing by John Evans of "Santa Maria della Saluta, Venice" (319), and two cleverly executed black and white incidents of modern naval warfare—one, "Torpedoed," an ironclad anchored in a bay with torpedo-boat discharging torpedoes at the unsuspecting vessel, by the President. A small, bright, sharp sketch is sent by R. Stefano, and we also notice Nos. 367, 369, 372, 380 as other studies of merit.

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THE FELLOWSHIP OF THE R.I.B.A.

THE crowded meeting at the Institute on Monday evening last, presided over by Mr. J. McVicar Anderson, adopted the report of the special committee concerning the mode of electing Fellows in future, by an unhesitating majority of about three to one. An epitome of the recommendations thus confirmed was published in our last issue on p. 793, so that it will not be necessary here to repeat them in exact terms. The resolution was moved by Mr. Arthur Cates, the chairman of the special committee, who recapitulated, in a moderate and convincing speech, most of the more prominent reasons for thus regulating the mode of procedure so that the thoughtless veto of a so-called Art set, or the malicious exclusiveness of a self-constituted clique co-operating to prevent the election of proper candidates for Fellowship, may be frustrated; the object aimed at also being that a more expeditious mode of election and thorough method of inquiry as to the merits of any candidate may be secured in all cases. Mr. H. C. Boyes seconded the proposal, giving as one reason the desirability of being enabled to ascertain the correctness of charges often now brought at the eleventh hour against a man seeking election, when it was quite too late to weigh the merits of such accusations. Mr. J. M. Brydon proposed an amendment for postponing the question, saying that during the past five years only 13 architects seeking election out of 203 candidates had been black-balled. No personal grounds should weigh as to a man's fitness, and the narrow-mindedness of local societies should not be allowed to veto a man practising in the same town from election at the Institute. He, the speaker, agreed with the clauses of the report up to E; but F and G, providing for the vote being taken by papers issued to all members, he did not agree with. The quality of a man's work was the only test worth anything in judging of a man's qualification and fitness for election. Let a candidate's drawings and designs be exhibited on the walls in the election chamber, and then they could see and judge for themselves as to their author's capacity. Mr. Brydon, however, overlooked the fact that drawings frequently do not truthfully represent the buildings themselves, and he knows very well that buildings from artistic drawings such as he alludes to are sometimes erected without proper supervision, as when foundations, necessary for the stability of a structure, are omitted. What is the value of the so-called artistic element when arbitrations result from the wretched way in which such work is sometimes executed? Evidence of this cannot be shown on the Institute walls in the way Mr. Brydon suggests; but the law reports occasionally furnish details than which nothing does more to injure the cause of architecture, either as a profession or an art. It is folly to talk about raising the tone of the Institute while such things are possible without rebuke. Mr. John Belcher seconded the amendment, speaking on the side of art, and although unaware of any combination to exclude candidates, he thought much could be said for those who black-balled some who had sought election. There also remains much to be said, we may add, against those who pose as the emancipators of art seeking to purge away as unholy "the practical man"—in short, what is called the surveyor element at the Institute, when the very class of men against whom this petty crusade is attempted are the persons often called in to give evidence in disputes brought about by the incapability of the would-be high art professor. Mr. Charles Barry supported the report of the Committee, and thought many of Mr. Brydon's reasons went far to support the resolution rather than his so-termed amendment. Mr. Wm. Woodward said that a member asked him to vote against two candidates because they belonged to the Society of Architects. The speaker called that a malicious objection, and unworthy of members of their Institute. Mr. Edwin T. Hall supported Mr. Cates' resolution on every ground, and corrected Mr. Brydon as to his statement concerning the necessary alteration of the Charter, inasmuch as the by-laws only were affected by the proposal suggested by the Committee. They were not, as alleged, acting in a panic; but they wished to prevent any minority from excluding worthy and able members of the profession. For instance, if Mr. T. Graham Jackson, A.R.A., who had written so much to the papers lately about the faults of the Institute, should present himself for election under present conditions, it would be possible for a small set acting together to blackball such a candidate, and he, Mr. Hall, said unhesitatingly that such a possibility was a scandal. Examination, even when it did come, would not get over the difficulty alone, because men engaged in busy practice had not the time to undertake such a task, and besides, their minds, being full of the care of business, were too preoccupied for successful examinations. They must repose confidence in allied societies, and who so well able to judge of a man's character and ability as those who knew him? Candidates now were passed sometimes by the Council of the Institute without really any knowledge beyond the signatures of their proposers. Mr. William Young thought it would be best to postpone the matter till another session. Mr. Phené Spiers supported the committee, and so did Mr. Ridge, who thought it a very serious matter that something like 6 per cent. of the nominations confirmed by the council should be black-balled in the way that had been done. He had watched the counting of the voting balls that evening, and every candidate had several black balls against him. Seeing that some exceedingly able architects were elected, as the following list will show, it is very evident that some electors do recklessly vote for party purposes. At a late hour the amendment was lost by a large majority, and the original motion was carried by over 100 for, and 35 against. The resolutions as to the establishment of "Compulsory Examination for Fellows," standing in the names of Messrs. Charles Barry, F.S.A., and H. D. Searles-Wood were postponed till the meeting on June 27th. It was announced during the evening that the Duke of Devonshire had undertaken to lend the celebrated collection of original drawings by Palladio and Inigo Jones from Chiswick House (now being converted into a private lunatic asylum) to the Institute for exhibition. They will shortly be on view with a descriptive guide.

The voting for the new council was also announced. Mr. McVicar Anderson, president; Messrs. Aitchison, A.R.A., J. Brooks, Henry Currey, and Campbell Douglas, vice-presidents; and Mr. Aston Webb, hon. sec., were elected by acclamation. No objection was taken either against the nominee of the Architectural Association for membership on the council, viz., Mr. H. O. Cresswell. The council were elected in the following order of voting:

T. E. Collcutt, 532; Ernest George, 532; Arthur Cates, 510; J. Slater, B.A., 480; Wm. Emerson, 476; Alex. Graham, F.S.A., 475; R. Phené Spiers, F.S.A., 475; T. Blashill, 466; Wyatt Papworth, 451; J. A. Gotch, F.S.A., 443; H. L. Florence, 418; J. Belcher, 395; Herbert Carpenter, 394; J. Holden, 392; Lacy W. Ridge, 381; J. M. Brydon, 379; E. A. Gruning, 374; and Octavius Hansard, 363. The following candidates were not elected:—Messrs. T. W. Cutler, W. D. Caröe, Knill Freeman, J. Goddard, E. W. Mountford, Leonard Stokes, R. S. Wornum, and Wm. Young. The Associate members elected were Mr. T. M. Rickman, F.S.A., 337; and Mr. Paul Waterhouse, M.A., 241. Messrs. G. A. T. Middleton and Beresford Pite failed to gain admission. Messrs. B. B. Bulmer, Leeds; H. Crisp, Bristol; T. Drew, R.H.A., Dublin; R. Evans, Nottingham; W. Hale, Birmingham; T. H. Harrison, Liverpool; C. J. Innocent, Sheffield; W. Leiper, A.R.S.A., Glasgow; and Ed. Salomons, Manchester, were elected as presidents of allied societies. Messrs. Lewis Angell and Wm. Woodward were elected auditors.

The ballot was taken for election of Fellows with the following result:—

A. Lett, Associate, E.C.; E. J. Woods, Adelaide; T. Stone, E.C.; C. J. Smithem, 45, Finsbury-pavement, E.C.; M. H. Medland, Gloucester; W. J. Gant, Associate, Hastings; Edmund Woodthorpe, M.A., Associate, E.C.; A. H. Paget, Associate, Leicester; James Ledingham, Associate, Bradford; Mark J. Lansdell, Associate, Hastings; J. Graham Fairley, Associate, Edinburgh; W. Larner Sugden, Leek; Oliver Essex, Associate, Birmingham; J. B. Colson, Winchester; A. J. Style, Associate, S.W.; Joseph Lavender, Associate, Wolverhampton.

The following candidates were elected Associates:—M. Garbutt, A. H. Thomas, C. B. Howdell, F. R. G. Wills, F. E. Ward, S. K. Greenslade, A. H. Ough, N. G. Bridgman, T. T. Rees, J. L. Hodgson, T. MacLaren, J. C. Watt, A. Warburton, W. Grace, R. S. Ayling, C. W. Baker, A. C. Breden, B. Walker, J. Murray, Kotaro Sakurai, Japan; H. C. Corlette, L. Kitchen, H. Passmore, E. C. Shearman, H. Goodman, W. G. Dobie, W. H. Greene, E. Thornton, T. Cooper, S. W. Cranfield, A. Hale, J. Bain, W. Vaughan, B. J. Capel.

* * *

FILTERING WATER.—I.

It is not the object of these papers to deal with domestic and table filtering appliances so much as to inquire into modes of providing sufficiently pure water for drinking or for business purposes, where there are no water companies' mains to rely upon. House filters will, of course, come within the scope of this subject, and will be spoken of, but chiefly as regards those suited for use in, or in conjunction with, house cisterns.

Filtration is practically of two kinds—viz., a process for removal of solid impurities, what are termed matters in suspension; and a further process, when needed, to remove impurities of a less obvious nature, such as soluble matters, gases, or low forms of animal life (animacula, bacteria, &c.) Of course there is, in many places, water obtainable which is quite free of impurities, or sufficiently so to render filtration unnecessary; but this can very seldom be said of what may be termed surface water, such as we obtain from ponds and rivers.

To pursue this subject in a lucid manner, we have to consider from whence water originally proceeds. Now, all the water that can be drawn from the earth, originally descended upon it in the form of rain, and in this form it is, we may say, absolutely pure. Rain water, if we could store it as it fell, would be more free from foreign matters than water that is delivered by a water company; but there are objections to dealing directly with rain, unless it becomes actually necessary. Rain-water owes its "softness" to its purity. It is only when it has, firstly, been able to absorb carbonic-acid gas; and, secondly, had contact with carbonate of lime (or certain other substances), that the so-called "hardness" is developed, and it is only by percolating through the earth that this feature is naturally brought about. The mere fact of the water passing through the earth is not sufficient to produce hardness, as will be understood: it depends entirely upon geological features, the substances of which the earth at that place is composed. Water that percolates through the earth, and is withdrawn from wells has certain characteristics governed by the strata through which the water has passed, but, as a general rule, this water is potable, agreeable for drinking and domestic purposes.

The water that is usually in real need of filtration is river, lake, pond, and roof water. This latter is rain-water which, falling upon the roof of a building, is collected and carried to a storage-tank by means of gutters and pipes. Roof-water needs filtering like the waters proceeding from the other sources mentioned, but it differs as regards the materials which bring about contamination. With river-water, the source from which quite the greater number of small waterworks have to deal with, it will be easily seen that there are a great number of things which go to make the water impure. Possibly, if the drinkers of water went down to the river to satisfy their thirst the water would have no harmful effect, no more than it does to cattle and such-like, which have no alternative. But for water of this kind to be stored and dealt with in the way water is stored and treated in house cisterns, we should have many objectionable features manifested, and they would soon prove to be of a very pronounced character. This would particularly apply to river water, which may be withdrawn from the neighbourhood of, or below a town, or somewhat thickly inhabited place. A river is used as a highway for sewage: this must never be forgotten. Then the rainfall upon the sloping ground in the vicinity of rivers, or the springs and brooks and ditches which feed the rivers, necessarily wash down everything that may be deposited there. We may consider that the impurities in river-water are of almost every conceivable sort, especially after heavy rains. There are not only animal excretions, the drainage from farm yards, and in many cases sewage; but there is sand and earth detritus, and everything that the flood carries with it. Then there are the various substances, in suspension or solution, that are gathered by the waters of springs and brooks issuing and passing through the various strata of which the earth is composed. The hardness of river water is naturally less than well water (if the well water is "hard" at all), as a great proportion of the water has not penetrated below the surface of the earth but to a trifling degree.

The most simple form of filtering process is to pass the water through sand. This is exceedingly simple, and in many instances fulfils all that is required to make the water sufficiently pure even for drinking purposes. This would apply to lake or pond water, which is found to be pure to all intents and purposes, except that it may occasionally have its mud disturbed by animals. For the majority of business purposes—for mills, factories, or for hydraulic works—this kind of filtration is all that is needed, even from polluted sources, unless the water actually enters into the manufacture of something that is an article of food or drink.

Filtration by sand is merely a straining process. If properly carried out, it will remove matters held in suspension, and as the majority of colouring matters in liquids are merely solid particles (though of exceedingly small size), it will usually remove these also. Let anyone get a pail or tub with holes in the bottom, and quarter fill it with fine, clean, sharp sand (a piece of muslin or cloth should be placed at bottom and top to prevent channels being washed through the sand). If water coloured with umber or sienna be strained through this, it will show what a good decolorising agent sand is with earthy matters.

Before discoloured water is passed through a filter-bed, it is desirable to let it rest, so that the larger portion of the suspended matter be deposited by the natural process of gravitation, if possible. Of course, there may not be room or convenience for settling-tanks or beds, in which case the water passes to the filtering medium direct. The only objection to this is that the more matter the filter has to arrest, the more quickly it becomes inefficient, and requires cleaning. With small works it is only a moderate size tank or pit that is needed as a settling bed, the turbid water entering and passing through this, and flowing out at a point near the top to enter the filter chamber. If there is any chance of the water washing through this first tank into the filter at all rapidly, then provision must be made to prevent this, or the effect will be unsatisfactory. The water should either flow through very slowly indeed at all times, or a means be provided to let the water in the settling tank rest for a time before passing through to the filter. This is the best plan. It does not follow that the depositing tank, and the filtering material, and the reservoir for the purified water need be all together. Sometimes they are, but more commonly they are not. Convenience has to be studied. It may be mentioned here that wherever they are situated, every thought should be given to their being easily cleaned out. The cleaning, although often neglected in residence works, is of the utmost importance, as will be explained directly.

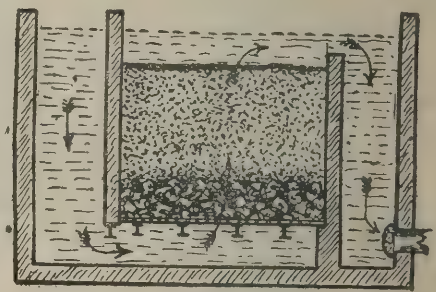
Fig. 1.

For surface waters that are, we may say, pure, except for solid matters held in suspension, the sand filter bed is very usually found sufficient. This also applies to less pure waters, if only to be used for manufacturing purposes, and are not used for drinking, nor form one of the ingredients of any manufactured food or drink. A brewery, for instance, requires very pure water. In large undertakings a filter bed of this kind is made by constructing a series of parallel arches of brickwork, without mortar or any cement material between the bricks. These arches are not large, they answer as a foundation for the filtering materials, but at the same time form a series of channels or tunnels for the purified water to pass away by. On the top of these arches is placed some 18in. to 24in. of fine gravel or very coarse sand. This material has no particular effect beyond preventing the fine sand being washed through, and choking the interstices between the bricks. This precaution is a necessary one, and with most all sand filter beds some coarser material has to come between the sand and the points where the water issues. On top of this layer of coarser material comes, say, 18in. to 24in. of fine sand. This is spread out evenly, and the water is allowed to float upon it, and eventually finds its way through to the brick channels below, from whence it passes to the reservoirs.

The thickness of sand stated is not really essential to remove the impurities in the water. What matters the sand arrests are stopped within an inch or two of the surface, and with certain discoloured waters which sand is not able to improve very materially, a thick bed is very little better than a thin one. The object of having a fairly thick bed is to allow of its upper surface being removed for cleaning purposes. At certain periods, depending upon the state of the water that is acted upon, the arrested matter gets accumulated to an extent that to let it remain longer would do more harm than good, possibly prove a source of contamination. It then become necessary to scrape off a few inches of the top surface and remove it for cleansing. The cleansing is done by agitating it in water or placing it in a trough of running water. It is afterwards replaced.

For smaller purposes, residences, small works, &c., nothing so extensive as that just explained is needed. An excellent arrangement possessing two distinct advantages is as Fig. 1. This is merely a brick-built pit (tiled or built with white glazed bricks for preference), with the sand bed as shown. The particular features of this are, that the filtration is upwards, not descending; this affords less opportunity for matter to be washed through the filtering medium. Then the space extending under the filter beds is practically an area for matter to settle—a settling bed in fact. In this case, although the direction is upwards, the sand requires to be topmost. It would not be satisfactory to place the sand direct on to the perforated wood bottom shown. With a bed of this kind the cleaning process would be very simple, but it would necessitate the entire removal of the material composing the bed. The material would require washing. It would not be requisite to have a second filter for use while one is being cleaned: the size of the works would not demand it. With the larger undertaking just referred to, the necessity of two beds, one in use and one out of use, would be very probable.

It is suggested by some who adopt the method of upward filtration (doubtless the best mode) that reversing the direction of the flow of water cleanses the filtering material. In other words, it washes back the matter that has collected upon and between the sand particles. Theoretically this sounds well, but in practice it is not found to work satisfactorily. If we poured water upon the upper surface of the filter-bed illustrated, as it soaked through doubtless it would carry back some of the arrested matter; but dislodge it all it certainly would not. The chief of the matter that it would disturb would be really solid substances, that would only require to be slightly disturbed to move, and these particles may be considered the least objectionable. The organic form of matter which collects in a limy and viscid state would not yield to such a gentle force as water passing back through a filter bed. The fact that the inch or two of sand, which really arrests the impurities, cannot be scraped off and treated by itself, is a little drawback to upward filtration. It must be understood, however, that with downward filtration the mere removal and treatment of the top surface is not sufficient for all time; the general body of the bed and all its channels and other parts have to be scoured periodically. The period for cleaning must vary considerably with the nature of the water. It cannot be too often, of course; but in some cases it is every three or four weeks of necessity. There is just one feature in favour of passing water backwards through a filter, in the fact that it disturbs some of the solid impurities, and washes them out as just explained; and as a filter yields less water every day, due to its pores being choked with the impure particles, it would be a good plan to adopt this backward flow of water now and again between the regular times of cleaning.

These cleaning processes are not an unnecessary trouble by any means. They are essential. The idea that a filter of any kind will act for ever, or at least for a very long period without attention, is fallacious. The filtering media not only gets choked, but the arrested matter is very generally of a kind that after a short time is a source of contamination itself. Some filters that the writer has had occasion to open have actually been underground, and having been unattended for a considerable period, their conditions have been disagreeable, to say the least. The rather common impression that filters need but little attention is doubtless due to the notion entertained that the material of the bed not only arrests objectionable matters, but that it by some means renders it innocuous, or spirits it away. It is forgotten that the sand merely stores up all the impure substances, and the longer it is left the greater the store must be.

This not only interferes with the passage of the water; but, worst of all, every particle of water has to be strained through this foul layer. Then, again, the impure material does not stay in its original state, but develops itself and introduces life, and, altogether, it soon gets into a state that is nauseous. Sand acts merely as a strainer—a sieve, in fact; the spaces between the particles of sand are smaller than the particles of matter to be arrested, and consequently the particles cannot pass through with the water that carried them. A druggist or a wine retailer may use a sheet of paper as a filter; it will arrest solid matters, but it does not alter the character of the liquid.. The next paper will speak of carbon filtration.

LONDON BRIDGE.

THE City of London has within its boundary three important bridges—London, Southwark, and Blackfriars. These bridges are maintained by the rents derived from the Bridge House Estates.

So carefully has this property been managed that sufficient money has accumulated to justify the erection of a fourth bridge, to be named the Tower Bridge, after the Tower of London, its near neighbour.

This bridge when completed will form one of the sights of London, and will, it is believed, assist very much to relieve the congested state of the traffic on London Bridge. Londoners will, therefore, have the advantage of a new bridge, at a cost of £750,000, without contributing one penny in the shape of taxation towards its construction.

The Tower Bridge, however, with all its mechanical appliances, can never detract from the simple beauty of London Bridge, or rob John Rennie, its designer, of the glory attached to his memory.

A bridge is a natural result of the development of a city on both sides of a navigable stream. Those who designed bridges in the past seemed to consider that they had only to do with forming a carriage-way across the river. It mattered little to them if in so doing they jeopardised the lives of those who carried out the traffic on the water spanned, or, indeed, whether they did not interfere with the water passage entirely.

Those who had to do with London bridges of the past forgot that one great advantage of a bridge is the education its surroundings always give to those who pass over it; the sight of the vessels being laden at the wharves is itself an inspiring object-lesson, and an impetus to commercial industry which ought not to be forgotten. To found a bridge was considered by our forefathers an act of piety almost as great as that of founding a church; thus the ecclesiastical powers had much to do with the London bridges now passed away.

No doubt from the earliest historical times there were means of crossing the Thames near the present London Bridge. Dion Cassius, in recording the invasion of Britain by the Emperor Claudius, A.D. 44, says: "The Gauls, however, again set sail, and some of them having passed over the bridge higher up the river, set upon the Britons on all sides."

How this bridge was constructed we do not know: it may have been simply a number of rough boats placed together to form a pathway; we do know that early in the 11th century at this spot was a low wooden construction built of thick, roughly-hewn timber, placed upon piles, with movable platforms to allow vessels to pass through. To avoid this obstacle, Canute, in 1016, cut a canal on the south side of the Thames, and thus conveyed his troops above bridge. That this must have been a structure with very little solidity we may gain from the fact that in 1008 Olaf the Norwegian fastened his vessels to the piles of the bridge, and did considerable damage to the structure.

It is said that a certain John Overs, a ferryman, left a considerable sum of money, which was utilised in erecting the church of the priory of St. Mary Overs, Southwark, and it was by the hands of the members of this fraternity that the first wooden bridge was built over the Thames.

Henry I. appropriated certain lands by which the bridge might be kept in repair; here, then, perhaps, is the origin of those estates from which the Bridge House Funds are derived. That there was a necessity for such a fund became evident from the fact that these wooden constructions had to fight against two enemies—storm and fire. On the 16th November, 1091, a violent storm swept away the bridge entirely, while the lands on either side were flooded for a considerable distance; in 1136, in the reign of Stephen, the bridge was again much injured, this time by its other enemy, fire.

It was evident to all that a bridge of stone must take the place of the wooden structure, which constantly needed repair. Another ecclesiastic comes to the front, this time Peter, the curate of St. Mary Colechurch, an edifice which before the Fire of London was to be found in Conyhoop-lane, on the north side of the Poultry. It was in the year 1176 that the bridge was commenced; it was not completed till the year 1209, and so was thirty-three years in building. In those days it was a common practice to tax some article of merchandise to obtain the funds for any great undertaking. Thus the tax on coals provided the money for building St. Paul's Cathedral; a tax on wool helped to provide the money to build the first stone London Bridge.

The new London Bridge had its piers raised upon platforms, or starlings as they were named; these were made of strong elm piles, covered by thick planks bolted together. Though the new bridge was constructed of stone, a large quantity of wood was used in the houses built upon it. On one pier a two-storied chapel was placed, dedicated to Thomas à Becket; the lower chapel could be reached from the river or from the floor of the bridge. It was here that Peter of Colechurch was buried, four years before the completion of the bridge.

The history of the first stone London Bridge is associated with many disasters and important historical facts.

In 1212 a fire occurred in Southwark, the populace rushed on to the bridge to view the spectacle, the houses on the bridge caught on fire, and some 3,000 persons lost their lives either by the flames or by drowning. In 1471 and in 1774 great damage was also done to the bridge by fire.

The severe winters proved terrible enemies to the bridge; five arches were destroyed in this way in 1282. In 1436 two arches at the south side, together with the bridge gates, fell. The reign of Elizabeth, with all its other glories, presents London Bridge restored in grand splendour; new gates were erected, and a tower three stories high, a huge pile, full of square Tudor windows. It was, however, the Nonsuch House which created such great admiration. This remarkable building was erected on the seventh and eighth arches, on the north side of the drawbridge. It was constructed in Holland, nothing but wood entering into its composition, and was fastened together with wooden pegs, not a single nail, or any particle of plaster being used in its construction. Its carved galleries and its richly-gilt panels made it one of the wonders of the age in which it was built.

The old bridge altogether must have had a curious appearance with its drawbridge, towers, chapel, gates, and colonnade constructed with the object of keeping passengers dry during stormy weather.

One cannot help smiling at the manner in which the funds necessary to keep the bridge in repair were raised from time to time. Both Henry IV. and Edward I. authorised certain monks, known as the Brethren of London Bridge, to solicit alms for the bridge all over the country.

In 1281 tolls were imposed, every foot-passenger one farthing, every packhorse a halfpenny, every vehicle drawn by a horse one penny.

The custody of the bridge was in some respects a sign of the freedom of the citizens. King John, of infamous memory, took the bridge from the keeping of the authorities, and his successors retained it till the year 1281. Henry III. gave the custody of the bridge to his Queen Consort. She received its profits and allowed the bridge to go to ruin.

With all its picturesqueness, the old bridge was condemned to go. Its 19 arches were a great impediment to the water traffic; the largest of these arches was only 46ft. wide, and this was only navigable for large craft for a few hours, just before and after high water. Ice collected around the buttresses of the arches, causing great damage to the shipping. The bridge had constantly to be repaired, something like £2,500 yearly being spent in this way for some years. In 1761, Smeaton was asked his advice. He recommended that the stones of the old City gates should be thrown into the river to strengthen the starlings. Though this represented about 1,000 tons of rubbish, it proved only a serious impediment to the navigation of the river. Passing through the narrow arches, or "shooting the bridge," as it was called, was always a dangerous practice, and often attended with loss of life.

It was this desire of allowing a free passage at all times and tides to ships of 200 tons burthen that caused a Committee of the House of Commons in 1801 to report: "That it is essential to the improvement and accommodation of the port of London that London Bridge should be rebuilt."

The architect and designer of the new bridge was John Rennie, a man of extraordinary stature and herculean strength, born in the year 1761. The first pile was driven on the 15th of March, 1824, and the first stone laid exactly 15 months after by Lord Mayor Garratt; but Rennie had died some four years before. The bridge was, therefore, completed in seven years and five months, under the superintendence of John Rennie, son of the designer, of William Jolliffe, and Sir Edward Banks. It may be interesting to mention here that Blackfriars and Westminster were both about eleven years in building, Waterloo was six years, and Southwark five.

The new bridge was a vast improvement on its forerunner; in place of the numerous small arches, we have five very beautiful elliptical arches, the central span of 152ft. being the largest elliptical stone arch in the world, the piers of each side of this being 24ft. in width. The arches on either side of the central one have a span of 143ft., the extreme arches 133ft.

The bridges designed by Peter of Colechurch and Rennie will hardly bear comparison. In one we had openings varying from 15ft. to 33ft.; in the other a total water-way of 692ft.

We see as we gaze upon London Bridge a structure of a "grand, beautiful, and antique air, so unlike the petty perforations and filagree work of Westminster, Waterloo, and Blackfriars Bridges." The exterior of the bridge is constructed of three kinds of granite—Aberdeen, grey Devonshire, brown and red granite of Peterhead. The fittings up of the piers, spandrels, roadway, &c., are of hard Bramwell Fall, a fine indurated sandstone of Derby and Whitby. The foundations of the piers are formed of beechwood piles, pointed with iron, driven from the interior of the coffer-dam to a depth of nearly 23ft. into the stiff blue clay forming the bed of the river. On the heads of these piles are laid two rows of horizontal sleepers, 12in. square, which are covered with beech planking, 6in. thick, on which is constructed the lowermost courses of masonry.

The enormous traffic on the bridge caused for many years fierce discussions in the Court of Common Council on the question of widening the bridge. Happily any such gross vandalism is now not contemplated, in prospect of the opening in a couple of years of the Tower Bridge. We hope, therefore, that London Bridge will remain in its naked beauty an ornament to the Metropolis for ages yet to come. The following figures from the City day census may be interesting as showing how vast is the traffic over this bridge:—During sixteen hours' day traffic 101,237 passengers and 12,652 vehicles passed over the bridge; during eight hours' night traffic 6,184 passengers and 1,715 vehicles; making a total for the twenty-four hours of 107,421 passengers and 14,367 vehicles.

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IMPROVEMENTS AT BLACKPOOL.

TWO engineering schemes of importance are in progress at this rapidly-growing watering-place—viz., the new Pier at the South Shore and the Eiffel Tower, while as soon as the Improvement Bill now before the House of Commons receives the Royal Assent, the extension of the North Shore Promenade will be undertaken. The new Pier will be of iron, and, including the head and approach, will have a total length of 1,020ft.; the width is 45ft., and the rectangular head measures 285ft. by 171ft. At the head will be a pavilion, containing a concert-hall 135ft. by 75ft., and seated for 1,700 people. The pier is carried on about 450 10in. cast-iron columns. The total cost of the structure will be about £40,000. Mr. Worthing, of South Shore, is the engineer, and Mr. Harker, of Manchester, the architect. Messrs. Butler and Co., Stanningley, near Leeds, are the contractors for the iron and steel work; Mr. T. H. Smith, builder, Blackpool, is the contractor for the timber portion of the pier deck; and Mr. W. Dean, builder, South Shore, the contractor for the woodwork. Good progress is being made with the great Tower, the design for which, by Messrs. Maxwell and Tuke, of Manchester, has been somewhat modified since it was selected in competition and illustrated in our pages. The site is in the centre of Blackpool, and includes an area of 6,000 square yards. The plan of the building will be almost rectangular in form, with a tower, 100ft. square in the centre, and rising to a height of 500ft. The base of this is to be used as a circus, around which are eight broad arcades for the sale of fancy articles. The outside portion of the ground floor, facing the three principal streets, will be devoted to shops. The heart of the first floor will be occupied by the circus gallery, and the remainder of the floor by a menagerie, aquarium, and waxwork exhibition. The second floor will be a promenade concert-room and floral hall, with an area of nearly 30,000sq.ft., with two stories of open-air balconies and cafés facing the sea. Galleries will be provided at 70ft. and 300ft. above the ground level, the lifts stopping at the latter level, from whence staircases will give access to the upper galleries. The towers will be built of steel girders strongly braced, and no projections break the line of latter below, the balcony at the top being ornamented by a lantern and cupola. The buildings inclosing the tower are treated in a free rendering of Jacobean, and are carried out in red brickwork, with terracotta dressings. The contract has been taken at £42,000 by Messrs. Heenan and Froude, of Manchester; and the foundations are completed, and the north-east leg commenced. The Promenade extension will add three-quarters of a mile to the promenade formed in 1870, already two miles in length, and is estimated to cost £47,500.

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PRICES.*—XXXVIII.

(All Prices Include Profit.)

IRONMONGER (*continued*).

Smith's Door-Springs, unfixed—

		£	s.	d.
No. 102 with brass shoe, very light, for 1⅝ doors	per set	0	12	0
Ditto ditto 1¾ ditto	ditto	0	13	3
No. 103 ditto 1⅝ doors	ditto	0	16	6
Ditto ditto 1¾ ditto	ditto	0	17	6
Ditto ditto 1⅞ ditto	ditto	0	18	0
Ditto ditto 2 ditto	ditto	0	18	6
No. 104 for medium doors, 1⅝ thick	ditto	0	18	0
Ditto ditto 1¾ ditto	ditto	0	18	9
Ditto ditto 1⅞ ditto	ditto	0	19	6
Ditto ditto 2 ditto	ditto	0	19	6
Ditto ditto 2⅛ ditto	ditto	1	4	0
Ditto ditto 2¼ ditto	ditto	1	5	0
No. 105 for heavy doors 1¾ ditto	ditto	1	1	6
Ditto ditto 1⅞ ditto	ditto	1	2	0
Ditto ditto 2 ditto	ditto	1	2	9
Ditto ditto 2⅛ ditto	ditto	1	4	0
Ditto ditto 2¼ ditto	ditto	1	5	0
No. 106 for ex. heavy doors, 1¾ ditto	ditto	1	9	0
Ditto ditto 1⅞ ditto	ditto	1	10	0
Ditto ditto 2 ditto	ditto	1	11	6
Ditto ditto 2⅛ ditto	ditto	1	12	0
Ditto ditto 2¼ ditto	ditte	1	12	9
Ditto ditto 2½ ditto	ditto	1	14	0
No. 109 very powerful, for banks, &c. 2¼ ditto	ditto	3	0	0
Ditto ditto 2¼ ditto	ditto	3	6	0

Climax Patent Door-Spring—

		£	s.	d.
No. 1 for very light doors, 1¼ ditto	ditto	0	11	6
Ditto ditto 1⅜ ditto	ditto	0	12	0
No. 2 for light doors 1¼ ditto	ditto	0	13	6
Ditto ditto 1⅜ ditto	ditto	0	14	0
Ditto ditto 1½ ditto	ditto	0	15	0
No. 3 for medium doors 1⅝ ditto	ditto	0	15	6
Ditto ditto 1¾ ditto	ditto	0	16	0
Ditto ditto 1⅞ ditto	ditto	0	17	0
Ditto ditto 2 ditto	ditto	0	17	6
Ditto ditto 2⅛ ditto	ditto	0	18	0
Ditto ditto 2¼ ditto	ditto	0	18	6
No. 4. Heavy doors 1¾ ditto	ditto	0	19	0
Ditto ditto 1⅞ ditto	ditto	0	19	0
Ditto ditto 2 ditto	ditto	1	0	6
Ditto ditto 2⅛ ditto	ditto	1	1	0
Ditto ditto 2¼ ditto	ditto	1	2	0
No. 5. Extra heavy doors 1¾ ditto	ditto	1	4	0
Ditto ditto 1⅞ ditto	ditto	1	4	0
Ditto ditto 2 ditto	ditto	1	4	9
Ditto ditto 2⅛ ditto	ditto	1	5	0
Ditto ditto 2¼ ditto	ditto	1	6	0

Robinson's Patent Spring Centres—

		£	s.	d.
For doors up to 1¼ thick	each	1	2	0
Ditto ditto 1½ ditto	ditto	1	4	0
Ditto ditto 2 ditto	ditto	1	12	0
Ditto ditto 2¼ ditto	ditto	1	14	0
Ditto ditto 2½ ditto	ditto	2	2	0

Add 20 per cent. for gunmetal slides and bearings.

Moser and Sons' "Donjon" Spring Hinge—

		£	s.	d.
Japanned double action for 1¾ to 2 door	per pair	0	13	0
Bronzed ditto ditto	ditto	1	4	0
Extra quality real bronze ditto	ditto	3	3	0

Adams's Adjustable Swing Hinge—

		£	s.	d.
No. 5. Plate 7 by 5½, shoe 1 to 1½	per set	1	6	6
Ditto ditto 7 by 5½, ditto 1½ to 2¼	ditto	1	10	0
No. 4. ditto 7½ by 6, ditto 1½ by 2¼	ditto	1	16	0
No. 3. ditto 7 by 7½, ditto 2⅜ by 3	ditto	2	2	0
No. 2. ditto 8½ by 7½ ditto ditto	ditto	2	8	0
No. 1. ditto 9⅝ by 8½ ditto ditto	ditto	2	17	0

Hill and Williams Swing Door-Springs—

		£	s.	d.
No. 68 with adjusting screw with brass shoe for 2in.	per set	1	10	0
Ditto ditto ditto ditto 2⅛in.	ditto	1	12	0
Ditto ditto ditto ditto 2¼in.	ditto	1	13	0
Ditto ditto ditto ditto 2⅜in.	ditto	1	16	0
Ditto ditto ditto ditto 2½in.	ditto	1	18	0
No. 31 without adjustment for 2in.	ditto	1	5	0
Ditto ditto ditto ditto 2⅛in.	ditto	1	6	0
Ditto ditto ditto ditto 2¼in.	ditto	1	7	6
Ditto ditto ditto ditto 2⅜in.	ditto	1	9	0
Ditto ditto ditto ditto 2½in.	ditto	1	10	0

Smith and Stevens Janus Door-Springs—

	£	s.	d.
No. 1. Y with brass trough shoe	1	16	6
Ditto with iron strap shoe	1	15	0
Extra for outer box	0	11	0
Lubricating mixture and screws	0	2	0
No. 2. Z with brass shoe	3	5	0
Ditto with iron strap shoe	3	2	0
Extra for outer box	0	18	0
Lubricating mixture and screws	0	5	6

The No. 1 spring is suitable for doors up to 2ft. 9in. wide.

The No. 2 spring for doors above 2ft. 9in.

The prices include spring, shoe, and regulating top centre.

Improved Janus swivel centres for very tall doors, or for top hanging for Gothic or curved heads—

		£	s.	d.
Single centres up to 2in. thick	each	0	10	6
Ditto above ditto ditto	ditto	0	13	6
Double centres up to ditto	ditto	1	0	0
Ditto above ditto	ditto	1	4	0

Model Door-Spring (A. Smith's)—

	£	s.	d.
X for doors up to 2ft. 6in. wide, and with brass trough shoe	1	4	0
Ditto with iron ditto	1	3	0
Extra for outer box	0	4	6
Y for doors up to 36in. wide	1	7	6
Ditto with iron strap shoe	1	6	0
Extra for outer box	0	4	6
Z for doors up to 42in. wide	1	10	0
Ditto with iron strap shoe	1	8	0
Extra for outer box	0	4	6
Lubricating mixture and screws	0	2	0

Hydraulic Spring and Check—

		£	s.	d.
X O for doors up to 24in. wide, with brass shoe		1	8	0
Ditto with iron strap shoe, double action only		1	6	0
Extra for outer box		0	5	0
X for doors up to 30in., and with brass shoe ...		1	9	0
Ditto with iron strap shoe, double action only	each	1	6	6
Extra for outer box	ditto	0	5	0
Y for 36in. door, with brass shoe	ditto	1	17	6
Ditto with iron strap shoe, double action only	ditto	1	14	0
Extra for outer box	ditto	0	7	0
Z for doors 42in. wide, with brass shoe	ditto	2	7	0
Ditto with iron strap shoe	ditto	2	3	0
Extra for outer box	ditto	0	8	6
Z_2 for doors 48in. wide, with brass shoe	ditto	2	15	0
Ditto with iron strap shoe	ditto	2	10	0
Extra for outer box	ditto	0	8	6
Specially-prepared non-freezing lubricating mixture	per pint	0	1	3

Battersea Double-Action Spring (A. Smith)—

		£	s.	d.
X for 30in. door, with brass shoe	each	1	9	0
Ditto with iron strap shoe	ditto	1	7	0
Extra for outer box	ditto	0	5	0
Y for 36in. door, with brass shoe	ditto	2	2	0
Ditto with iron strap shoe	ditto	1	15	0
Extra for outer box	ditto	0	7	0
Z for 42in. door, with brass shoe	ditto	2	4	0
Ditto with iron strap shoe	ditto	2	0	0
Extra for outer box	ditto	0	8	6

Ben Turner's—

		£	s.	d.
Any door up to 2½in.	ditto	1	18	0
Ditto strong	ditto	2	5	0
Ditto extra strong	ditto	3	5	0
Ditto with extra centre	ditto	3	10	0
Sympathetic springs for two doors	ditto	5	5	0

Ben Turner's: The Silent, double-action, spring centres—

		£	s.	d.
For doors up to 30in. wide	each	1	2	0
Ditto ditto 36 ditto	ditto	1	6	0
Ditto ditto 42 ditto	ditto	1	12	0
Ditto ditto above	ditto	1	18	0

(5 per cent. less for iron strap shoes.)

Jeffery's Automatic Door-Check and Spring—

		£	s.	d.
Suitable for doors 6ft. 9in. by 2ft. 10in., and 1¾in. or 2in. thick, lacquered	each	1	3	0

(This price includes oil and screws.)

The Shaw Door-Check and Spring—

		£	s.	d.
Doors not exceeding 30in. wide and 1¾in. thick		1	3	0
Ditto ditto 32 ditto 2	ditto	1	6	6
Ditto ditto 42 ditto 3	ditto	1	10	0
Ditto ditto 48 ditto 3	ditto	1	14	0

The Norton Door-Check and Spring—

		£	s.	d.
Doors not exceeding 30in. wide and 1¾in. thick		1	2	6
Ditto ditto 32 ditto 2	ditto	1	7	0
Ditto ditto 42 ditto 3	ditto	1	9	0
Ditto ditto 48 ditto 3	ditto	1	13	0

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Verity's Air Check and Spring—

		£	s.	d.
Malleable iron, size No. 1	each	0	17	0
Ditto ditto ditto No. 2	ditto	1	1	0
Ditto ditto ditto No. 3	ditto	1	4	0
Ditto ditto ditto No. 4	ditto	1	8	0
Ditto ditto ditto No. 5	ditto	1	13	0
Gunmetal ditto No. 1	ditto	1	1	0
Ditto ditto ditto No. 2	ditto	1	4	0
Ditto ditto ditto No. 3	ditto	1	10	0
Ditto ditto ditto No. 4	ditto	1	15	0
Ditto ditto ditto No. 5	ditto	2	0	0

Fryer's "Facile"—

Iron japanned (light)	each	0	2	0
Ditto (medium)	ditto	0	2	6
Ditto (strong)	ditto	0	3	6
Bronzed ditto (light)	ditto	0	2	3
Ditto (medium)	ditto	0	2	9
Ditto (strong)	ditto	0	3	6
Brass polished (light)	ditto	0	3	0
Ditto (medium)	ditto	0	4	0
Ditto (strong)	ditto	0	5	6
Nickel plated (light)	ditto	0	3	6
Ditto (medium)	ditto	0	4	6
Ditto (strong)	ditto	0	6	6

Weston's Steel Wire Door-Springs—

3ft. long with regulating fittings	0	1	6
3ft. 6in. long ditto ditto	0	1	9
4ft. long ditto ditto	0	2	0
4ft. 6in. long ditto ditto	0	2	3
5ft. long ditto ditto	0	2	6

Helical Door-Springs and Screws—

	each. s.	d.		each. s.	d.
4in. japanned iron	1	10	4in. brass barrel ...	2	6
5in. ditto ditto	2	6	5in. ditto ditto	3	0
6in. ditto ditto	3	0	6in. ditto ditto	3	9
7in. ditto ditto	4	0	7in. ditto ditto	5	6
8in. ditto ditto	6	0	8in. ditto ditto	6	6
9in. ditto ditto	7	3	9in. ditto ditto	8	0
4in. all brass	3	0	7in. all brass	8	6
5in. ditto ditto	4	0	8in. ditto ditto	9	6
6in. ditto ditto	5	0	9in. ditto ditto	11	0

Rat-Tail Springs and Screws—

12in. strong japanned	1	0	12in. patent regulating	1	6
14in. ditto ditto	1	3	14in. ditto ditto	1	8
16in. ditto ditto	1	5	16in. ditto ditto	2	3
18in. ditto ditto	1	6	18in. ditto ditto	2	6
20in. ditto ditto	1	8	20in. ditto ditto	2	9
24in. ditto ditto	1	10	24in. ditto ditto	3	0
12in. extra strong japanned...	1	3	12in. ditto extra strong	1	8
14in. ditto ditto	1	4	14in. ditto ditto	1	10
16in. ditto ditto	1	6	16in. ditto ditto	2	2
18in. ditto ditto	1	8	18in. ditto ditto	2	6
20in. ditto ditto	1	9	20in. ditto ditto	2	9
24in. ditto ditto	2	0	24in. ditto ditto	3	0

Single-Action Spring Butts and Screws—

	per pair. s.	d.		per pair. s.	d.
3in. iron, No. 318 ..	1	8	3in. brass No. 327 ...	6	6
3½in. ditto ditto ...	2	0	3½in. ditto ditto ...	7	6
4in. ditto ditto ...	4	6	4in. ditto ditto ...	8	0
5in. ditto ditto ...	5	9	5in. ditto ditto ...	10	0
6in. ditto ditto ...	7	0	6in. ditto ditto ...	11	6
7in. ditto ditto ...	14	0	7in. ditto ditto ...	26	0

Double-Action Spring Butts and Screws—

				each.	
3in. iron No. 4378 ..	4	9	3in. blanks only, No. 336 ...	1	4
3½in. ditto ditto ...	6	6	3½in. ditto ditto ...	1	6
4in. ditto ditto ...	7	6	4in. ditto ditto ...	1	11
5in. ditto ditto ...	9	0	5in. ditto ditto ...	2	3
6in. ditto ditto ...	10	0	6in. ditto ditto ...	2	9
7in. ditto ditto ...	15	6			
				each.	
3in. brass, No. 4379	7	6	3in. ditto, blanks only, No. 337	2	4
3½in. ditto ditto ...	9	6	3½in. ditto ditto ...	8	0
4in. ditto ditto ...	11	0	4in. ditto ditto ...	3	9
5in. ditto ditto ...	15	0	5in. ditto ditto ...	4	9
6in. ditto ditto ...	17	6	6in. ditto ditto ...	5	9
7in. ditto ditto ...	25	6			

A pair consists of one spring butt and one blank butt.

Brass Barrel, Back Springs and Screws—

2½in. plate 4in. wide, No. 308	each	0	3	6
2¾in. ditto, 4¼in. ditto ditto	ditto	0	4	0
3¼in. ditto, 5½in. ditto ditto	ditto	0	4	9
3½in. ditto, 6in. ditto ditto	ditto	0	5	6
3¾in. ditto, 6¼in. ditto ditto	ditto	0	6	0
4⅛in. ditto, 7in. ditto ditto	ditto	0	7	3
4¾in. ditto, 7¼in. ditto ditto	ditto	0	8	9

Brass Circular Door Springs and Screws—

	each.			each.	
4½in. plate, No. 335	5	6	4¼in. ditto, second quality, No. 310	3	9
4¾in. ditto ditto ...	6	3	4¾in. ditto ditto ...	4	3
5in. ditto ditto ...	6	9	5in. ditto ditto ...	4	9
5¼in. ditto ditto ...	7	3	5¼in. ditto ditto ...	5	3
5¾in. ditto ditto ...	7	9	5¾in. ditto ditto ...	6	9
6⅛in. ditto ditto ...	8	9	6⅛in. ditto ditto ...	7	3
6⅝in. ditto ditto ...	9	9	6½in. ditto ditto ...	7	9

"Janus" Buffer Spring—

To check the blow of swing door.

Brass	each	9 6	Iron	each	8 0

Redmund's Spring Hinges, Single Action—

	each. s.	d.		each. s.	d.
2½in. iron spring hinge	3	0	4in. iron spring hinge	3	10
3in. ditto ditto	3	4	4½in. ditto ditto	4	2
3½in. ditto ditto	3	6	5in. ditto ditto	4	6

Ditto Brass Plated—

2½in. brass tubed and plated	5	6	4in. brass tubed and plated	7	6
3in. ditto ditto	6	0	4½in. ditto ditto	8	0
3½in. ditto ditto	6	6	5in. ditto ditto	9	9

Redmund's Double Action—

	per pair. s.	d.		per pair. s.	d.
3in. iron	12	0	4in. iron	14	6
3½in. ditto	13	0	4½in. ditto	17	0

Ditto Brass—

3in. brass with iron joints	19	0	4in. brass with iron joints	22	0
3½in. ditto ditto	20	0	4½in. ditto ditto	26	0

Gerishe's Double-Action Spring Butts—

	per pair.			per pair.	
2½in. iron (adjustable)	9	0	4½in. iron (adjustable)	14	0
3in. ditto ditto	10	6	5in. ditto for 2½"door	15	6
3½in. ditto ditto	11	6	6in. ditto for 3"door	18	6
4in. ditto (2"door)	12	6	7in. ditto	24	0

Ditto, Brass—

2½in. for 1½ door ...	15	6	4½in. for 2⅛ door ...	24	0
3in. for 1⅝ door ...	16	6	5in. for 2⅜ door ...	28	0
3½in. for 1¾ door ...	19	0	6in. for 3 door ...	35	0
4in. for ditto ...	21	0	7in. for ditto ...	42	8

Gerishe's Single-Action—

	each.			each.	
2½in. iron	3	3	2½in. brass ditto ...	4	9
3in. ditto	3	6	3in. ditto ...	6	3
3½in. ditto	3	9	3½in. ditto ...	7	0
4in. ditto	4	6	4in. ditto ...	8	0
4½in. ditto	4	10	4½in. ditto ...	9	0
5in. ditto	5	6	5in. ditto ...	10	6
6in. ditto	7	3	6in. ditto ...	12	6
7in. ditto	9	0			

Indiarubber Door-springs—

No.	each.		No.	each.	
1 size with metal eyes	0	8	3 strong ditto	1	3
2 ditto ditto	0	10	5 extra ditto	1	6

Coil Door-springs—

1 for light screen doors	0	9	3 for medium doors	1	1
2 strong	0	11	4 for large doors ...	1	6

Indiarubber Buffers to Screw to Floor—

1 grey with wood centre	0	4	2 coloured solid rubber	0	8
Ditto large	0	6	4 ditto to screw to wall	0	8

Public-House Door-Springs—

Lancewood, with projecting brackets	each	0	3	9
48in. leather straps, 2in. wide, and brass buckles	ditto	0	3	3
54in. ditto ditto	ditto	0	3	6
6 in. ditto ditto	ditto	0	4	0
Hooks and staples, 4½in. by 1½in., of japanned malleable iron	per pair	0	1	0
Brass ditto ditto	ditto	0	2	3

Rollers: "Hatfields," for hanging sliding doors—

2in. bowl, 2ft. run	each	0	3	3
2½ ditto 2ft. 6in. run	ditto	0	4	3
3 ditto 3ft. run	ditto	0	5	6
4 ditto 4 ditto	ditto	0	6	9
5 ditto 5 ditto	ditto	0	9	6
6 ditto 6 ditto	ditto	0	13	0
6½ ditto 7 ditto	ditto	0	18	6
7 ditto 8 ditto	ditto	1	1	0
8 ditto 10 ditto	ditto	1	8	0
8 ditto 12 ditto	ditto	1	13	0

Fixtures for hanging rollers, wrought-iron rail, bolts, nuts, and washers, cast-iron brackets for—

2ft. doors	per set	0	8	9
2½ ditto	ditto	0	10	0
3 ditto	ditto	0	12	0
4 ditto	ditto	0	17	6
5 ditto	ditto	1	9	0
6 ditto	ditto	1	18	0
7 ditto	ditto	2	2	0
8 ditto	ditto	2	10	0
Bottom rollers, each	from	0	1	9
Side rollers, each	ditto	0	2	9
Wrought-iron rail for bottom rollers,	per ft. run	0	0	6
Cast-iron flush rail	ditto	0	0	7

Adams's Reversible Action for Sashes and Frames, for turning the outside inward for cleaning—

No. 173, unfixed (2 sashes)	per set	0	7	6
Ditto larger size, unfixed (2 sashes)	ditto	0	10	0

Penney's Ditto—

2in. sashes and frames, primed and glazed with 15oz. sheet	per foot super.	0	2	6
For applying the patent to existing windows ...		0	1	4

ARCHÆOLOGICAL SURVEY: N.W. PROVINCES AND OUDH CIRCLE, INDIA.

THE Governmental Progress report of the architectural survey of this district, ordered towards the end of 1889, has now been published, and Mr. Edmund W. Smith, who is in charge of this work, gives the following particulars in the course of his detailed report dated from Lucknow:

On arriving at Fathpur Sikri the buildings were examined, and it was decided to commence operations on that known as the Panch Mahal, or the five-storied pavilion—a building erected by Akbar, probably as a pleasure resort; or it may have been used exclusively by the ladies and children of the court. The peculiar feature of the structure is that each story is smaller than that upon which it stands, till at last only a small kiosk supported on four square shafts remains. The "key-note" of the design appears to have been taken from that of a Buddhist Vihâra. On the ground-floor, which measures 57ft. 11in. by 72ft. 4in., there are 88 columns, on the first 56, on the second 20, on the third 12, and on the fourth 4. The outer rows are all "coupled." Those on the first floor are remarkable on account of the great variety of design, no two being exactly alike in all respects. The sides of the building were at one time inclosed by stone screens, and the ground-floor divided into cells. The staircases leading from the first to second floor, and third and fourth are modern, the originals having been removed some few years ago.

The entire building has been thoroughly surveyed, and plans, elevations, sections, and details have been prepared to illustrate the whole in 24 sheets.

The next building selected was Miriam's Kothî, formerly occupied by Akbar's so-called Christian wife, Miriam-uz zamânî. It consists of an oblong block measuring 59ft. 10in. by 48ft. 5in. It stands on a podium, and is conveniently planned, and has four rooms on the ground and three on the upper floor—from which, on the south side, steep staircases lead to the roof, at the north end of which is a pavilion carried on eight square shafts surmounted by heavy bracket capitals. It was originally known as the *Sonahrâ Makân* or "Golden House" on account of its having been entirely coated with that material. Upon this field frescoes were painted, of which some are partially extant, notably that known as "The Annunciation" over the north-west doorway, and one on the corresponding doorway on the east façade. The interior of the building also was richly decorated. The principal frescoes have been carefully delineated, and a set of drawings prepared of the entire structure. The interior and exterior decorations of the house were irreparably spoilt some years ago by being whitewashed. This has to an extent been removed, and, unfortunately, with it most of the paintings. The chambers on the upper floor are still coated with whitewash, beneath which are remains of painted ornament. A painted ceiling can be traced in the small room on the east side of the house, as well as some mural decoration in this and the corresponding room on the west side.

After the completion of the survey of Miriam's Kothî, the "Dîwân-î-khâs," or "Privy Council Chamber," was taken up. It is one of the most remarkable buildings at Fathpur-Sikri. Although from the exterior it appears to be a double-storied building, it is found on entering to be open from the floor to the roof. Standing in the centre is a large octagonal shaft on a square base, surmounted by a huge circular capital composed of three tiers of brackets, each tier projecting in front of the other, the lowest springing from the top of the shaft. Radiating from the top of the cap to the four corners of the building are as many causeways, at the end of which—so tradition says—sat Akbar's four ministers; whilst the Emperor occupied the central seat over the capital. On the east and west sides are narrow staircases leading to the ground and the roof, which, although now uninclosed by a parapet, was originally surmounted by one of stone trellis-work. A plan of the ground floor has been made, upon which is shown the old geometric stone paving, and another of the upper floor, giving the positions of the staircases, causeways, corridors, &c., besides which a section has been made from west to east looking north, and a large drawing of the central shaft, as well as sheets of details, giving samples of the Jâli-work, dripstones, &c.

To the east of the building is a small channel which carried the overflow from the tank in front of the Khwâbgâh to that on the north side of the Dîwân-î-khâs. For some time past it has been filled up with earth and rubbish, but this we have removed, as it is one of the channels formed in connection with the waterworks.

Whilst some of the draftsmen were drawing the Dîwân-î-khâs, a survey of "the Sultânâ's House" was commenced, and on account of the elaborate nature of the work, occupied us nearly to the end of the season. Tradition asserts it was erected for the Turkish wife of Akbar, but it is very doubtful whether he ever married a Turkish lady. As it now stands, the building consists of one room, 16ft. by 16ft. 3in., surrounded by verandahs. But though so small, it is a gem the beauty and richness of which is not to be surpassed. From roof to floor is a mass of ornament, and on such a minute scale that one wonders how the workmen were found to execute it. Exterior as well as interior is decorated, and even the soffits of the drip-stone and cornices are elaborately carved. The verandah ceilings on the north, south, and east sides are divided into a series of small decorated panels.

In addition to the drawings, several photographs were taken, and 139 casts of the ornament were prepared, which have been deposited in the Provincial Museum, Lucknow. In future the preparation of casts will form part of the duties of the Archæological Survey officers, as whilst in camp they have excellent opportunities afforded them for making a good and large collection, and thus preserving permanent models of exquisite architectural ornament which year by year is crumbling away, and will in the course of time be entirely lost sight of.

Bîr Bal's house, next to the Turkish Sultânâ's house, is one of the most elaborate pieces of work in the North-Western Provinces. It was erected by Râjâ Bîr Bal in 1571 A.D., and was probably used by his daughter. It is two-storied, and has four rooms and two entrance porches on the ground floor, and two square chambers, covered by domes, on the upper floor. Mr. Fergusson, in speaking of the building, says: "It is impossible to conceive anything so picturesque in outline, or any building carved and ornamented to such an extent, without the smallest approach to being overdone or in bad taste." Unfortunately, some of the doorways have been filled in with modern architraves, quite out of keeping with the style of architecture, and the jâlî fanlights blocked up with unsightly slabs of stone. Those on the upper floor have even been filled in with plaster, &c.

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THE NEW NATIONAL SCOTTISH OBSERVATORY, EDINBURGH.

[WITH LITHOGRAPHIC ILLUSTRATIONS.]

IN the middle of 1888 the Earl of Crawford and Balcarres offered to the Government, for use in a National Scottish Observatory, the splendid and valuable equipment of his own observatory at Dunecht. The Government accepted the gift, but the space available at the Royal Observatory on the Calton Hill was altogether inadequate for the housing of the instruments, and so the question of a new building was forced upon them. A committee was accordingly appointed by the Secretary for Scotland to select a site and make needful arrangements. The committee consisted of Earl Crawford, Lord M'Laren, Prof. Tait, Prof. Copeland (the Astronomer Royal for Scotland), and the Queen's Remembrancer. They, after inspecting various sites in the neighbourhood of Edinburgh, recommended one on Blackford Hill, which was tested for freedom from vibration and suitability in other respects, and was found satisfactory; and eventually a site on the eastern slope of the hill, just above the road leading up from the Harrison Arch, and extending to 3½ acres, was conveyed by the Edinburgh Corporation to the Commissioners of Her Majesty's Works and Public Buildings for the purpose of the new observatory. The plans were prepared by Mr. W. Wybrow Robertson, of Her Majesty's Board of Works, but everything had to be subordinated to scientific considerations. We fully illustrate the work by views, plans, and sections to-day from the architect's drawings. The buildings consist of an observatory proper and transit house, placed along the north front of the site, with detached residences—one for the Astronomer Royal and a double villa for the two assistants—on the south slope, the residence of the astronomers on the hill being necessary, in order to permit of their taking continuous observations. There is also a gatehouse at the entrance, which is to the south side. The observatory proper consists of a T-shaped building, with a frontage towards the north of 180ft., and as it is this front which will be in view of the citizens every day, its architectural features are of importance. It shows towards the city an unbroken range of flat-roofed central buildings having a mean height of 30ft., and consisting of a principal story and a basement. These are flanked by towers of unequal size, crowned with large cylinders of copper—the larger tower, 75ft. high and 40ft. in diameter, is placed at the east end; and the smaller, 44ft. high and 27ft. in diameter, is placed at the west end. The observatory will be used for physical as well as for astronomical observations, and the accommodation is therefore more extensive than would be required for one purpose only. In the towers are to be placed the two large equatorial telescopes. The Dunecht equatorial, which is a 15in. refractor, is to be placed in the eastern or larger tower, and the tower has been carried up to the height stated in order that the telescope may be able to sweep the horizon without obstruction. The Calton Hill equatorial, which is a 24in. reflector, will occupy the western or smaller tower, and will command the whole circle except what is cut off by the larger tower. The equatorial telescopes are to rest on massive, hollow, brick piers, completely isolated from the surrounding walls and floors, as illustrated in the accompanying sections. The upper stage of each tower will consist of the cylinder of copper in which the equatorial telescopes are placed, and each has an observing aperture extending from the horizon to the zenith. Each will rotate upon a vertical axis so as to admit of its being turned with the telescope. The cylindrical form has been adopted for these domes in preference to the usual hemispherical shape, on account of the greater ease with which the instruments can be turned. The advantage of this form has been recognised for some time, but it has not hitherto been adopted in an observatory of the first class. The apartments below the domes will be used as chart rooms, and in the base of the larger tower will be placed a suite of rooms for photographic purposes. The central range of buildings between the towers is to be occupied by laboratory rooms for the astro-physical side of the observatory work. In the angle between the large tower and the central buildings, at the back, has been placed a turret carrying a spiral stair, and beside it is a smaller turret carrying a lift for convenience in moving apparatus. The flat roof of the central buildings has been adopted to facilitate communication between the towers, so that heavy accessories may be easily transferred, and so also that room may be found for the numerous instruments used in the meteorological open-air observations. In the principal story, beginning at the west end, there will first be a room used for spectroscopic work; and to the south of the building, outside this room, will be placed a heliostat, by which the rays of the sun will be reflected into the apartment through a 10in. aperture in the wall. Next will come the experimenting room, or working laboratory, having three isolated pillars for delicate measuring operations, and there also the mean-time clocks will be kept. Then comes an electric room, which will be the centre of the electric system for lighting and scientific purposes. It will contain the large stock of electrical apparatus now at Dunecht, the meteorological registering apparatus, the barograph, and also the apparatus for controlling the time-signal from the Nelson Monument. Next will come the mechanics' workshop and cleaning room; and lastly the chronograph room, which will contain the large barrel chronograph from Dunecht, and all the smaller astronomical instruments which are not in continuous use. The room is also designed to be used for observing purposes by students. The basement of the range is to be occupied by stores, workshops, and printing room. Southward from behind the central building extends a wing 80ft. in length and 28ft. wide. It consists of three floors, and has the entrance to the observatory on the west side. The basement floor is to be occupied by the heating apparatus, and rooms for the dynamos and accumulators in connection with the electrical apparatus. The principal floor will contain the library, with accommodation for about 30,000 volumes, which will house the magnificent astronomical library at Dunecht, which, it is understood, is not surpassed by any in Europe, except that of the Russian Imperial Observatory at Pultowa. Besides the library, this floor will contain the directors' room, ante-room, and computing-room. The top floor is to be occupied by a long apartment to be used in connection with the 15in. heliostat, which is placed on the roof of the main building already described. It is for spectroscopic and photographic purposes when long distances are required, and insulated rails are fitted up in it so that the delicate instruments in use are free from vibration. The room will be lighted from the roof by skylights, the shutters of which can be closed instantaneously. The placing of the roof was one of the many points in which scientific considerations had to be carefully taken into account, and it had to be at such a height that the heliostat could receive the rays of the sun at any hour of the day throughout the year. At a distance of 80ft. west from the main observatory, and in line with the north-west front of it, is to be placed the transit house, which is connected with the main building by a covered way. It is so placed that its meridian line is entirely clear of the residences to the south of it. In designing the transit house nice considerations of temperature had to be weighed, equability of temperature being of the utmost importance in obtaining accuracy of observation. Accordingly the walls and roof are to be of corrugated iron, covered with curved louvres of tinned steel, with an air space between of about 6in., the object being to prevent radiation and secure uniformity of temperature between the inside and the outside of the building. In the transit house will be fitted up on insulated piers the splendid transit circle, with telescope of 8·6in. aperture, and the two large collimators from Dunecht. The observatory being above the level at which the water of the Edinburgh and District Water Trust can be supplied by gravitation, a large tank will be provided on the principal floor of the great tower for the storage of water, which will be forced up by a pumping apparatus placed in an underground chamber near the Harrison Arch, and worked by an electric motor with a current supplied from the observatory. The dwellings will be lighted with gas, but electric light will be provided for the observatory buildings, principally on account of its superior efficiency in connection with instrumental work. The whole observatory will be heated with hot water from a central furnace, so that there is only one chimney in the whole range of buildings. The object is to avoid the distraction of the instruments, because every fireplace would be a disturbing influence which would hinder accuracy of observation. The cost of the building, including fittings, will be about £34,000, and the contract has been intrusted to Messrs. W. and J. Kirkwood, Edinburgh. It need scarcely be added that when the buildings are completed Scotland will be provided with an observatory of the very first class.

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CONCENTRATION AND OVER-CROWDING.

THE baneful results of concentration of the human dwellings in our cities was the subject of a lecture by Prof. G. V. Poore at University College some time ago. The Professor said the increased frequency and virulence of London fogs was due to the concentration of houses and multiplication of chimneys on a given area. Overcrowding also produces those diseases which are propagated by air-borne contagion. "The invention of the steam-engine, the cast-iron water-pipe, and the hydraulic lift had removed all the practical drawbacks of high buildings, and had enabled engineers to construct human warehouses almost unlimited in height, and without any curtilage whatever." In Chicago, where this class of buildings had reached a maximum, ample space might have been allowed for the houses. In consequence of this reckless building, the zymotic death-rate of Chicago for 1890 and 1891 was nearly double that of London. The Professor also points out the undeniable fact that the air of London is getting more foul, vegetation is arrested—a sure sign of serious contamination. He says, in short, that London is "hygienically in a critical state, for not only do the green leaves of trees and plants absorb carbonic acid from and give off oxygen to the air; but their roots are no less useful in the draining and purifying the soil upon which we live." Unless a check is placed on overcrowding, Prof. Poore says London will become less healthy and less habitable. From an æsthetic and hygienic view, the prospect is disastrous.

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Mr. F. Du Cane Godman, F.R.S., has presented to the British Museum a blue Persian bowl, regarded as a unique specimen of one of the most brilliant phases of 13th century Persian art. The bowl is figured in plate 14 of Mr. Henry Wallis's "Persian Ceramic Art."

Professor Banister Fletcher, F.R.I.B.A., M.S.A., who, it will be remembered, sat in the short Parliament of 1885 as Liberal member for the Chippenham Division, has come forward as a Gladstonian candidate for the representation of Bournemouth.

CONTENTS.

Contrariety in Architecture 821
Gallery Design 821
Dudley Gallery Art Society 823
The Fellowship of the R.I.B.A. 823
Filtering Water.—I. 824
London Bridge 825
Improvements at Blackpool 826
Prices.—XXXVIII. 826
Archæological Survey: N.W. Provinces and Oudh Circle, India 827
The New National Scottish Observatory, Edinburgh... 828
Concentration and Overcrowding 828
The Building News Directory XIII
Our Illustrations 829
Competitions 829
Wayside Notes 848
Foreign Sewage Precipitation Works 848
Technical Arts at the Albert Hall 849
Building Intelligence 849
Correspondence 849
Intercommunication 850
Legal 850
Legal Intelligence 850
Water Supply and Sanitary Matters 851
Statues, Memorials, &c. 851
Our Office Table 852
Meetings for the Ensuing Week 852
Trade News 853
Tenders 853

ILLUSTRATIONS.

NEW GUILDHALL, WESTMINSTER.—NEW ROYAL OBSERVATORY, EDINBURGH.—CHURCH OF THE GOOD SHEPHERD, GOSPEL OAK.—DETAILS OF MESSRS. HONEYMAN AND KEPPIE'S DESIGN FOR THE GLASGOW GALLERIES AND MUSEUM. — ESTATE COTTAGES AT LUNSFORD, NEAR HASTINGS.

Our Illustrations.

THE GUILDHALL, WESTMINSTER.

THE Guildhall, Westminster, which until the passing of the Local Government Act of 1889 was used by the Middlesex magistrates for the purposes of quarter sessions business only, is now being completely remodelled in order to provide the various offices and accommodation required for the transaction of the extensive administrative and other work devolving upon the Middlesex County Council, whose headquarters the building has now become. In addition to the offices required by the council, it is proposed to retain the two courts for the trial of prisoners, and to provide a handsome chamber exclusively for the meetings of the council, which, together with large committee-rooms, &c., will necessitate the addition of two new floors to the building, which at present consists of a basement and ground floor only. The view now published was taken from the original design—since somewhat modified by trifling minor alterations—of Mr. F. H. Pownall, F.R.I.B.A., the county surveyor, under whose direction the works are now being carried out. The contract, amounting to over £15,700, exclusive of all fittings, was obtained in competition by Messrs. Higgs and Hill, of South Lambeth-road, London.

THE NEW NATIONAL SCOTTISH OBSERVATORY, EDINBURGH.

(FOR description see page 828.)

CHURCH OF THE GOOD SHEPHERD, GOSPEL OAK.

THE drawing from which this plate was taken is now in the Royal Academy Exhibition. It illustrates the new church of the Good Shepherd, which Messrs. James Brooks and Son, the architects, have designed for a corner site at the angle of the Savernake and Shirlock-roads, at Gospel Oak, N.W. The plan shows the arrangement adopted with a morning chapel on the south side of the choir, and as the ground falls considerably from west to east, space has been obtained in a crypt under the chancel for the vestries. The building is groined throughout, and will be faced with stone inside as well as out. The drawing shows the building from the south-east. The roofs are covered with tiles.

GLASGOW ART GALLERIES, KELVINGROVE PARK.

THE detail of the various designs contributed in competitions of the first class like this important one at Glasgow necessarily has a special interest for architects. Those who have made a mark and won in former similar contests not infrequently, and with some reason, perhaps, contend that the detail of the last new competition is more or less a prig from their own productions. Others employed in the struggle of impending contests naturally look to these enlarged parts of designs shown in the latest architectural engagement with a view of ascertaining if anything more than ordinarily suggestive may be noted. The supremely superior or the moneyed leisureling viewing competition as contrary to high-art restrictions, none the less finds these details useful and saving of personal effort, while members of the critical class, always the most numerous, discern in them much to contrast and compare. Details from the Glasgow Art Galleries competition designs will be found in our issues for April 29th, May 20th, and among our plates to-day. Similar details of the South Kensington Museum competition designs were published by us on the following dates last year:—Mr. Aston Webb's chosen design, Sept. 11th; Mr. Collcutt's, Sept. 18th; and Mr. Belcher's, Sept. 25th. Details of the Imperial Institute appeared in our pages as follows:—Mr. T. E. Collcutt's chosen design July 22nd, 1887, on which date we also gave Messrs. Aston Webb and Ingress Bell's details. The Birmingham Law Courts five designs submitted in the final competition all appeared in the BUILDING NEWS for August 13, 1886. These references may be useful in connection with the present series to many of our readers, and very few of the same designs were illustrated in any other journal.

ESTATE COTTAGES, LUNSFORD, SUSSEX.

THESE cottages are for the accommodation of the labourers of Mr. Henry Cruttenden, on the Lunsford Cross Home Farm, and the pair are estimated to cost £600. The walls up to the chamber floor are to be faced with light red hand-made bricks from a brickyard on the estate, the tiles for roofing and weather-tiling coming from the same yard. Oak left from the plane is to be used for the half-timbered work. Besides the accommodation shown on the plans, there is a large washhouse at the back, common to both cottages. The architect is Mr. Ivor Stuart Price, of St. Leonard's-on-Sea.

CHIPS.

The name of George Herbert Durrant, of Forest Hill, Kent, late of Hart-street, Bloomsbury, W.C., architect and surveyor, appears in the list of adjudications in bankruptcy in Friday's *London Gazette.*

The Neath rural sanitary authority, at their meeting on the 8th inst., increased the salary of Mr. S. N. Glass, their assistant surveyor, from £104 to £120.

A new postmen's office has been opened in Cornwall-road, Brixton. It occupies an area of 3,760ft. super, and the front elevation is of red brick, with cut and gauged brick pilasters. There is no public office, the whole building being utilised for departmental work. The contractors were Messrs. Plumbridge and Thomas, of Hammersmith.

Sir Frederick J. Bramwell was among those who received the honorary degree of LL.D. at Cambridge on Saturday. His claims to the distinction were stated to be his eminence as an engineer, and the great services he had rendered to technical education. A recipient of like honours was Lt.-Gen. Richard Strachey, who proposed and elaborated the policy by which the Indian Government undertook the systematic construction of railways and works of irrigation.

A Local Government Board inquiry touching an application by the city council of Winchester to borrow £5,250 for the purpose of enlarging the Municipal Buildings, took place on Wednesday week, conducted by Major-General H. D. Crozier, R.E. Mr. T. Colson, of Winchester, the architect, explained the proposed alterations and additions, which include a new platform in the large hall, a smaller hall with gallery, classrooms, and a cart-shed.

At the last meeting of the Ipswich town council, a tender was accepted from Messrs. Parkington and Son, at £3,468, for the erection of public baths on a corner site in Fore-street, St. Clement's, from plans prepared by Mr. T. W. Cotman. The swimming-bath will have an area of 73ft. 4in. by 22ft., in addition to twelve private baths.

An inquiry was held at Sheffield on the 8th inst. as to an application by the Town Council for leave to borrow £4,600 for the extension of the infectious hospital buildings at Lodge Moor. The inquiry was conducted by Col. Hasted, one of the inspectors of the Local Government Board, assisted by Dr. Barry, medical inspector of the Board. Mr. E. M. Gibbs, the architect under whose superintendence the additional buildings are proposed to be constructed, explained the plans.

COMPETITIONS.

GALASHIELS.—A cottage hospital is about to be built at Galashiels for the treatment of patients suffering from non-contagious diseases, upwards of £3,000 having been subscribed. The committee got plans and estimates, which were submitted to a meeting of the subscribers held on Saturday afternoon in the Burgh Court-room. The committee had selected, on the recommendation of Mr. Hippolyte J. Blanc, A.R.S.A., Edinburgh, a plan by Mr. Wallace, architect, Edinburgh, which gave accommodation for fourteen beds, with all accessories for a hospital such as that required for Galashiels. The estimated cost was £2,600 for building, without the fittings and furnishings, which would be about £500 over what was contemplated. Mr. Wallace's plans were adopted, and it was agreed to proceed with the undertaking at once.

HOSPITAL FOR WEST FIFE.—At a meeting at Dunfermline on Saturday of a joint committee appointed by the burgh and county local authorities, it was resolved to adopt the plans of Messrs. Johnston and Burnie, architects, Edinburgh, for an infectious diseases hospital for the district. The hospital is to be built at Milesmark, and is, with furnishings, to cost nearly £6,000.

STAFFORD.—For the proposed County Council Hall to be built at Stafford, 63 competitive designs have been sent in by architects in response to the invitation of the county council. Mr. J. Macvicar Anderson, P.R.I.B.A., who was appointed assessor, was occupied several days last week at the Shire Hall, Stafford, in adjudicating upon the plans, and his decision will shortly be forwarded to the general purposes committee. There are three prizes to be awarded, of the several sums of £150, £100, and £50, but the committee do not pledge themselves to accept any of the designs submitted. The principal entrance to the council hall will be from St. Martin's-place, and in addition to the council chamber there will be three committee-rooms, a chairman's parlour, and office accommodation for the clerk of the council, the county surveyor, and the chief surveyor of main roads.

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In his preface to the new edition of "Nicholas Nickleby," Mr. Charles Dickens refers to Maclise's portrait of his father, now in the National Gallery, as the only really successful portrait of the great novelist which was ever painted.

Two new public swimming-baths have just been erected at New Swindon by the Great Western Railway Medical Society, which has 10,000 members in the town. The baths, which, together with a medicine dispensary and consulting rooms, are situate in Faringdon-road, close to the washing and Turkish baths belonging to the same body, will cost £50,000. The larger of the two baths contains 104,000 gallons of water, being 11ft. in length by 30ft. in width, whilst the depth varies from 3ft. 9in. to 6ft. 3in. The smaller bath, which will be restricted to ladies and children, is 74ft. long by 30ft. broad, and is shallower than the other bath. The opening took place on Saturday, the ceremony being performed by Viscount Emlyn.

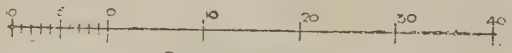
Special services in connection with the completion of two altars in the Catholic Church of the Sacred Heart, Hanley, took place on Sunday. The altars are from the designs of Messrs. Goldie, Child, and Goldie, of Kensington-square, London, W., and are in the Early English style. The work has been executed by Messrs. Boulton and Sons, Cheltenham. The altar on the Gospel side is dedicated to the Blessed Virgin. The centre figure represents the Madonna with the Infant on her knee. The left-hand panel shows the presentation of the infant Jesus in the temple, and that on the right the House of Nazareth. The altar is flanked by statues of St. Anne and St. Joachim. The altar on the Epistle side is dedicated to St. Joseph.

The Blackman Ventilating Co., Limited, have been awarded the contract for the complete warming and ventilation of the new technical school at Salford. The work is to be carried out on what is known as the Blackman-Smead system. The entire building will cost over £50,000, and when finished will undoubtedly stand as one of the finest of its kind in this country. The architect is Mr. Henry Lord, of Manchester. It is also noteworthy that the Sheffield School Board have shown their appreciation of the advantages to be derived from pure air and plenty of it by deciding that the Blackman-Smead system shall be installed in the new extension for technical education which they are about to build, the architect for which is Mr. Mitchell-Withers, of Sheffield.

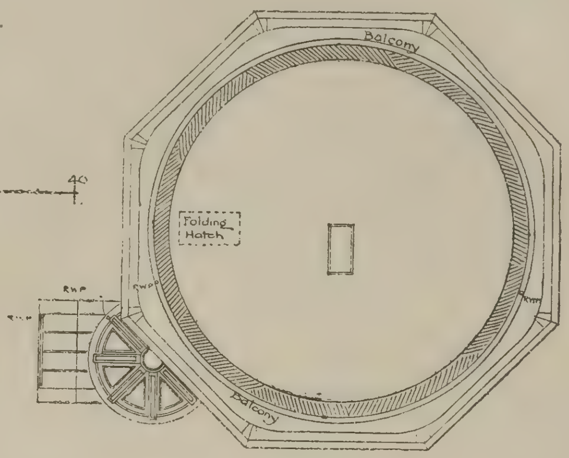
NEW · ROYAL · OBSERVATORY

BLACKFORD · HILL · EDINBURGH ·

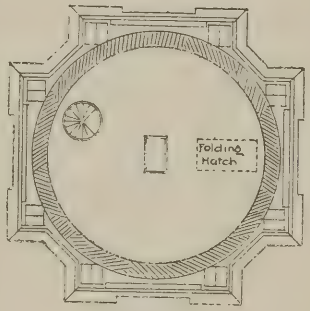
W. W. ROBERTSON · ARCHITECT ·
H · M · OFFICE OF WORKS ·
EDINBURGH



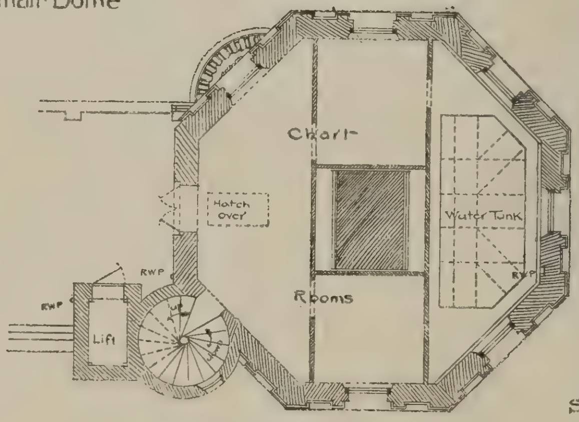
SCALE OF FEET ·



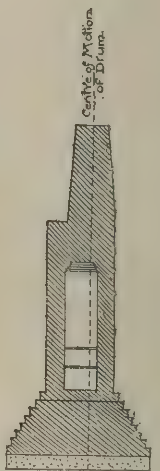
2nd Floor of Large · Dome ·



2nd Floor · of Small · Dome

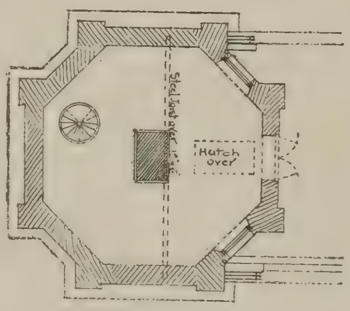


1st Floor · of · East · or · Large · Dome

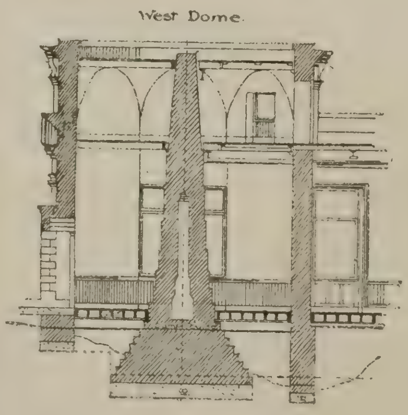


Section through Pier South North

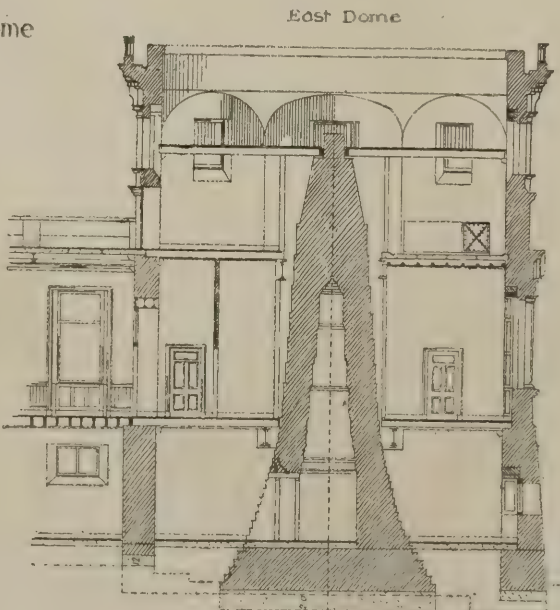
Small Dome



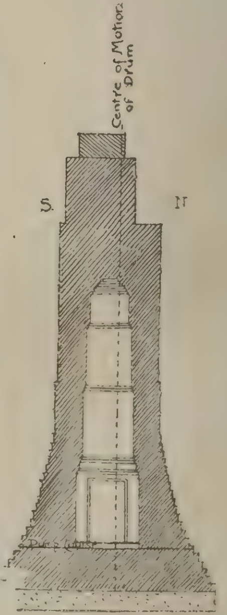
1st Floor of West or Small · Dome



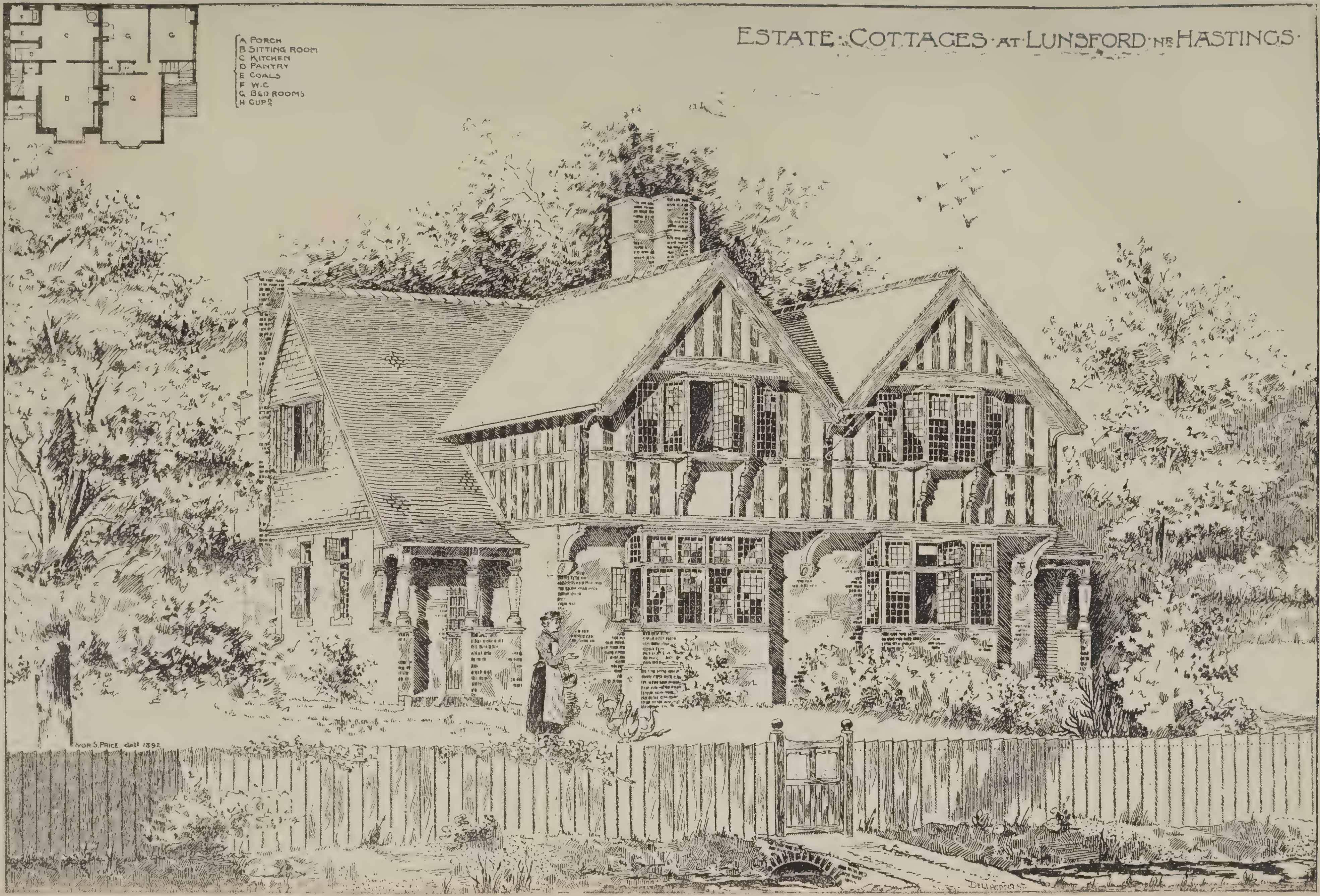
SECTION · of Small · Dome



SECTION · or LARGE · DOME ·



Section through Pier South North



ESTATE COTTAGES AT LUNSFORD Nr HASTINGS

WAYSIDE NOTES.

JUDGING by the attention bestowed upon the building in the Press, we are very proud of our new City Market. It is certainly a most creditable undertaking, and I suppose the most extensive architectural conception of the late Mr. Alexander Peebles. Much money has been expended on the structure, which now appears to be the most complete of its kind. Large as the market is, it may yet grow bigger in days to come, the City Fathers having seen to it that there should be room for extension.

Again another move in the matter of the new road from Holborn to the Strand. Under the auspices of the Metropolitan Improvements Association, a meeting was held at the Holborn Town Hall on Monday evening last "to urge upon the London County Council the immediate necessity of proceeding with the formation of a new street for the better accommodation of central London." There will require to be a deal of "urging." Everybody knows that more than one corner of London needs improvement in its thoroughfares, and doubtless every member of the County Council knows as much; but the majority of the Council have other work on hand. The blocking of railway enterprise and other matters seems to occupy much of the time. Actual improvements must look after themselves. "Improvement with 'betterment,' or no improvement at all," seems also to be the cry. We have had about enough of it.

It is said that the vote this year for the new buildings at South Kensington is £5,000 only. A writer in the *St. James's Gazette* says:—"An interesting calculation would be: Taking the cost of the buildings at half a million, and with the possibility of the advent of a Government pledged to economy, which generation of our descendants will see its completion?" Perhaps Macaulay's New Zealander will find the building a ruin, with unmistakable signs of its never having been completed. Whig or Tory Government, it seems to have made little difference in the past history of architecture. What would be the case in a Radical Administration one fears to think, although it is true that things could never be much worse. English Governments do not take kindly to architecture.

Americans are commonly supposed to dream of Paris and Parisians, when they have a mind for a change. The affection displayed seems deeper seated than one would imagine. It goes further than French millinery, confectionery, and drama. At the Chicago "Exposition" a feature will be a series of casts, in a specially-prepared building, illustrative of French architecture from the 12th century to the present day. It is said that the greater portion of the cost of the preparation and transport of the casts will be borne by the American Government.

Now is the time and opportunity to see Warwick Castle—Warwick with its charming view over the gentle Avon. The County Show of the Royal Agricultural Society is to be held next week in the grounds of Warwick Castle, and the most interesting portions of the old place will be open to the public. Here is a rare chance for any architect or archæologist who may happen to combine a taste for beans and potatoes and ancient architecture.

Much has been said—and well said—about the crowd of monuments to nonentities that take up so much valuable space in our Metropolitan abbey. When there is a desire to place a monument to a really great man, there is difficulty in finding good positions. It is much to be hoped, however, that those who are taking steps to erect a monument to Dr. Arnold in Westminster Abbey will be able to secure a good monument, in the good position offered by the Dean, to so noble a character.

June has opened well for competing architects. At Norwich they require new board schools, at Walsall public baths are wanted, and the people of Bexhill-on-Sea have so far advanced as to require municipal buildings. Out, therefore, will come spare drawing-boards, and the offices of competitors will be merry with the ring of pencil-driving. The Norwich School Board have been at some pains to prepare a lengthy advertisement. If they take as much trouble about other details of the competition, it should be successful. I note that the board, with somewhat of a show of decisiveness of action, announce that *they only* will adjudicate upon the plans. This is not quite an up-to-date arrangement. The assessor is rapidly becoming a *sine quâ non.*

I said that Bexhill had advanced, and the competition advertisement is proof of the assertion. The advt. looks satisfactory, and they are not in such a violent hurry for plans as some people. There is the Walsall competition: plans are required by July 16, which, speaking comparatively, is quick work.

I have had gentlemen tell me that they finished a whole set of competition plans in so many hours so many minutes net; but they need hardly have explained that they did not win the competition. Again, I have seen competitors imbued with an idea that plans prepared with a show of nonchalance and a dash would favourably impress the assessor. From my own experience of matters, I should advise all so thinking to avoid such miserable delusions, and trust only to merit and hard work.

If an assessor is worth anything, he can see at a glance where work has been done hurriedly, because ideas crowd upon the designer faster than he can draw, and also detect "humbug" in draughtsmanship. The manner of putting in details of the competent and rapid draughtsman is totally different to any counterfeit of the same. One looks natural and the other cannot help but look unnatural. So also there is a difference between the effect of drawings made in true haste and those made in a pretence of haste. It is difficult to understand why competing architects do sometimes make this show of hastiness in the preparation of their drawings. Even supposing that the assessor gave them credit for being busy men, this would surely count as nothing in their favour. It appears to me that the day of all tricks in competing has passed away, and that this one of sham hastiness should go with them.

GOTH.

FOREIGN SEWAGE PRECIPITATION WORKS.

AT a meeting of the Society of Engineers held at the Town Hall, Westminster, on Monday evening, Mr. Joseph William Wilson, jun., President, in the chair, a paper was read by Mr. Albert Wollheim, on "Foreign Sewage Precipitation Works."

In the introduction to his paper the author reviewed and detailed the existing legislation in Germany for the prevention of river pollution. Unlike England, Germany possesses no statutory legislation for preventing the pollution of its water-courses. There are only in existence ministerial decrees, rescripts, and reports of scientific bodies. The most important precipitation works of Germany are those at Frankfort-on-the-Maine (population 160,000). Ever since the year 1885, when the canal works and port were completed, the trade of the town has increased to an enormous extent, and a thorough system of sewerage and sewage disposal is therefore of the first importance to the town. The system of water-closets, drains, and sewers was commenced over thirty years ago, under the late Mr. W. H. Lindley, and completed by his son, Mr. W. Lindley, the present city engineer, who has also designed the precipitation works. These are situated on the left bank of the Maine, the sewage from the right bank being conveyed across by two wrought-iron siphons, 2ft. 6in. diameter, with a total discharging capacity of 800,000 gallons per hour. The precipitation tanks are covered in, and will consist of two groups of six subdivisional tanks each; but only four subdivisions are as yet constructed. They are each 270ft. long by 17ft. average width, and 6ft. 10½in. average depth of water. Each subdivision holds one-quarter million gallons, and as the present daily dry weather flow is six million gallons, the existing tank capacity is 16 per cent. of the total daily flow. The whole volume gravitates to the works, and in dry weather overflows continuously at the outlet end. But as the high-water mark of the river is considerably above the ordinary water level in the tanks, special adjustable high-water dams have been provided at the tank outlets, which enables the sewage to be backed up in the tanks and sewers for some hours without causing floodings in the town. During exceptionally heavy floods, when there is danger of backing up the sewage too high in the town, two powerful centrifugal pumps with 20in. suctions can lift the effluent into the river, and thus keep down the tank-water level. The sludge is pumped up periodically into sludge drying pits capable of holding an aggregate of one million gallons of liquid sludge. The precipitants used are lime and sulphate of alumina, and the quantities are adjusted by means of Lechner and Spohr's patent automatic electric gauge, which continually transmits to the precipitant house, and records on a revolving drum the height of the sewage in a bay formed at the tank inlets where the chemicals join the sewage. The author drew attention to some important experiments carried out by Mr. Lindley, bearing on the displacement of water in tanks. These tend to show that in summer the incoming sewage glides along the top, in winter it immediately falls to, and glides along, the bottom, towards the outlet end. In both cases the body of water in the tank remains more or less undisturbed. To remedy this Mr. Lindley has devised a falling dam, to be fixed in front of the outlet, which has the effect of deflecting and distributing the incoming stream throughout the tank. The Roeckner-Rothe system of circular upward-flow tanks, as distinguished from the rectangular longitudinal system, was next described. The Roeckner-Rothe system has been somewhat simplified by Herr Kniebuehler, city engineer of Dortmund. His tanks are huge circular brick wells sunk into the ground, the sewage being led into the conical bottom where it deposits the sludge, the clarified effluent rising and overflowing continuously all round the top. The sludge is pumped up periodically without disturbing the continuous working. A complete installation on this system is at work at Dortmund. The author concluded his paper with a brief *résumé* of what has been done in the United States to prevent river-pollution. It would appear that the States, with their vast area and innumerable rivers and streams carrying large volumes of water, have not experienced any difficulty from the discharge of raw sewage until a short time ago. The country is just now beginning to stir in the matter. This accounts for the fact that only three precipitation works have been constructed. The largest are those at Worcester, Mass. In these Worcester works, which were designed by Mr. Allen, the city engineer, well-known English types have been followed, the tanks having been planned somewhat after the Coventry tanks. The tank-walls are constructed of small rubble bedded in Portland cement, and faced with vitrified bricks, the copings being composed of granite chippings and cement. The chemicals used are lime and sulphate of alumina. Only a portion of the city drains to the works at present, the daily flow being about three million gallons. The author gave a table showing the number of gallons of water per head supplied to various towns throughout the States, from which it appears that 100 gallons per head is by no means an uncommon figure. The paper was illustrated throughout by a large number of diagrams.

CHIPS.

Major-General C. Phipps Carey, C.E., Local Government Board Inspector, held an inquiry in the Guildhall, Rochester, on Thursday, the 9th inst., relative to the application of the town council to borrow £2,000 for purposes of technical education in the city. Mr. W. Banks, the city surveyor, produced the plans, and described the building in detail.

A new Board school, built at the cost of £2,750, including site, by the Baildon School Board, at Tong Park, was opened on Saturday. The new buildings, for which Messrs. W. and J. B. Bailey, of Bradford and Keighley, have prepared the plans, accommodate 220 scholars.

The Council of Almoners of Christ's Hospital, after considering over 100 different properties and personally inspecting many of them, have decided to purchase the estate of the Aylesbury Dairy Company, near Horsham, as a site for the hospital's new boarding schools.

A stained-glass window has been placed in Bretforton church, near Evesham, in memory of the late vicar, who held the incumbency for 13 years. It is of two lights, the subjects being St. Clement and St. Mary the Virgin. Messrs. Jones and Willis, of London and Birmingham, were the artists.

TECHNICAL ARTS AT THE ALBERT HALL.

YESTERDAY in the great arcaded gallery round the Albert Hall, Kensington Gore, the annual exhibition of the Home Arts and Industries Association was opened to the public. The Ashbridge class holds its own for excellence of wood-carving, as in the Japanese overmantel with the carved fret-cut bird panels, or in the low proportioned Italian-like stool. Blickling has a class of its own, and does good work, and, like the larger Norfolk class held at Sandringham, undertakes wood-carving. The pupils of the latter class are more ambitious, as instanced by the illuminated floral-stamped leather seats and chairs, which, by force of brilliant colour, are very attractive. A capital piece of work in the shape of an Italian hand-tray, done in walnut, attracted our approval for simplicity and refinement of line. Kirkby Lonsdale is unsurpassed for the excellence of its stamped leather work for "Bradshaw" covers, blotters, and screen-wings, &c.; and the Keswick School of Industry is again to the fore front with some exceedingly good *repoussé* brass and copper exhibits, such as the altar-cross, enriched with jewels, executed from the drawings of Mrs. H. D. Rawnsley. It has emblems of the Four Evangelists on its arms, and the delicate softness of the beaten forms well befits the material and method employed. Here it is that Miss Twelves conducts the Ruskin Linen industry for the manufacture of altar-cloths, curtains, and other useful articles, treated with artistic finish. Messrs. Paley and Austin, the architects, have prepared a design for a new building in a picturesque style, to be erected to accommodate this class, which now works chiefly in the parish hall of St. Kentigerns. Vegetable-dyed mats of artistic patterns harmoniously woven at Fensham are shown by Mrs. Moody's class. Woodwork of merit comes from Gotherington, Gloucestershire, like the coffer exhibited, with a boldly-treated front of foliage growing in wavy lines from a common centre, done in elm or ash. The class at Leeds and that at Nottingham display carved trays, beaten metal, and furniture objects. The sideboard from Ascot, not for competition, is a practical sort of piece in oak; and the acanthus-leaved ironwork, done by the Thornham class, in a hall lamp, grate grille-screen, and some firedogs form conspicuous objects of merit in the show. The pupils at Tunbridge Wells and Porlock Weir do capital leatherwork, such as hassocks in stamped calf and sheepskin, imitated from Italian patterns. The Italian coffer, with a vigorously-carved front enlivened with flowers and birds and cone-like fir-trees, shown by the Stepney class, is one of the best things in the exhibition. It stands on legs set at a splay, and has good mouldings. Herbert Shaw is the craftsman. A green stained swing toilet-glass by Beatrice Carpenter, of Bolton-on-Swale, is an adaptation from an old panel, with pilasters at the sides of the frame and a shell over in the centre. The stand is original, but hardly accords with the rest of the piece, which is effective. A portfolio and drawings what-not by T. Izzard, of Penshurst, and put together by L. G. Totman, is a very sensible contrivance for readily storing large folios. The beaded treatment of the angle-posts and the square sunk caps are effective, but the little cupboards are too near the floor. Tea-tables by the Arisaig class we saw, and a folding screen writing cabinet in walnut from Ardnamurchan. The Corstorphine metal-work holds its own, and so do the basket-works from Letterpack. Shillelagh, Dunleckney, and Glonkeen are Irish contributors, and Glasgow, Gorebridge, Midlothian, Culburne, Aberlady, and Laurencekirk figure among the classes from Scotland.

The town council of Wolverhampton have appointed Mr. Lyons Wright, the present manager of the waterworks, as consulting engineer, at a salary of £300 per year, and will elect an engineer to take charge of the department, of which Mr. Wright has had control for 31 years.

The Mayor of South Shields laid on Tuesday the foundation stone of a Wesleyan school-chapel, which it is proposed to build in Baring-street. The building will take the place of the old Wellington-street chapel, which is being pulled down. It consists of a room to seat 300 adults, the cost being £1,200. Mr. W. J. Robertson is the builder, and Messrs. Page, of South Shields, the architects. The building will be of red brick with white stone facings.

Building Intelligence.

Farringdon Road, E.C.—The Lord Mayor opened on Friday the structure erected at the junction of Charterhouse-street and Farringdon-road, as a fruit, vegetable, and flower market. This market completes the series which the corporation have erected under the Act of 1875 at a total outlay of £1,794,000. The new market has cost £70,000, exclusive of the value of the site, and of this sum £41,000 has been laid out on the substructure and for basement works. The market has frontages of about 370ft. by 184ft. Of this area of 54,000ft., the building now erected occupies 30,000ft. super, leaving room for extension when required. The main entrance to the new building and the chief cross avenue are about 38ft. in width. The building is carried out in iron and glass. The height to the plate level is 28ft., and to the ridge 46ft. The area of the basements is about 100,000ft. Large hydraulic lifts raise the market produce brought by the railway companies to the markets above, and inclined roadways for horse traffic are provided for access from the basement to the street level. The architect was the late Mr. Alexander Peebles, city architect, and the works have been carried out under the supervision of Mr. Murray, the city surveyor.

Gateshead.—The foundation stones of a new church for Primitive Methodists of No. 1 Circuit, Durham-road, Gateshead, were laid last week. The church is 61ft. by 42ft., with a gallery round three sides, and will accommodate about 620. The organ and choir are placed in a gallery behind the rostrum, and raised about 8ft. above the church floor, with entrance from South-street. Under the choir gallery is a large church vestry 21ft. 6in. by 17ft. 6in., with ministers' vestry adjoining; on the South-street side are provided separate lavatories. There are two staircases to the gallery, the principal one leading from the entrance hall being so planned as to give communication with the schools and lecture-hall adjoining. The church is being built in stone, and has been designed to harmonise with the schools, in the Early English style, with a tower over the entrance porch connecting the two blocks. The seating, rostrum, gallery front, and internal fittings generally are to be carried out in pitch-pine. The buildings are to be heated by hot water on the low-pressure system, and are being carried out from plans and under the supervision of the architects, Messrs. Davidson and Bendle, 33, Grainger-street West, Newcastle, and South Shields, at a cost of about £3,250. Messrs. Haswell and Waugh, Gateshead, are the contractors.

Ipswich.—The foundation-stone of a new Baptist Chapel in Silent-street was laid by the Mayor on Wednesday week. The building will replace Turret-green Chapel, built in 1842, and lies at the rear of that edifice. Running almost due north and south, the new building will occupy, with vestries, a length of 108ft., the chapel proper being 90ft. by 50ft. It will consist of nave and two aisles. At the south end there will be chancel and choir, surrounded by an organ chamber, a deacons' vestry, and a minister's vestry. The only gallery will be one at the north end. The sittings throughout will be of pitch pine, and the chapel will accommodate in all 750 persons, including 100 in the gallery. The roof will be plastered in six bays with moulded ribs. Externally the material employed will be red brick, with facings of red Corsehill stone, and the style is Decorated. The clerestory will be lighted with 14 windows, and two three-light windows are inserted in each of the aisle walls. The designs are by Messrs. Eade and Johns, of Ipswich, and the contractor is Mr. F. Dupont, Colchester. The cost will be about £6,000.

The corporation of Hertford have retained the services of Mr. Urban Smith as consulting engineer to advise them upon the sewerage of Bengeo, a district lately added to the borough.

Col. Luard, R.E., inspector under the Local Government Board, attended at the local board office, Littleborough, on Tuesday week, to hold an inquiry into an application made by the local board for sanction to borrow the sum of £2,600 for works of sewerage and sewage disposal works, and £850 for the purchase of a steam fire-engine and appliances. Mr. George H. Wild, clerk and surveyor, produced and explained the plans.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. Passmore Edwards.

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One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 0d. (or 6dols. 30c. gold). To France or Belgium, £1 6s. 0d. (or 33fr. 30c.) To India, £1 6s. 0d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two the minimum charge being 5s. for four lines.

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Situations.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is One Shilling for Twenty-four Words, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., L., LI., LIII., LIV., LVIII., LIX., and LX. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

Received.—J. M. and R. B. Co.—Salopian.—B. T. L. Co. —R. F. M. (Suffolk).—C. R. T.—Græcus.

Correspondence.

PATENTED PLANS FOR WORKMEN'S DWELLINGS.

To the Editor of the Building News.

Sir,—I notice in your issue of the 27th ult plans of "Hughes' Patented Improvements in the Construction of Artisans' Dwellings."

As to any patent right existing in these plans, I may state, for the information of Mr. Thomas Hughes, that so far back as 1867 I erected on the estate of the Leeds and Yorkshire Land, Building, and Investment Company at Burley several cottages on this system, the plans being almost identical with the ones you publish.—I am, &c.,

Chas Fowler.

Britannia Buildings, Leeds, June 9.

On Saturday, the foundation-stone of the new premises for the Logan and Johnston School of Domestic Economy at Greenhead, Bridgeton, was formally laid. The buildings, which are from the plans of Mr. James Thomson, are 114ft. by 90ft. in area. The style adopted is Old Scottish, and all outside stone walls are faced with red sandstone from Ballochmyle quarries.

The Royal Engineers' memorial in London of the late Major-General Charles George Gordon, C.B., has been placed in Westminster Abbey. The memorial consists of a bronze head in high relief, supported on a bracket, with a shield below. The background of the relief is filled with foliage, and the space around the shield with scroll-work, on which is inscribed: "Mandarin of China; Pasha of Egypt; Major-General of the British Army." The memorial, which is the work of Mr. E. Onslow Ford, A.R.A., occupies the space over the belfry door, within the trefoil of the Early English wall arcading, immediately to the north of the great west door of the nave.

Intercommunication.

QUESTIONS.

[10785.]—**Pumps.**—Will any reader kindly recommend to a young contractor's engineer a good practical book on pumps, referring chiefly to the fixing of them into position on works? An immediate answer will greatly oblige.—SUMP.

[10786.]—**Sketching Tour.**—Will any reader give route for fortnight's sketching tour in Northern and Midland Counties, giving chief buildings of interest, and any hints which might prove useful?—PEN AND INK, Newcastle.

[10787.]—**Perspective.**—Will some correspondent kindly show by diagrams the rules for drawing an internal view of a room, say 60ft. by 30ft.?—PUPIL.

[10788.]—**Ownership of Specification.**—Will the president or some member of the Institute kindly give an opinion upon the following question—viz., Are the members of a local board justified, and have they any legal right in demanding, and wishing to retain (six months after the signing of the contract), the architect's copy of the specification for works upon which he has been appointed by them, and while such works are in course of erection?—the want of the specification to the architect meaning the stoppage of works eventually. Is the architect compelled to find and supply a third copy of same without any remuneration over and above the usual commission? N.B.—The specification in question bears the contractor's signature, and the Board state in consequence it should be annexed to the agreement of contract which is in their possession, as they allege that if the original specification gets lost or destroyed, they will have no means of ascertaining if the contract has been carried out. In the agreement made between the architect and the Local Board, no mention is made of such copy being required. The architect offers the members of the Board every facility for inspecting the specification at his offices, or will produce the same at any of the Board's meetings if requested.—J. CALDER.

REPLIES.

[10780.]—**Church Bells and Towers.**—There is a decided risk of injuring a church tower by ringing bells in it if they are not hung properly, or if the top of the frame or cage is wedged against the walls of the tower. Many towers have been damaged by the ramming action of the top of the bell cage: this being in a loose condition or wedged against the wall. If the bells are properly hung there is no more danger in firing than in change or round ringing.—S. B. GOSLIN.

CHIPS.

The corporation of Hereford decided last week to increase the salary of the city surveyor, Mr. Parker, to £350 per annum.

A stained-glass window has been placed over the south chancel door of Hemsworth church. The window completes a group of three by the same artists, Messrs. Lavers and Westlake, who also put up the large window and the west window in the south aisle.

On Saturday the corner-stone was laid of a new church at Hightown, Liversedge, near Leeds. The building is to cost about £4,500. The plans are by Mr. W. S. Barber, of Halifax, and the style is Early English. The nave and aisles will be 50ft. by 20ft. and 9ft. 6in. respectively, and chancel 28ft. 6in. by 20ft., with organ chamber and vestries, and the building will seat 380 people. Messrs. W. and J. Milner, of Mirfield, are the contractors.

The new church of Pontyrhil, Garw Valley, and dedicated to St. Mary, was consecrated on Monday by the Lord Bishop of Llandaff. It is designed to seat 300 persons.

The parish church of St. Keverne, 12 miles from Helston station, is about to be restored, from plans by Mr. Edmund Sedding, of Plymouth, at a cost for the present section of £1,000.

A small picture, bequeathed by Mr. R. W. Cooper has been added to the National Gallery. It is numbered 1353, named "Landscape with Satyrs," and attributed to M. Ryckhaert, 1587-1631.

A memorial, which has been erected at Burnley-in-Wharfedale, near Otley, Yorkshire, to the late Mr. W. E. Forster, was unveiled on Saturday. The memorial consists of a replica of the well-known St. Martin's Cross at Iona, executed by Messrs. Whitehead and Sons, sculptors, of Aberdeen and London.

The Marchioness of Waterford laid, on Friday, the foundation-stone of the new church of St. Paul's, Barking. The architect is Sir A. Blomfield, and when completed the church will seat nearly 900, but only one portion of the proposed structure will be erected at present.

An east window, placed in St. Catherine's Church, Colwyn, was dedicated on Saturday. The window consists of three principal lights and three smaller ones above. The centre light is a representation of the Crucifixion of our Lord. On the left is a full-length figure of St. Catherine, and on the right a full-length figure of St. Asaph, holding in one hand a pastoral staff, and a small model of St. Asaph's Cathedral in the other.

Legal.

FIRE INSURANCE.

INSURANCE against fire is a matter of very pressing interest to all concerned with house property, or, indeed, with any buildings whatever. It is curious to observe that, with our improved appliances for putting out fires, fires nevertheless seem to increase in number and in violence, especially in our great cities. No doubt the use of electricity for lighting purposes has done something in this direction, especially in the hands of ignorant and half-trained artificers. So, again, our modern style of building, with thin iron girders and "fireproof" floors, instead of good old beams that could not be burnt through, makes a fire more rapidly serious and more frequently fatal than used to be the case. Although the duty of insuring against fire is seldom, if ever, neglected nowadays, there are many points of law and practice that need noting and remembering. A volume upon "Insurance," and one of a series of Manuals of Practical Law (various writers, this work being by C. F. Morrell, barrister-at-law. London: A. and C. Black), has just been published, which gives the best and clearest account of the matter we have yet seen in a popular law book. The work deals with fire, life, marine, and accident insurance, and does so in that simple, straightforward, and yet complete manner which appeals to men of business, and is found by them to be satisfactory.

One of the first things to bear in mind in regard to fire insurance is that the proposal forms the basis of the contract, which is completed by the policy, and by which the parties are bound. This shows what is the risk undertaken by the insuring company, and that risk must not be increased, or else the policy may be avoided and rendered worthless just when it is wanted. Now it is obvious that the risk of fire beginning or spreading is increased if building work is carried on upon insured premises, or if they are altered or enlarged by the making of fresh doors or other openings. It is, therefore, advisable in all such cases that notice of what is being or about to be done be first given to the company in which the premises are insured. Then, again, it must be borne in mind that the contract of fire insurance is one of indemnity only, and that the insurer will only pay for such actual damage as is done, up to the limit of the total stated in the policy. In some cases, as upon agricultural produce and farm buildings, &c., the offices insist upon an average "clause," which means that they will, in the event of a fire occurring, only pay such a proportion of the loss as the total amount of the insurance bears to the total value of the property covered, which, indeed, is the usual form of all fire insurance on the Continent.

FRED WETHERFIELD, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

NOTE.—All questions for reply in this column must be headed "BUILDING NEWS," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

LIFE TENANT.—WASTE.—The life tenant would be liable for such dilapidation as you name, under the head of waste; while as occupier he would be responsible to the local authorities for the unsanitary state of the premises.

BOUNDARY WALL.—REPAIRING COVENANT.—The question whether it is your wall depends on the deeds and boundaries of the property. It seems to be a party-wall. But if you are liable to repair and uphold it, that would mean that you must rebuild it if necessary.

C. W. S.—BUILDING CONTRACT.—SPECIFICATION.—The specification appears in this case to have been made part of the contract, and to have been signed by the contractor. Under these circumstances, I should say that the employers had a right to retain that signed copy as a part of the contract, which they may have occasion to enforce, or in some way to proceed upon.

* * *

It has been decided at a vestry meeting held at Withyham, near Groombridge, to reseat the parish church as a memorial to the late rector.

Mr. G. E. Wade is designing two bronze colossal statues of the late Sir John Macdonald, G.C.B., the Canadian Premier. One model represents him in the Robes of the Order of the Bath and the other in ordinary costume. The statue selected will be erected at Hamilton. The sculptor is also executing for the Imperial Federation League a marble bust of Sir John Macdonald, which is to be placed in St. Paul's Cathedral.

LEGAL INTELLIGENCE.

IN RE ROBINSON AND CO.—EX PARTE DICKSEE.—An application was made to Mr. Registrar Linklater on Tuesday, by Bernard John Dicksee, a partner in the late firm of Valentine Robinson and Co., auctioneers and surveyors, carrying on business in Poultry Chambers, City, for an order of discharge. The debtor commenced business in July, 1888, in partnership with Mr. Valentine Robinson. He possessed no capital of his own, but he borrowed £900 from a relative, out of which he paid £400 to Robinson as premium, and £500 as his capital in the firm. It was understood that Robinson would bring in £500, but he failed to do so. At the end of 1888 Robinson went to New York, and had not since returned. No dissolution occurred, and the debtor continued to carry on the business in the absence of his partner, without consulting him as to the conduct of it. He attributed the insolvency of the firm to liabilities contracted in respect of differences on shares, and to expenses in connection therewith. The application was opposed by the Official Receiver by reason of the insufficiency of the assets to pay 10s. in the pound, and on the ground that the debtor had brought on his failure by rash and hazardous speculation. Charges of fraud were also preferred in reference to transactions in shares. For the debtor it was submitted that the transactions had been entered into by Robinson without his authority. Mr. Registrar Linklater, after hearing the evidence, came to the conclusion that the charges of fraud had not been established, but that the debtor had been guilty of culpable neglect of his business affairs. The other offences alleged had also been proved, and the order of discharge would be suspended for seven years from this date.

ACTION BY AN ARCHITECT.—YOUNG V. ARMSTRONG AND CO.—The plaintiff in this action (heard at the City Guildhall on Tuesday and Wednesday before Mr. Justice Denman and a special jury), who was Mr. Lamont Young, an engineer and architect, carrying on business in Naples, sued the defendants, Sir W. G. Armstrong and Co., of Elswick, to recover damages for an alleged breach of contract to employ him as their architect and building adviser in connection with the construction of a naval arsenal by the defendants on the shores of the Bay of Naples in 1884. The plaintiff alleged that the defendants had requested him to act as their architect in connection with the intended arsenal and works, and to survey the shores of the Bay of Naples and to select a suitable site, and to enter into negotiations with the municipal authorities and to obtain the concession of the right to execute the proposed works and to purchase the site decided upon, and to do all surveys, borings, drawings, and plans. All these things the plaintiff alleged he had done, and had, further, made plans and drawings, at the defendants' request, for the proposed buildings. He claimed £20,000 damages in connection with his having obtained the concession and site, £2,000 odd for services in making plans and drawings, £384 odd for disbursements and further work, and £10,000 damages for the defendants' refusal to further employ him as their engineer and architect. In the alternative, the plaintiff alleged that it was agreed that he should be paid 10 per cent. on the cost of all work intrusted to him for execution, with certain defined exceptions; but that in August, 1886, the defendants refused to further employ him as their engineer and architect, or to pay him anything for his past services. The defendants alleged that prior to this action being brought the plaintiff had been fully paid by the defendants and the municipal authorities of Pozzuoli for all the work he did for or at their request. The defendants, in the alternative, paid £457 into court as sufficient to cover any possible liability against them by the plaintiff; and, further, paid £100 more into court. During the cross-examination of plaintiff the case was settled, the defendants agreeing to pay a certain sum, the amount of which was not mentioned, in excess of the moneys paid into court, and also to withdraw all imputations against the plaintiff's professional competency.

IN RE ARBITRATION BETWEEN FRANK KIRK AND JOSEPH RANDALL.—This partnership dispute came before the Queen's Bench Divisional Court on Tuesday, upon a case stated by an arbitrator for their lordships' opinion, and it arose out of the following circumstances: Messrs. Kirk and Randall in 1875 entered into partnership as builders and contractors, and the partnership deed said that this arrangement should continue for 10 years. It continued, in fact, down to 1890, when there was a dissolution, and the deed provided that the value of the partnership assets should be ascertained, and that Mr. Randall should continue the business. This question of value went to arbitration, and in the course of it various questions were raised as to the principles upon which the value should be assessed. The main one of these questions was as to current contracts, whether Mr. Kirk was entitled to a share of the profits estimated up to the time of the expiration of those contracts, or whether he was to have only a share of the profits earned down to the time of the dissolution. Mr. Justice Grantham, upon the conclusion of the argument, said that there was no difference of opinion upon that bench, and he had no hesitation in saying that the contention of Mr. Kirk was correct, that he was entitled to a share of the whole profits from current contracts until they came to an end, and not to a share of the profits merely down to the time of the dissolution. His Lordship as to minor points gave judgment, some in favour of Mr. Kirk and some in favour of Mr. Randall.

A Builder Committed to Prison.—George Ham, a builder, of Church-court, Kensington, and Joseph Curl, in his employ, were summoned to the West London police court on the 9th inst. in respect of a horse which was worked while in an unfit state. Mr. Haynes appeared for the owner, Mr. Ham. A constable asserted that the horse produced in court was the same, though witnesses for the prosecution declared that it was not, and that on the day before the proceedings were instituted, the horse first complained of was sold, but was afterwards brought back to the defendants. Mr. Curtis Bennett observed that he did not repose the least confidence in the evidence of the constable. A more infamous case he had never heard, there being a deliberate attempt to defeat justice by a person who was described as a respectable and honest man. He committed the owner for three months with hard labour, and Curl for six weeks with hard labour.

Re Overton and Avis.—The debtors state that from June, 1888, to 1890, they practised in partnership as architects and surveyors, but since then have been engaged in company promoting, first at Westminster Chambers, Victoria-street; subsequently at Beaufort Mansions, Queen Anne's Gate; and since November, 1891, at 41 and 42, Parliament-street. They further state that Overton was from January to October, 1890, chairman of the Bread Union (Limited), and that Avis was for a short period during 1889 director of the Metropolitan District Bread Company (Limited), and of the Westminster Bread Company (Limited). A summary of the accounts as amended was now issued, the joint liabilities amounting in the gross to £13,318, of which about £5,000 are expected to rank, and the assets showing a surplus, the Official Receiver, however, observing that the realisable value of the assets must be regarded as doubtful. The unsecured debts of Overton are returned at £3,941, and debts fully secured £25,000, the assets being estimated at £6,892. The separate accounts of Avis show liabilities £2,459, and an estimated deficiency of £453. An adjudication of bankruptcy has been made.

A private Act has been obtained this session enabling the corporation of Ipswich to purchase the plant and undertaking of the local waterworks, and to borrow for the purpose £230,000, repayable in 60 years, equivalent to a rate of 3d. in the pound.

A Wesleyan chapel has been opened at New Ferry, near Bebington, this week. It is Decorated Gothic in style, and consists of nave, transepts, chancel, and tower and spire, accommodation being provided for 520 persons. The buildings are faced with red sandstone from Helsby, and the window and door dressings, &c., are of Runcorn stone. The roofs are slates, in alternate red and blue bands. The contract has been carried out by Messrs. Kelly Bros., of Walton, for £2,275, from the designs of Mr. Thomas W. Cubbon, architect, of Birkenhead, whose plans were selected in a limited competition.

A museum has just been added to the buildings of the Charterhouse School at Godalming. It was designed by Sir Arthur W. Blomfield, A.R.A., and is built in the same style as the main building—Early Gothic. At the back of the museum is a lecture theatre. The north hall is devoted to natural history and geology, and that on the south to arts and antiquities, the most interesting portion of this section being that which contains autographs and manuscripts of *alumni* of Charterhouse. The museum will be open to visitors and will not be closed on Sunday.

The inquest on the bodies of the two firemen killed in the fire in Holloway on Friday morning was opened on Friday. Evidence was given that when the present tenant took a lease of the premises as a dancing academy internal alterations were made, and a girder was put in which was imbedded in 3in. of brickwork at the end. It was the giving way of this girder that caused the fall of the floor and the loss of the men's lives. The coroner read a letter from the superintending architect to the London County Council, stating that the district surveyor would not be concerned in internal alterations. The coroner added that he thought powers should be given to district surveyors to supervise such work, and see that proper precautions had been taken with regard to fire, &c. The jury concurred. The coroner adjourned the inquiry to enable the premises to be thoroughly inspected by one of the County Council architects till Thursday in next week, the 23rd inst.

WATER SUPPLY AND SANITARY MATTERS.

The London Water Supply.—The Royal Commission on the Metropolitan Water Supply resumed its sitting on Monday, Lord Balfour of Burleigh occupying the chair. The case for the London County Council being proceeded with, Mr. A. R. Binnie, chief engineer to the Council, was called. He pointed out that he could not reconcile the estimates of population with the number of houses supplied, and both these with the quantity of water provided. Taking the rate of supply per head per day at 30 gallons, at 32½, and at 35, the theoretical populations would be, with the supply at 182,456,905 gallons as in 1891, 6,081,986—a population which did not exist in London; 5,614,059—again a clearly impossible number; and 5,213,054—a figure which was more likely to be correct. It being suggested that some reduction would have to be made upon the figure given as the quantity supplied, in order to allow for slip and short stroke in the companies' machinery, he objected, because for years past the statements had been made by the companies that they supplied certain quantities, and they must have known that these quantities were either correct or incorrect. Continuing, Mr. Binnie stated that the area of Greater London was about 701 square miles, and the approximate Parliamentary area of the water companies was 620 square miles, but the area of actual supply was, according to a Local Government Board report, 514¼ square miles; and then, directing attention to the question of population, he showed that the houses in the metropolis were increasing in a greater ratio than the population, the tendency being for fewer persons to live in each house than formerly. As to the future, the statements presented led to the conclusion that in 1931 the population of Greater London would be something between 10,966,011 and 11,877,184, and in 1941 between 12,977,285 and 14,312,007. Interrogated as to the rate per head at which the population of London was now supplied with water, he thought, looking at all things, that they would not be very far wrong in putting it down at 35 gallons; that was for all purposes.—At the meeting of the Royal Commissioners on Tuesday the case for the Thames Conservancy was entered upon. Mr. J. H. Gough, the secretary to the Conservancy, showed statements and copies of agreements dealing with the amount of water which the metropolitan water companies might take from the Thames. The Southwark and Vauxhall, the Lambeth, and the Grand Junction Water companies had unlimited power; and the companies whose power was limited were the East London, the West Middlesex, and the Chelsea. There were other bodies which took supplies from the main stream—namely, the Oxford Corporation, the Windsor Corporation, the West Surrey Water Company, and the South-West Suburban Water Company. The present quantity of water taken from the river by the metropolitan companies varied up to 105 million gallons a day, and the amount that could be taken was 130 millions, while the other bodies mentioned took 9½ millions. The witness stated that there was a constant systematic inspection of the sewage effluents to check and prevent pollution of the river. Mr. C. J. More, engineer to the Thames Conservancy, and Mr. C. E. Grove, F.R.S., consulting chemist to the Conservancy, also gave evidence, and the Commission adjourned till Monday next.

The opening of the new line from Sheffield viâ Beighton to Staveley, the first section of the extension to London, took place recently. The line has been constructed by the M.S. and L. Company from Beighton to Chesterfield, but owing to the portion between Staveley and Chesterfield, a distance of about four miles, not being in a sufficiently forward state to be certified as fit, the opening of the Chesterfield portion had to be postponed for a few days. The Staveley station is a junction both for Chesterfield and Nottingham, and it has three platforms, with spacious waiting-rooms, and a covered bridge to cross the line. A large goods warehouse, with sidings, is in course of erection. There are intermediate stations at Renishaw and Eckington, Killamarsh and Beighton.

The foundation-stone of St. Barnabas' Church, which is being erected in Wednesfield-road, Wolverhampton, was laid on Saturday. The edifice is intended as a mission church for the parish of St. James, and the estimated cost of the entire building is about £4,500; but only a portion of the church will now be raised, at a cost of £2,435, accommodation being provided for 320 worshippers. The church will consist of nave (74ft. by 30ft.) and baptistery, and will be built of red brick, with stone dressings. Inside the walls will also be of red brick, with a cement dado. The roof will be open-timbered with boarded ceiling, and covered outside with Broseley tiles. The work is being carried out by Mr. Gough, of Wolverhampton, under the direction of Mr. T. H. Fleeming, of Waterloo-road, Wolverhampton.

STATUES, MEMORIALS, &c.

The Presentation Fountain at Ayr.—Mr. Steven, of Steven Bros. and Co., architectural ironfounders, 4, Upper Thames-street, London, E.C., turned on the water to the new fountain, which has been constructed at his ironworks in Glasgow, and, after erection on the site chosen by the council, presented by him to the town. The fountain is a very handsome one, with a large basin some 28ft. in diameter, and three cups, surmounted by a cone-shaped top, from which an additional spray is thrown. At the inaugural ceremony the provost, in the name of the town, thanked Mr. Steven for his generosity, and after a short reply to the address the donor formally turned the key. After a vote of thanks to Mr. Steven, the procession re-formed and marched back to the town hall, where a cake and wine banquet was provided, and several toasts were given and responded to. In the course of his reply to the toast of his health, Mr. Steven intimated, amid cheers, his willingness to present six small drinking-fountains to be placed at various points in the vicinity of the fountain which he had just declared public property.

CHIPS.

A scheme is being proposed for opening out a direct line of the Midland Railway from Bedford to Colchester and Harwich, for the Continent.

St. Luke's Mission Church, Rush Hill, near Bath, has just been completed. The walls are of Combe Down stone. There is accommodation for about 300 people. The contract has been carried out by Messrs. Morris and Son, of Bath.

The new chancel of Poplar Church was opened on Sunday last. The work has cost £600, and is one of the six sections of restoration now being carried out in the church, from plans by Messrs. S. F. and John Clarkson, of Bloomsbury; Mr. J. Kemp Coleman, of High-street, Poplar, was the contractor. The old wooden pulpit has been replaced by a light one of iron and bronze, executed by Messrs. Strode and Co., of Osnaburgh-street, Regent's Park, from the designs of the architects.

Under the Union of Benefices Act, the site of the late church of St. Mary Magdalen in Old Change, near St. Paul's, was offered to auction on Wednesday by Messrs. Edwin Fox and Bousfield, and was sold for £12,700. The site contained a superficial area of 3,900ft., with return frontage of 116ft.

Mr. R. E. Middleton has been appointed Assistant-Commissioner to the Royal Commission on Metropolican Water Supply.

The ventilation of the new Roman Catholic church, Strathblane, has been carried out by Messrs. Baird, Thompson and Co., who have introduced their latest improved exhaust roof ventilators for the extraction of the vitiated air.

A new institute has been erected at Cramlington, and special attention has been paid to the ventilation, which is carried out on the Boyle system, the latest improved form of the self-acting air-pump ventilator being adopted for the extraction of the vitiated air, and fresh air admitted by their improved air-inlets.

A new altar dedicated to St. Joseph has been placed in St. Mary's R.C. Church, Grantham, during the past week. The height is 30ft., and it is composed of Caen stone, embellished with alabaster and marble pillars. The figures of three saints stand in niches, under a cupola, cherubs' wings hovering above. The centre position is devoted to St. Joseph. On the right is St. Peter bearing the keys, and on the left St. Paul wielding a sword. The structure has a centrepiece portraying the death of St. Joseph, with Our Lord and the Virgin Mary in attendance. The carving has been executed by Mr. R. L. Boulton, of Cheltenham, the designs being by the Rev. P. Sabela.

Lady Ingram-Watkin will open the New Beach Rocks Convalescent Home, at Sandgate, which has been erected at a cost of £20,000, on Saturday in next week, the 25th inst.

The new hospital, Wakefield, is being warmed and ventilated by means of Shorland's patent Manchester stoves, the same being supplied by Mr. E. H. Shorland, of Manchester.

The first wing of the Franciscan Monastery of St. Bonaventure's, at the top of Egerton-road, Bishopston, Bristol, was formally opened on Sunday. The building forms the east side of a future quadrangle, and contains porch, hall, reception rooms, porter's room, study, library, and friar's cells. It is in Domestic Gothic style, and is built of local stone with Bath dressings. Messrs. Wilkins and Sons have carried out the building contract in accordance with plans prepared by Messrs. Pugin and Pugin, of Westminster. The cost of the building is about £3,000; the two other portions which are to be erected will cost each about the same sum, and it is intended to erect a church adjoining the monastery at a cost of £10,000.

Our Office Table.

The old historic Raleigh House on Brixton-hill is now exposed to view by the removal of trees which will soon rob the place of its picturesqueness and beauty. The remains of the old Elizabethan brick mansion consist chiefly of two gables of the usual form made up of curves and straight copings, and some chimneys; but the beauty of the mouldings has been much destroyed by age and the tasteless additions of the newer parts of the house on the south side. Architectural and artistic photographers and sketchers would do well to make what records they can of the old house externally and internally before the hands of the spoiler are laid upon it, or the trees are further cut away. We understand that the mansion is doomed, and that Mr. Julius Ichenhauser, of New Bond-street, has purchased the Jacobean panelling, which will probably be refixed before long in a country house. A new road from Brixton-hill is already made past the old house, with some curious twists and turns. We may express the hope that the residents of the neighbourhood will jealously guard any further cutting down of the trees towards the main road, so as to preserve the rights of the Rush Common Act intact. The erection of houses has already commenced towards the frontage—let us hope they will be tasteful red-brick and tile villas of some architectural merit, and be well detached, instead of the miserable rows of the jerry-builder which have already spoilt the fine estate in the rear.

The twenty-ninth annual meeting of the Incorporated Gas Institute was held on Wednesday at the Institution of Civil Engineers, Westminster. Mr. William A. Valon delivered his presidential address, in which he referred at some length to the general progress of gas manufacture and consumption, the improvements in machinery for gas manufacture, and various other interesting subjects to gas managers. He urged the value of coke as a means of lessening the blackness of fog in great cities. Papers by Mr. William Foster, professor of chemistry at the Middlesex Hospital, on "Some Analyses and Lighting Values of English Coal-gas made during the year 1891," and by Mr. F. G. Dexter, of Winchester, on "Steam Applied to the Revivification of Oxide of Iron *in situ*," were read and discussed; and on Wednesday afternoon Professor Vivian B. Lewes, of Greenwich, delivered an address on "The Centenary of William Murdoch."

The tenth annual meeting of the Society for Preserving Memorials of the Dead will be held on Tuesday and Wednesday next, the centre being Bishop Stortford. On the first day the members will leave the Railway Hotel at 10.45 a.m. in carriages, and will visit the hall and church at Little Hadham, where memorials and portraits of Lord Arthur Capel, Lord Tewkesbury, and others will be inspected; Braughing Church, rich in memorials of the Hanchett, Brograve, Steward, and Freman families; Standon Church and Hospice, formerly occupied by the Knights Hospitallers; Much Hadham Church, where the rector, Dr. Stanley Leathes, will act as guide, the day closing with an examination of the historical apartments of Bishop Bonner's Palace and of Bishop Stortford Church. On the second day, after a visit to Sawbridgeworth Church, the annual meeting will be held at the "Bell and Feathers" in that village, and Hatfield Broad Oak Church, where some of the De Veres of Oxford are buried, will be seen. An exhibition of rubbings of Hertfordshire houses and numerous drawings, sketches, and photographs of local memorials will be on view at Stortford Corn Exchange.

The members of the Carpenters' Company held a court dinner in their hall, London-wall, on Wednesday night, the master (Mr. Thomas Robertson) presiding. Mr. A. Preston, in submitting "The Judges and Examiners of the Carpenters' Exhibition," spoke of the assistance the Carpenters' Company was giving the movement for technical education, and instanced the examinations instituted by the Company in practical carpentry as an efficacious means of promoting that object. Mr. Seymour Lucas, A.R.A., as an examiner, declared that wood carving (really a fine art) was better encouraged in the practical workshop than in any of the fine-art schools. The amateur might do good carving, but the serious man, who earned his living by it, did the finer work. Mr. H. T. Ashbee also responded. Mr. H. Saunders proposed "The Worshipful Company of Carpenters," to which the Master replied.

Mr. J. de Morgan, who was appointed in March last director of the Gizeh Museum, is already justifying his appointment. Forty more rooms are being prepared in the Gizeh Museum for exhibits, and will be opened next November, thus doubling the present extent of the museum. Most of their contents have for long remained stored in the building, which will soon become too small to contain the contributions from the numerous excavations now being made in various parts of Egypt. One of the most interesting works at present is the removal from Sakarah of thirteen large stelæ of soft limestone, belonging to the ancient empire of the fifth and sixth dynasties, which had been discovered and described by Mariette Pasha. Mr. de Morgan is also conducting excavations at Memphis on the site of the great temple, and expects next winter so much will be laid bare that visitors to Cairo will find a new interest in the remains of the capital of ancient Egypt. The 163 mummies of the priests of Ammon, found a year ago near Luxor, and a valuable recent find of bronze divinities from Sakarah, are being arranged in the new rooms. These will also contain a collection of stone slabs, on which are drawn sketches in black and coloured outline, and now exhibited for the first time.

At the Imperial Institute, now approaching completion from Mr. T. E. Collcutt's designs, the lifting machinery has been designed and erected by Messrs. Archibald Smith and Stevens, and consists of eleven hydraulic lifts, with pumping engines and power storage plant. There are two passenger lifts running from the ground to second floors, three lifts for reception and distribution of coals and general stores, three appropriated to the kitchen department, one for delivery of refuse from the engine and boiler-house, one heavy machine capable of raising a ton up the central shaft of the east tower, and designed for dealing with stores and large objects for the museum, and finally, a three-ton lift for raising extra large exhibits to the upper floor of the great gallery running east and west. All these are supplied by water at 700lb. per square inch—i.e., equal to the pressure which would be given by a tank placed 1,600ft. high. This water is pumped by an engine into a weighted receiver or accumulator wherein it is stored at the required pressure, and drawn off as required by any of the lifts. Immediately this occurs, the accumulator, by automatic mechanism, starts the pumps, which run till the accumulator is again full, when it automatically stops them till more water is required. All the water employed is returned by the lifts to the pumping machinery for re-use, and is, therefore, not wasted, but kept constantly circulating. The cost of working the system is, consequently, only that of coal burned, and the labour of stoking, no other attendance being required. In its outlines the system is similar to that adopted by the London and other hydraulic power supply companies, and to that on which the lifts for the electric railway are worked.

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The council of the Royal Academy have agreed to offer a prize to the students for the best design illustrative of an event in the history of the City. The selected cartoon is to be reproduced on the wall of the Royal Exchange.

The Metropolitan Railway Company's extension to Aylesbury, by way of Chalfont-road and Amersham Valley, will be opened for traffic about the beginning of July. The line will form the link in the proposed extension of the Manchester, Sheffield, and Lincolnshire Company's system to London.

The font at St. Paul's is to have a fine cover, which it is proposed to erect in bronze, and which will resemble the best specimens of Florentine work. The cover will be suspended from the roof, and will be of great height, with Scriptural designs of baptismal scenes; whilst around the font itself will be a marble screen or wall, of different colours, resembling as much as possible the font surroundings of Ravenna.

The Northern Counties and Yorkshire District meeting of the Incorporated Association of Municipal and County Engineers will be held at Scarborough to-morrow (Saturday). The municipal works of the Queen of Watering Places will be inspected, more especially the process of laying down tar-paving on the roads.

MEETINGS FOR THE ENSUING WEEK.

Saturday (To-morrow).—Dundee Institute of Architecture. Excursion to Perth and Scone Palace, by 11 a.m. train from West Dundee (Caledonian) Station.

Tuesday.—Society of Engineers. Visit to the South Metropolitan Gas Works, East Greenwich, and the Tower Bridge Works. Special steamer 1.15 p.m. from Westminster Pier.

Society of Architects. Annual meeting, St. James's Hall, Piccadilly. 8 p.m.

Wednesday.—Royal Institute of British Architects. Conversazione at South Kensington Museum. 9 to 12 p.m.

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CHIPS.

It is announced in Tuesday's *London Gazette* that receiving orders have been granted in the cases of Christopher Moses, of Middlesbrough, architect and surveyor, and Samuel Smith, of Leeds, architect.

A gift of 400 guineas has been forwarded to the church of St. Bartholomew the Great, West Smithfield, as a memorial, with the request that it be applied to providing a case for the organ, as the instrument has been without one since it was removed from St. Stephen's, Walbrook, in 1887.

The opening meeting of the session of the Glasgow Architectural Association was held on Tuesday week in the North British Station Hotel, George-square, the hon. president in the chair. Mr. Alexander M'Gibbon delivered his presidential address, the subject being "Current Architectural Criticism."

A portrait of the late Earl Beauchamp, painted by Mr. Lehmann, has been placed as a memorial in the Shire Hall at Worcester. The presentation to the Worcestershire County Council was made on Monday by Viscount Cobham on behalf of the subscribers. The portrait is 30in. by 25in., and is a replica of one executed by Mr. Lehmann in 1878, which is now at Madresfield Court.

The total proceeds of the four days' sale of the Barbédienne collection of *objets d'art* from China and Japan, at Durand Ruel's Gallery in Paris, amounted to £3,550. Most of these works of art have gone to America, particularly the jades which the late M. Barbédienne acquired at a small cost after the taking of the Summer Palace in Pekin by the French troops in 1860.

The interesting little church of St. Peter's, Burnham, Bucks, is about to be restored, from plans by Mr. W. F. Unsworth, towards the aid of whose scheme of improvement a bazaar will be opened at Burnham on the 28th inst. by the Princess Victoria of Teck.

The Bill promoted by the London County Council for carrying a line of tramways over Westminster Bridge and along the Embankment towards Charing-cross was read a second time in the House of Lords on Tuesday.

Mr. John Mackay, of Hereford, the well-known railway contractor, has just commenced his candidature in Sutherlandshire as a Liberal Unionist for a seat in Parliament.

Mr. John Dickson, proprietor of the Swansea and Mumbles Railway, died at Mumbles on Monday, at the age of eighty-seven years. The deceased was contractor for the Shrewsbury and Birmingham Railway and several branch railways in South Wales.

A meeting was held in the College Hall, Westminster, on Monday, the Bishop of London presiding, at which a committee was appointed to take steps for providing a memorial of Dr. Arnold in the Abbey, a site for which has been granted by the Dean between the busts of Wordsworth and Keble.

A Local Government Board inquiry was held at Accrington on Friday, relative to the application of the town council to borrow £12,048 for the construction of a new park at Oak Hill. The park covers 13 acres, and the purchase price is £9,500. There was no opposition.

The new church which was erected in the village of Croesfaen, in the parish of Pentyrch, some three years ago, was consecrated by the Bishop of Llandaff on Saturday. The architect was Mr. E. M. Bruce Vaughan, of Cardiff.

The carved oak parclose 15th-century screens in the parish church at South Pool, in the South Hams, are to be restored by Messrs. H. Hems and Sons, of Exeter.

On Saturday the first sod of a new line connecting the Manchester, Sheffield, and Lincolnshire system at Wrexham with the Cambrian Railways at Ellesmere, was cut by the Hon. Mrs. Kenyon. The length of the line is 13 miles. Messrs. Davies Brothers, of Wrexham, are the contractors; the engineer is Mr. George Owen, of Oswestry, engineer to the Cambrian and the Neath and Brecon Railways; and the work will be carried out under the superintendence of Mr. Woolley.

Trade News.

WAGES MOVEMENTS.

The London Building Trade.—It is highly satisfactory to report that at the conference of delegates from all the branches in the building trades and a special committee representing the Central Master Builders' Association, held on Friday last, at 31, Bedford-street, W.C., a settlement was arrived at by a compromise. Mr. Stanley G. Bird presided. After a long and stormy discussion, both parties agreed to waive some of their demands. Thus a strike more widely spreading and disastrous than that engaged in with the carpenters last year has been averted. The following were the terms agreed to: (1) That the working hours in summer shall be fifty per week. (2) That during the fourteen weeks in winter, commencing on the first Monday in November, the time worked for the first three weeks shall be eight and a half hours per day, the eight middle weeks eight per day, and the following three weeks eight and a half hours. (3) That the present rate of wages for skilled mechanics and labourers shall be advanced one halfpenny per hour. (4) That overtime, when worked at the request of the employer, but not otherwise, shall be paid for at the following rate: From eight to ten p.m. time and a half, and after ten p.m. double time, no overtime to be worked until a full day has been made, except where time has been lost through stress of weather. On Saturdays pay from noon to four p.m. shall be at the rate of time and a half, after four p.m. and on Sundays double time. Christmas and Good Friday pay shall be the same as on Sunday. (5) That employers shall give one hour's notice, or pay one hour's notice, on terminating an engagement. All wages due shall be paid at the expiration of such notice. (6) That men who are sent from the shop or yard, including those engaged in London, and sent to the country, shall be allowed their expenses, 6d. per day, for any distance over six miles from the shop or job, exclusive of travelling expenses, time occupied in travelling, and lodging money. (7) That the payment of wages shall commence at noon, or as soon after that time as practicable, on Saturdays, and be paid on the job; but if otherwise arranged, walking time at the rate of three miles per hour shall be allowed to get to the pay-table by noon. (8) That employers shall provide, when practicable and reasonable, a suitable place on the works for workmen to have their meals in, and a labourer to assist in preparing them. (9) That the wages earned after leaving off time on Friday and Saturday only shall be kept in hand as back time. (10) Six months' notice on either side shall terminate the foregoing rules, to expire on May 1. The foregoing rules shall come into force on the first Monday in November, 1892; but the increase in pay to bricklayers shall commence on the first week in July. The men have received the result with entire satisfaction.

Cardiff.—As far as the allied building trades are concerned, with the exception of the bricklayers, there is still little or no sign of a settlement. The men say the result of negotiations in London has immensely strengthened their position. The bricklayers, after a separate meeting at the Ship on Launch, *in camera*, sent a communication to the Master Builders' Association which, it is hoped, may lead to negotiations. Very nearly three thousand employés are directly concerned, and during the last six weeks they have been idle. The workmen desire rules prohibiting piecework and sub-contracting, the importation of dressed material, and the employment of apprentices regulated. They also claim a slight advance of wages. The masters profess a willingness to grant some concession in the matter of wages, but with regard to the other questions decline to be interfered with.

Colchester.—The bricklayers' strike, which appeared to have been settled by a compromise, has been resumed, the men refusing to wait till January next for an advance of ½d. in wages. They now decline to return to work except at an immediate rise from 6d. to 7d. per hour.

Cork.—The carpenters to the number of 200 went on strike on Thursday in last week, on account of a difference with the employers as to machine-prepared work in the rules agreed upon two months since between the representatives of the Cork Builders' Association and the Cork United Building Trades. The builders have offered to leave the point in dispute to the arbitration of the architects of the city.

Edinburgh and Leith.—The strike in the slater's branch is over, the employers having all now conceded the rise of ½d. per hour.

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Two priests' desks, executed by Messrs. Harry Hems and Sons, of Exeter, have been placed in Ilminster parish church, recently restored, from plans by the late Mr. John D. Sedding.

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◆

TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

Abertillery.—For market hall at Abertillery, Mon. Mr. Alfred Swash, M.S.A., Newport, architect. Quantities by the architect:—

	£	s.	d.
Bagley, Abertillery	£4,551	7	5
Linton, W. A., Newport	4,350	0	0
Linton, J., Newport	4,250	0	0
Williams, R., and Son, Newport	4,235	0	0
Webb, T., Newport	4,210	0	0
Richards, E., Newport	4,190	0	0
Stephens, Bastow, and Co., Bristol	4,100	0	0
Diamond, T. G., Newport	4,000	0	0
Williams, A. P., Abertillery*	3,900	0	0

* Accepted.

Ashburton, Devon.—For the erection of bank premises, for the Capital and Counties Bank, Limited. Messrs. J. W. Rowell and Son, Newton Abbot, architects:

	£	s.	d.
Shellabeer, G., Plymouth	£3,200	0	0
Trevenna, W., Plymouth	3,100	0	0
Finch, J., Plymouth	2,591	0	0
Rabbich and Brown, Paignton	2,572	0	0
Andrews, E., Teignmouth	2,500	0	0
Steer, J. L. & H., Clyst St. George	2,386	0	0
Goss Bros., Torquay	2,350	0	0
Brook and Ash, Totnes	2,326	0	0
Rundle Bros., Kingsbridge	2,264	0	0
Foaden, J. H., Ashburton	2,199	0	0
Stacey, F. A., Newton Abbot	2,190	0	0
Gooding, W. H., Exeter	2,124	0	0
Stevens, H., Ashburton (accepted)	2,081	14	0

Balham.—For the erection and completion of new church of St. Jude's, Sarsfield-road, Balham. Mr. E. Elton Hankins, architect. Quantities by Mr. A. Boxall:

	£	s.	d.
Higgs, F. and H.	£2,446	0	0
Holloway Bros.	2,284	0	0
Lorden	2,121	0	0
Turtle and Appleton	2,103	0	0
Gregory	2,088	0	0
Nightingale, B. E.	2,053	0	0
Johnson	1,987	0	0

Bath.—For carrying out structural alteration and new sanitary arrangements at the theatre. Mr. C. J. Phipps, F.S.A., architect:—

Wibley, C., Bath (accepted).

For the decoration of the auditorium, vestibule, and lobbies:—

Campbell and Co. (accepted).

Chester-le-Street.—For further works at Messrs. Luccock's jam works. Messrs. Plummer and Burrell, Newcastle, architects:—

Taylor and Hunter, Chester-le-Street (accepted).

Carlisle.—For the erection of semi detached villas, Howard-place. Mr. H. Higginson, Carlisle, architect. Quantities by the architect:—

Accepted tenders.

	£	s.	d.
Builder's work:—			
Bell, J. and R.	£700	0	0
Joiner's work:—			
Forster, James	398	0	0
Plumber's work:—			
Wilson, J.	92	0	0
Slater's work:—			
Hanson, C. J.	55	0	0
Plasterer's work:—			
Harrington, James	131	0	0
Painter's and glazier's work:—			
Kirk and Robley	60	0	0
Total	1,436	0	0

All of Carlisle.

Carlisle.—For the erection of a boiler-house and chimney shaft at Fusehill Workhouse, for the guardians of Carlisle Union. Mr. H. Higginson, Carlisle, architect. Quantities by the architect:—

Accepted tenders.

	£	s.	d.
Builder's work:—			
Johnston, R.	£380	0	0
Joiner's work:—			
Hindson, J.	25	0	0
Ironfounder's work:—			
Stanfield, D.	26	0	0
Plumber's work:—			
Wilson, J.	5	18	0
Slater's work:—			
Nanson, C. J.	14	18	0
Glazier's and painter's work:—			
Canning, D.	5	18	0
Total	457	14	0

All of Carlisle.

Cheriton, East Kent.—For works of drainage at Cheriton, near Folkestone, for the Elham rural sanitary authority. Mr. Jeal, engineer:—

Conley (accepted).

Cockington, Devon.—For the erection of a manager's house, cottage, and other buildings at the South Devon Fruit Farm. Messrs. J. W. Rowell and Son, Newton Abbot, architects:—

	£	s.	d.
Smale, G. K., St. Marychurch	£786	0	0
Cocks, C., Torquay	740	0	0
Brown and Peeke, Torquay	673	0	0
Vanstone and Mumford, Torquay*	669	0	0

* Accepted.

Cork.—For rebuilding the Courthouse. Mr. W. H. Hill, architect:—

	A.			B.	C.		
Dixon & Campbell	£30,960	0	0	£1,000	£29,960	0	0
Delaney, J., & Co.	29,390	0	0	250	29,140	0	0
Collen Bros.	29,638	0	0	638	29,000	0	0
Martin, H. & J., Ltd	28,578	0	0	578	28,000	0	0
Johnson, R. W.	27,897	0	0	400	27,497	0	0
Sisk, J.	27,540	12	4	1,500	26,040	12	4
O'Flynn, E. and P.	27,355	0	0	1,360	25,995	0	0
Hill, S. (accepted)	26,455	0	0	1,500	24,955	0	0

A. Gross tender. B. Less old materials.
C. Net amount.

Coventry.—For repairs to the Free Library, for the city council:—

	£	s.	d.
Smith, W.	£199	0	0
Whiteman, H., Coventry (accepted)	170	0	0

Coventry.—For the supply of 191 yards run of unclimbable fencing at the Hill Field allotments for the city council:—

	per yard.
Bayliss, Jones, and Bayliss	6s. 0d.
Icke, W. H.	5 10
Rowell and Co. (stays extra)	5 9
Matterson and Co. (accepted)	5 9

Croydon.—For warehouse and offices, George-street, for Messrs. John Thrift and Sons. Mr. Alfred Broad, A.R.I.B.A., 27, Dingwall-road, Croydon, architect. Quantities by the architect:—

	£	s.	d.
Smith, James, and Sons, Norwood	£3,673	0	0
Waller, D., Croydon	3,650	0	0
Marriage, W., Croydon	3,650	0	0
Maides and Harper, Croydon	3,587	0	0
Holt, W., and Son, Croydon	3,500	0	0
Barker, D. W., Croydon	3,461	0	0
Bullock, A., Croydon	3,365	0	0
Bulled, E. P., and Co., Croydon	3,350	0	0
Page, S., Croydon	3,340	0	0
Taylor, M., Croydon	3,125	0	0
Saunders, E. J., Croydon*	3,000	0	0

* Accepted.

Dunfermline.—For the erection of works of sewerage for the public commissioners. Messrs. Leslie and Reid, of Edinburgh, civil engineers:—

McDonald, L. and W., Inverkeithing (accepted) £3,676

Durham.—For eight cottages, Red Hill, Durham, for Mr. Wm. Gray. Mr. H. T. Gradon, Durham, architect:

	£	s.	d.
Moody, R.	£1,682	2	0
Kell, J.	1,350	0	0
Coates, T.	1,255	0	0
Gradon, G., and Son	1,229	10	0
Walton, W.	1,193	0	0
Whaley, J.	1,192	3	7
Mowbray Bros.	1,191	12	0
Draper and Sons, West Rainton	1,158	0	5
White, J., Langley Moor	1,150	0	0
Gibson (accepted)	1,149	0	0

Rest of Durham.

East Cowes, I.W.—For the preliminary boring for the proposed waterworks, for the East Cowes local board:—

Tilly and Sons, London (accepted)... £199 3 0
(Lowest tender received.)

Gladhouse, Edinburgh.—For constructing a pipe track and laying pipes to Gladhouse reservoir, for the Edinburgh and Leith Water Trust:—

Young, J., and Sons (accepted) ... £3,294 0 0
(Seven tenders received.)

For the supply of pipes:—

Laidlaw, R., and Son (accepted)... £3,442 16 11
(Lowest of five tenders received.)

FULHAM.—For refitting bathrooms and ward sculleries at the Western Fever Hospital, Seagrave-road, Fulham, for the Metropolitan Asylums Board. Messrs. A. and C. Harston, 15, Leadenhall-street, E.C., architects :—

Islip, F.	£1,732	0	0
Haynes, H.	1,597	10	0
Clements, Jeakes, and Co.	1,530	0	0
Burn Bros.	1,369	9	6
Benham and Son	1,350	0	0
Knight, J.	1,317	0	0
Minter, F. G.	1,300	0	0
Leslie and Co.	1,276	0	0
Brodie, M.	1,239	0	0
Wenham and Waters	1,092	0	0
Peattie and Axtell	1,070	0	0
Finch, B., and Co., 82, Belvedere-road, Lambeth (accepted)	1,047	0	0

FULHAM.—For the erection of proposed St. Mary's Mission Hall, North End-road, for the Rev. C. B. Foy. Mr. E. F. Roberts, A.R.I.B.A., architect :—

Powell, S.	£3,500	0	0
Swan, E.	3,408	0	0
Roffey, H.	3,200	0	0
Turner and Withers	2,955	0	0
Leslie and Co.	2,694	0	0
Clark and Co.	2,690	0	0
Patterson, S. F.	2,681	0	0
Chessum and Co.	2,636	0	0
Bendon, T.*	2,376	0	0
Bryant, J.*	2,330	0	0

* Received by telegram.

HEREFORD.—For the erection of an office for the inspector of weights and measures, for the city council :—

Pritchard, W. (accepted)	£56	10	0

IPSWICH.—For the erection of public baths in Fore-street, for the town council. Mr. T. W. Cotman, M.S.A., architect. Revised tenders :—

Girling and Coe	£3,750	0	0
Parkinton, T., and Son, Ipswich*	3,468	0	0

* Accepted.

KENSINGTON.—For rebuilding Nos. 99 and 101, and for alterations to No. 103, High-street, Kensington, for Messrs. Derry and Jones. Mr. Josiah Houle, F.R.I.B.A., architect :—

Stimpson and Co.	£8,950	0	0
Chappell, I. J.	8,834	0	0
Grover and Son	8,754	0	0
Kearley, C. F.	8,517	0	0
Spencer and Co.	8,475	0	0
Patman and Fotheringham	8,423	0	0
Nightingale, B. E.	8,330	0	0

LONDON.—For trial boring into the chalk at the Workhouse, Fulham Palace-road, Hammersmith, W., for the guardians of the Fulham Union. Mr. Alfred Saxon Snell, London, architect :—

Baker & Sons, Southwark Bridge-rd.	£940	0	0
Docwra and Sons, Ball's Pond-road	909	10	0*
Tilley and Sons, Walbrook, E.C.†	847	0	0

* Tubes to have plain joints. † Accepted.

LONDON.—For the erection of two dwelling-houses and shops in the Kennington-road, S.E., for Mr. Edric E. Salkeld. Mr. E. Clarke, 11, Queen Victoria-street, E.C., architect. Quantities by Mr. B. Swanstead, 22, Wellington-street, W.C. :—

Larter, W., and Son	£2,948	0	0
Pattinson, S. and W.	2,929	0	0
Young and Lonsdale	2,908	0	0
Balaam Brothers	2,900	0	0
Hoare, J., and Son	2,885	0	0
Patrick, M., and Son	2,870	0	0
Jelley, W.	2,553	0	0

LONDON.—For alterations and additions to the Guildhall, Westminster, S.W., for the Middlesex County Council. Mr. F. H. Pownall, F.R.I.B.A., 33A, Montagu-square, W., architect. Quantities by Messrs. Young and Brown, 5, Henrietta street, W.C. :—

Leslie	£18,787	0	0
Allen and Sons	18,465	0	0
Nightingale	18,300	0	0
Mowlem	17,953	0	0
Dove Brothers	17,945	0	0
Roberts	17,775	0	0
Cubbitt	17,760	0	0
Holland and Hannen	17,300	0	0
Colls	17,190	0	0
Chappell	16,849	0	0
Higgs and Hill (accepted)	15,740	0	0

LONDON.—For rebuilding 33, Great Castle-street. Mr. W. Hunt, architect. Quantities by Mr. H. Lovegrove ;—

Bulled and Co.	£2,040	0	0
Saunders, F.	1,995	0	0
Downs, W.	1,857	0	0
Nightingale	1,788	0	0
Smith, James, and Sons	1,779	0	0
Allen, J., and Sons	1,735	0	0

LONDON.—For fitting up new offices in St. Bride-street, E.C., for the London Society of Compositors. Mr. Alfred Saxon Snell, London, architect :—

Roberts, L. H. and R., Rheidol-terrace, N.	£2,731	0	0
The Co-operative Builders, Brixton	2,643	0	0
Wall, H., and Co., Kentish Town	2,640	0	0
Dove Bros., Tokenhouse Buildings, E.C. (accepted)	2,595	0	0
Dearing, C., and Son, Halliford-street, N.	2,556	0	0

LONDON.—For alterations and additions to the Royal Oak p.h., St. John's-road, Holloway. Messrs. Saville and Martin, Dacre House Arundel-street, Strand, architects. Quantities by Mr. E. J. Sadgrove, 22, Savoy-street, Strand :—

Toms, E.	£2,862	0	0
Goodall, S.	2,848	0	0
Ward and Lamble	2,822	0	0
Scrivener and Co.	2,795	0	0
Dearing and Sons	2,718	0	0
Gould and Brand (accepted)	2,697	0	0

LONDON.—For alterations to No. 227, Strand. Messrs. Saville and Martin, Dacre House, Arundel-street, Strand, architects. Quantities by Mr. E. J. Sadgrove, 22, Surrey-street, Strand :—

Oldrey, H. B.	£2,511	0	0
Goodall, S.	2,349	0	0
Dearing, C., and Son	2,343	0	0
Gould and Brand	2,325	0	0
Toms, E.	2,248	0	0

LONDON.—For rebuilding the Garrick public house, Green-street, Leicester-square. Messrs. Saville and Martin, Dacre House, Arundel-street, Strand, architects. Quantities by Mr. E. J. Sadgrove, 22, Surrey-street, Strand :—

Goodall, S.	£3,750	0	0
Perkins, R.	3,635	0	0
Anley, J.	3,522	0	0
Sanders, F.	3,510	0	0
Spencer and Co.	3,450	0	0
Payne, D.	3,421	0	0
Gould and Brand (accepted)	3,230	0	0

LONDON.—For rebuilding Nos. 99 and 101, and repairs and alterations to No. 103, High-street, Kensington, W., for Messrs. Derry and Toms. Mr. Josiah Houle, architect. Quantities by Mr. F. Stone :—

Stimpson	£8,950	0	0
Chappel	8,834	0	0
Grover	8,754	0	0
Kearley	8,517	0	0
Spencer	8,475	0	0
Patman and Fotheringham	8,423	0	0
Nightingale, B. E.	8,330	0	0

LONDON.—For erecting model dwellings in Radstock-street, Battersea, S.W. Messrs. Saville and Martin, Dacre House, Arundel-street, Strand, architects. Quantities by Mr. E. J. Sadgrove, 22, Surrey-street, Strand :—

Bates	£2,210	0	0
Dearing and Son	2,150	0	0
Toms	1,943	0	0
Young and Lonsdale	1,793	0	0
Goodall	1,773	0	0
Gould and Brand	1,716	0	0

LONDON.—For steam boilers, heating and hot and cold water apparatus, gasfitters' work, and kitchen fittings at the Fulham Union Workhouse, Hammersmith, W., for the guardians of the Fulham Union. Mr. Alfred Saxon Snell, London, architect :—

Clements, Jeakes, and Co.	£7,080	0	0
Rosser and Russell	5,020	0	0
Bradford and Co.	3,932	5	0
May Bros.	3,773	0	0
Berry and Sons (accepted)	3,400	0	0

LYNTON.—For taking down and rebuilding the church wall, erecting two lych gates, and widening the road to a minimum width of 23ft. opposite the banking premises on Church Hill, for the local board :—

Jones Bros., Lynton (accepted).

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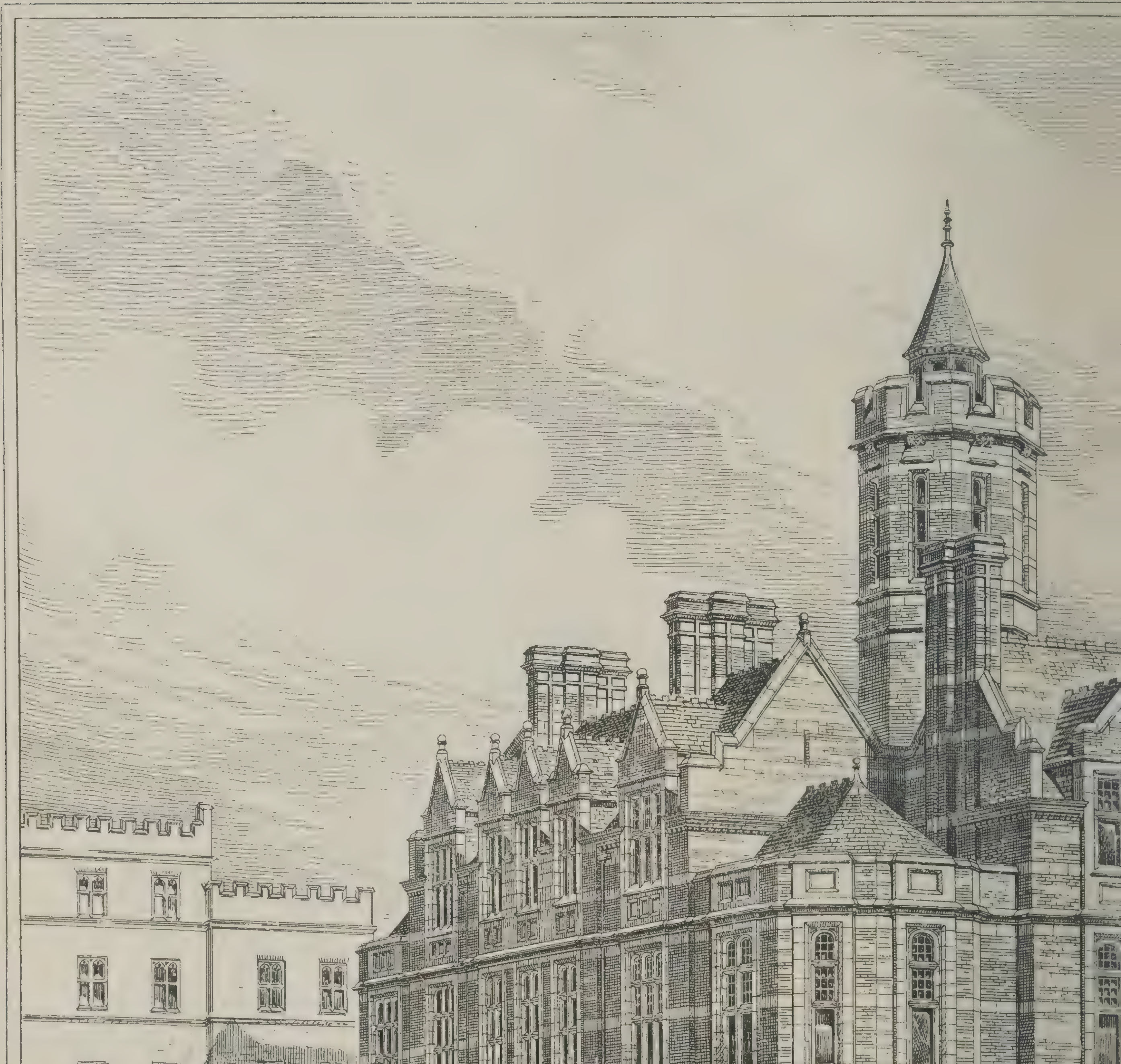

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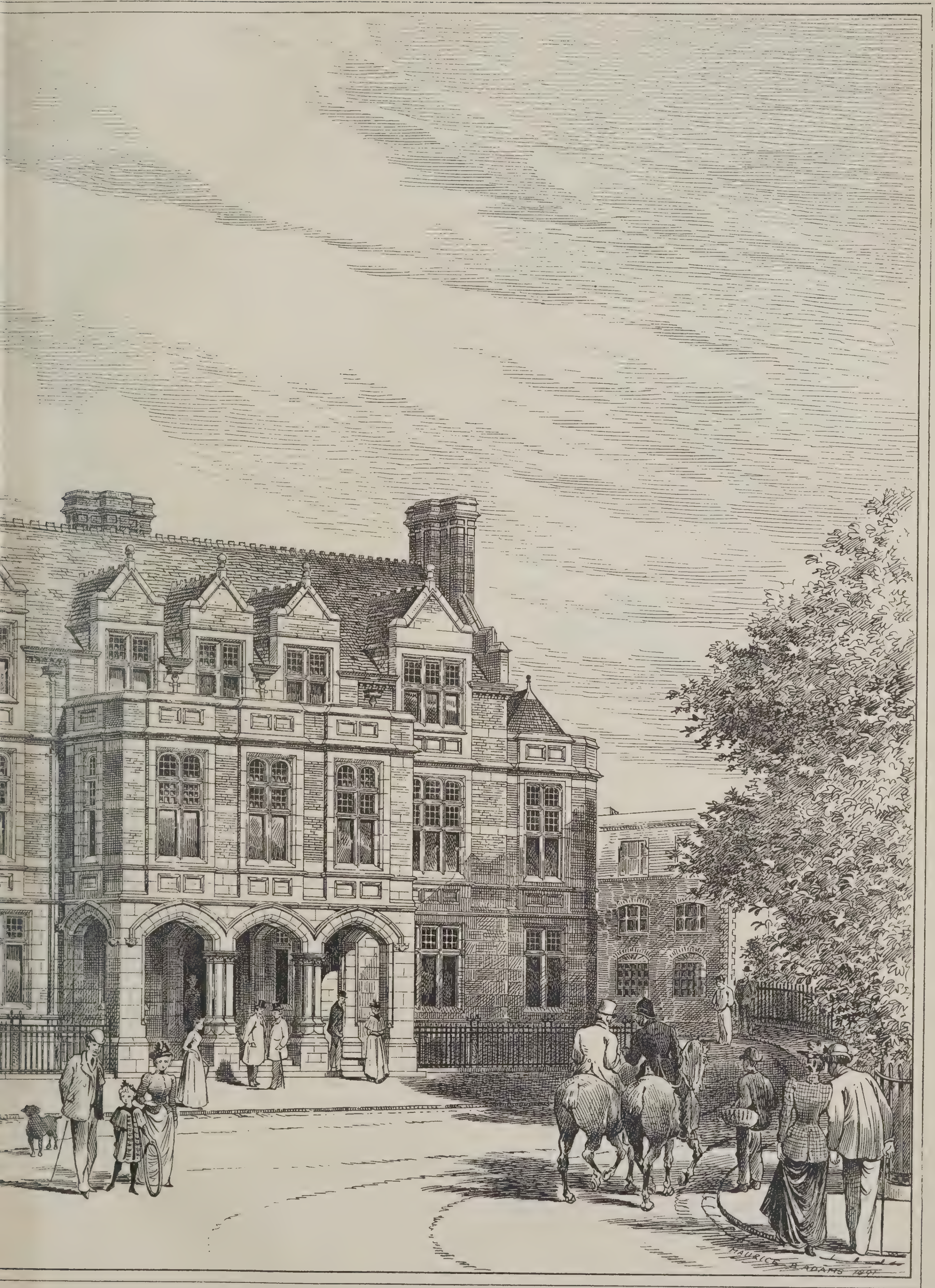
· GVILDHALL



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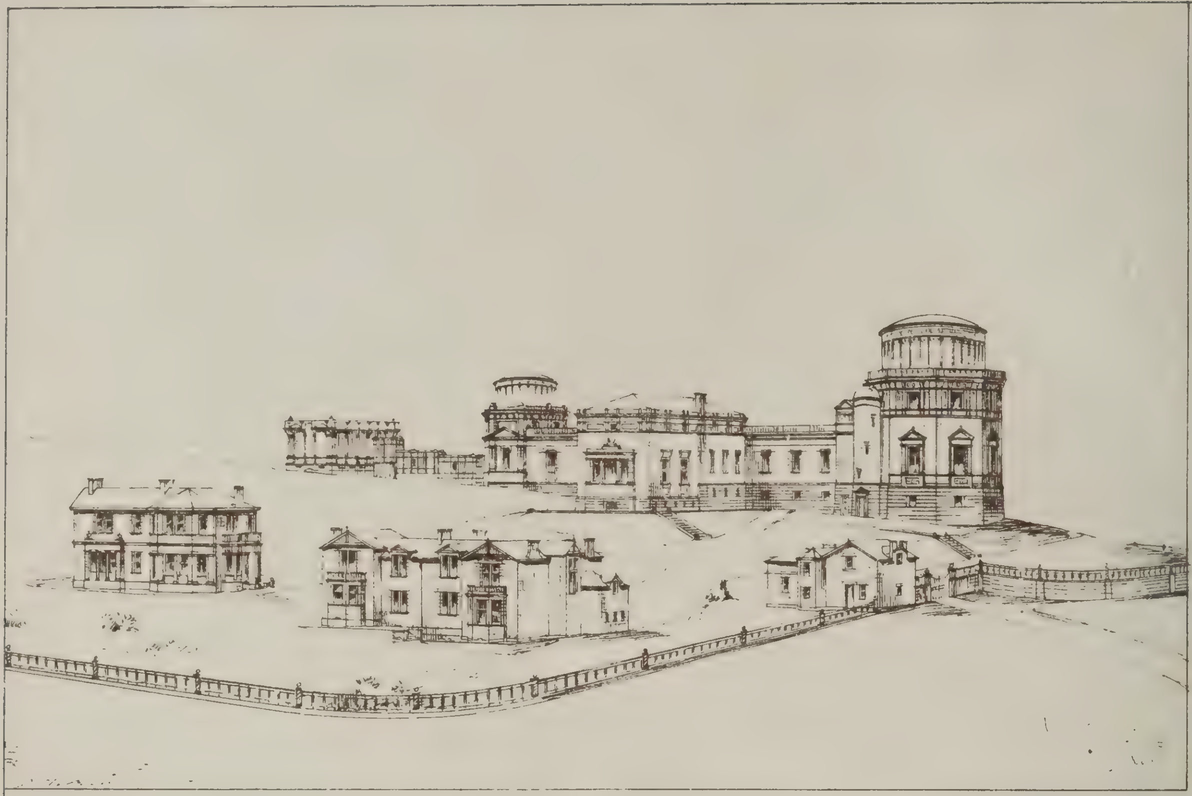

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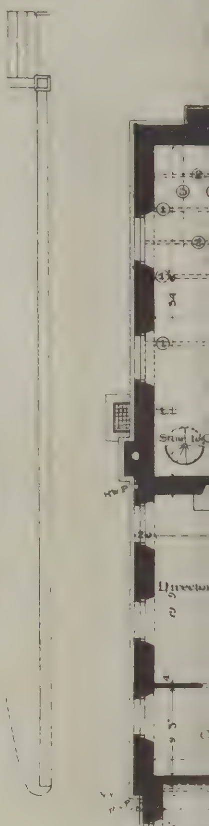

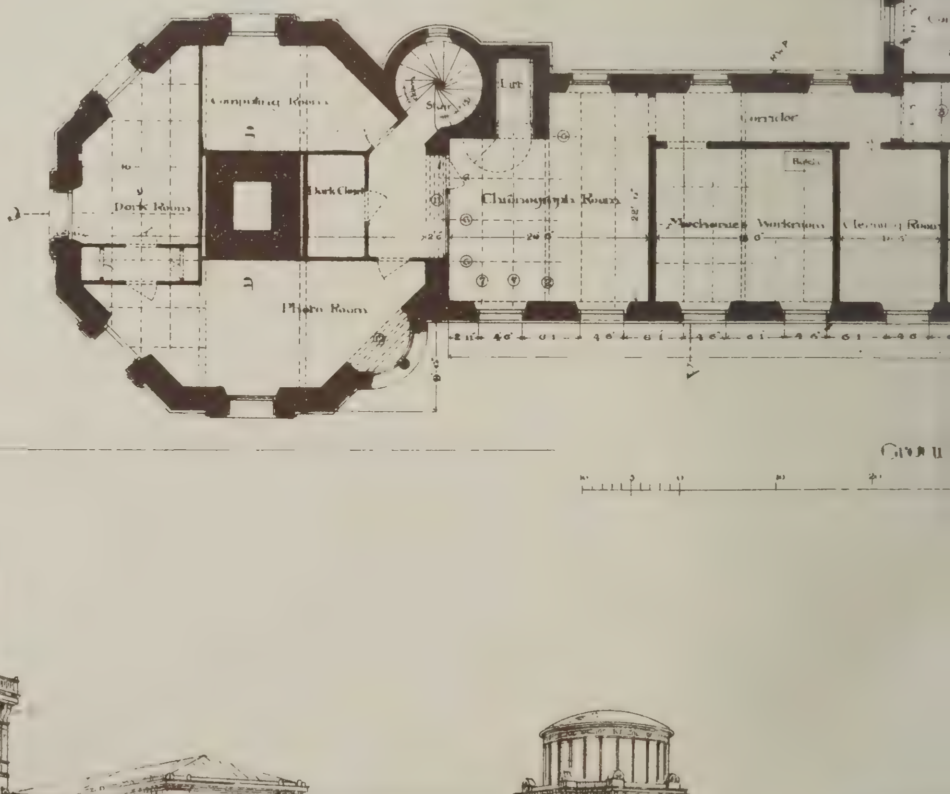

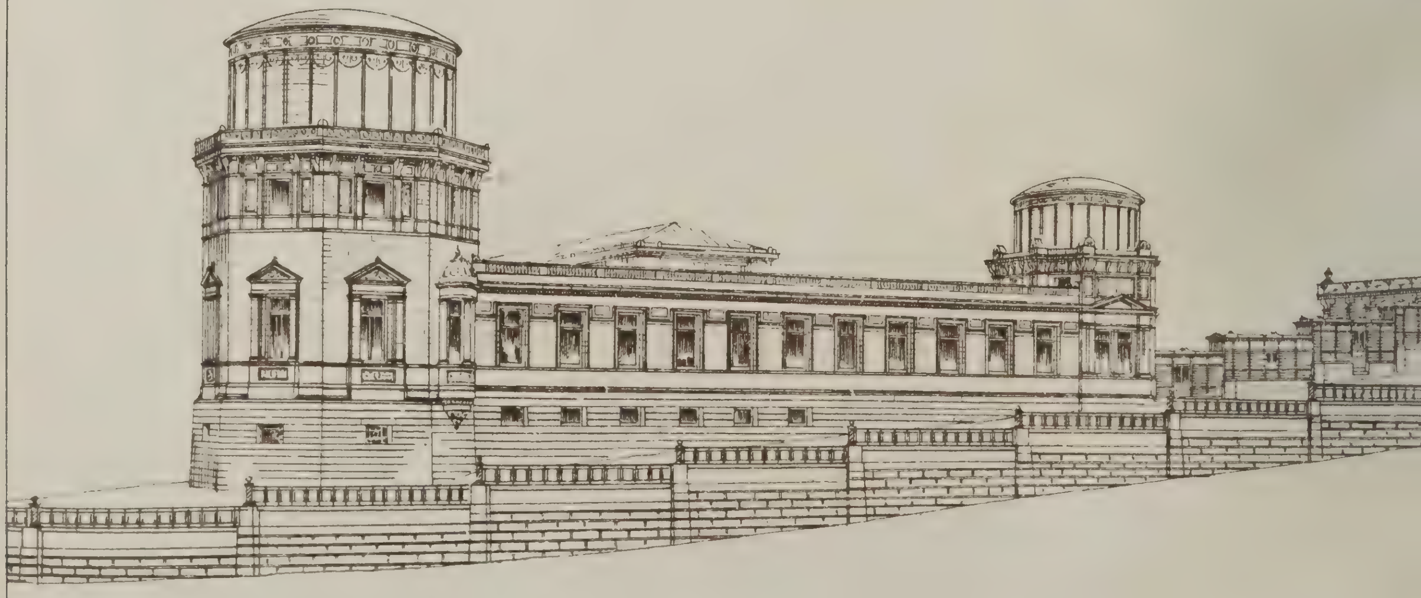

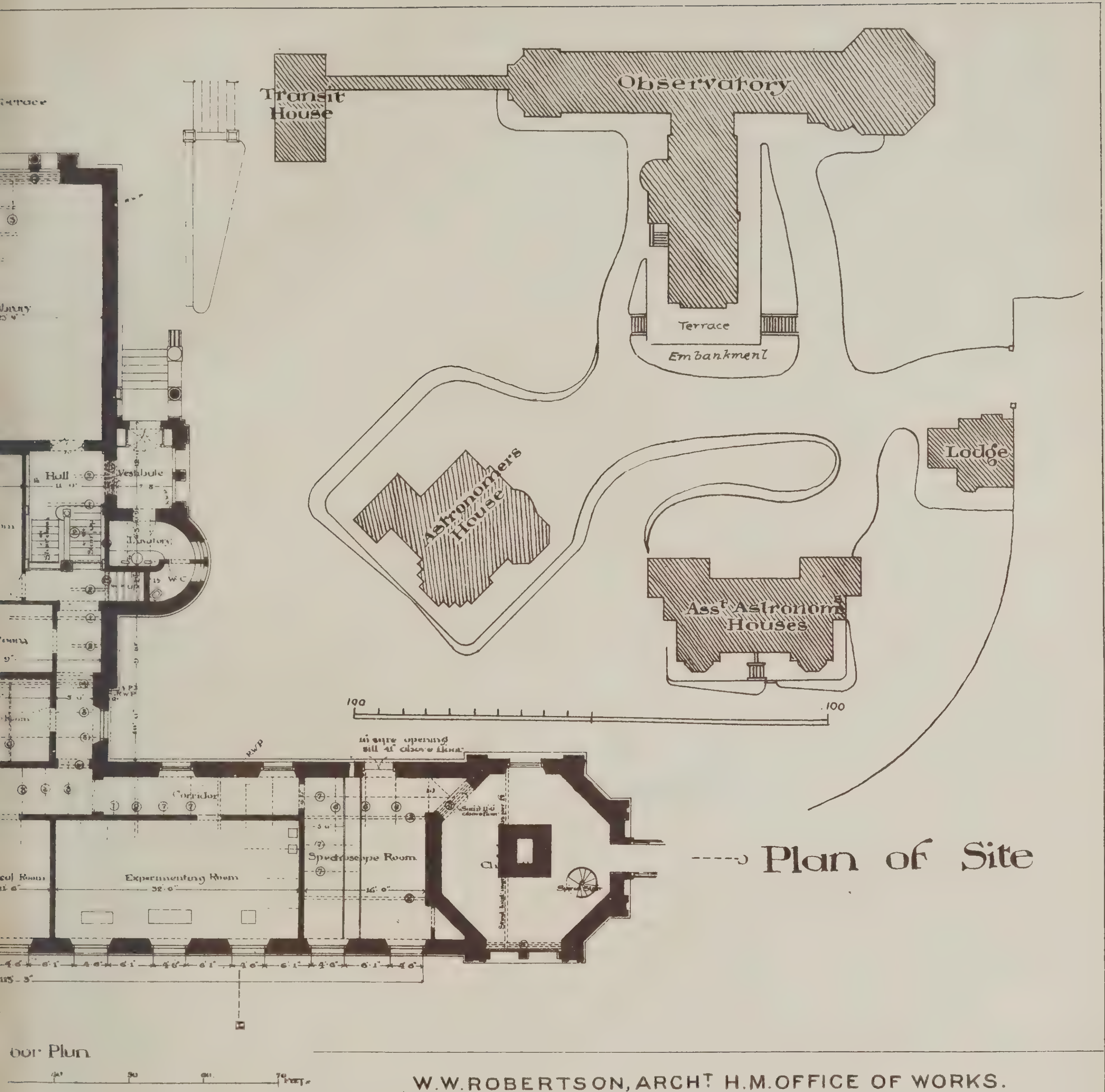

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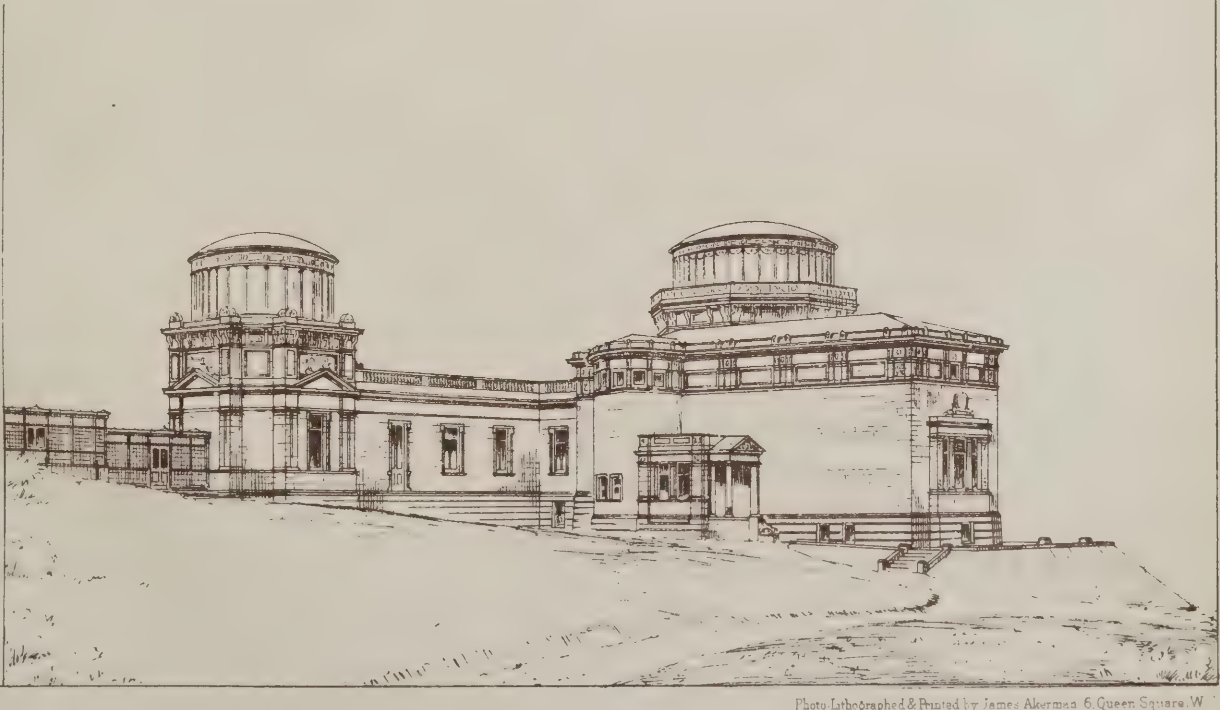

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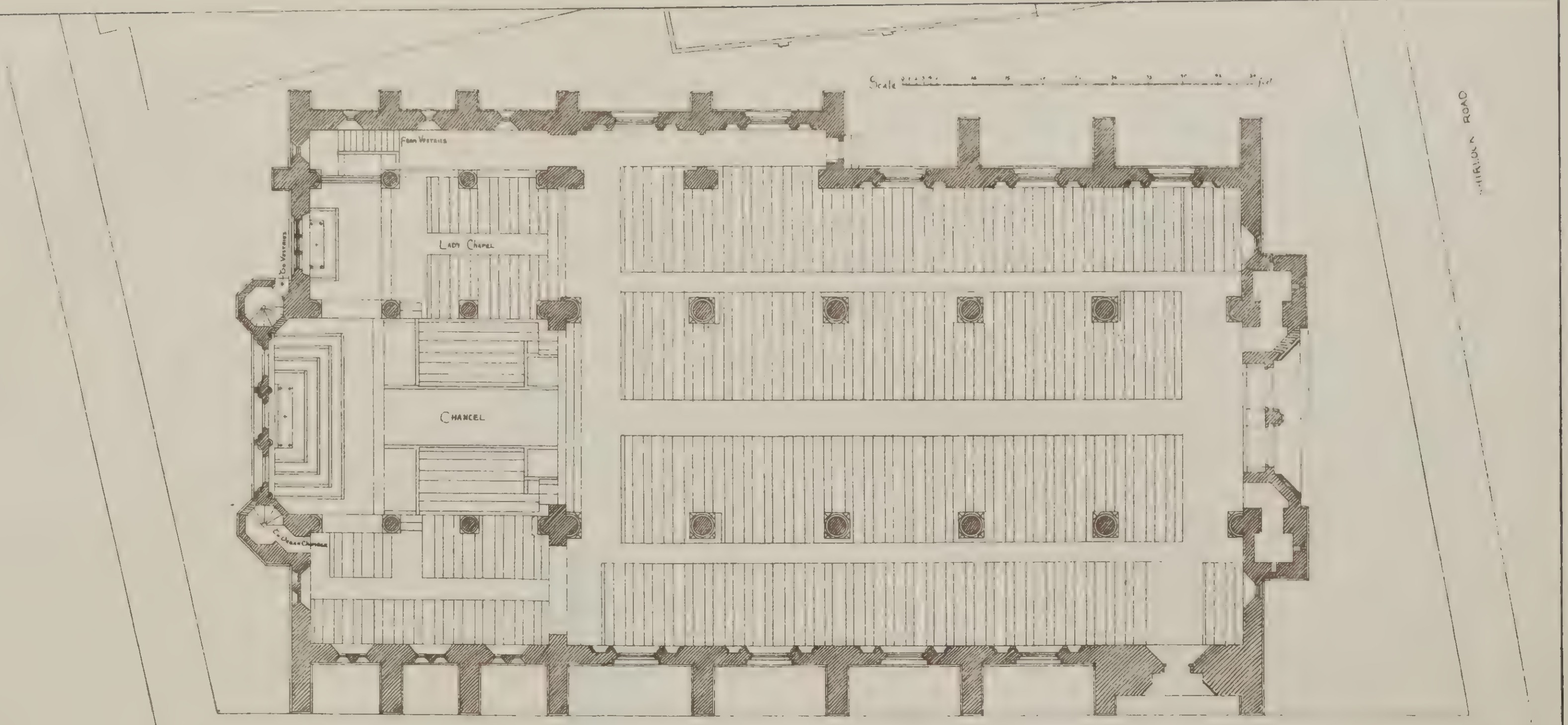
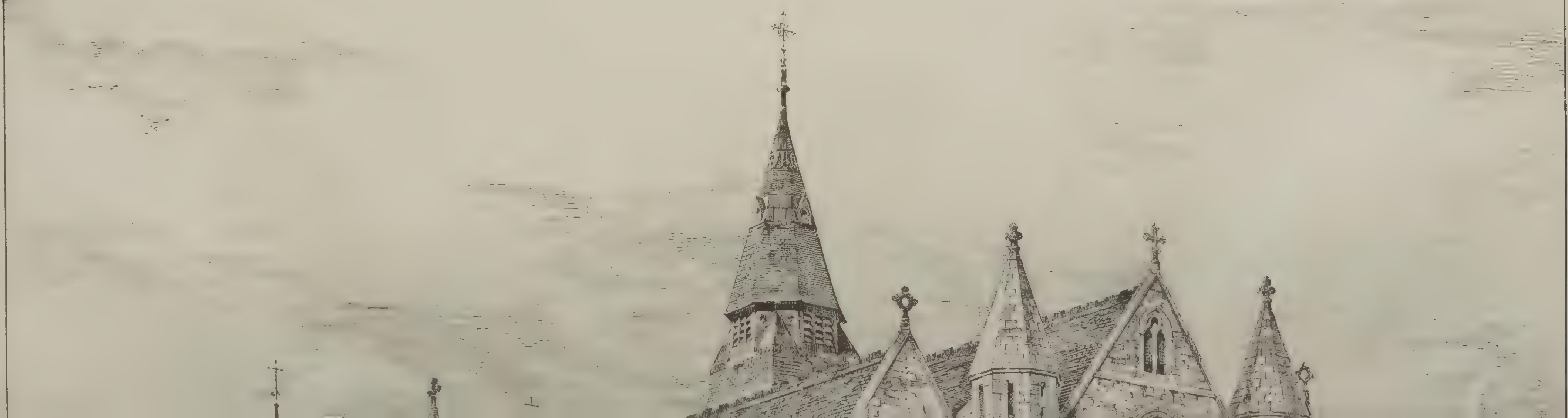
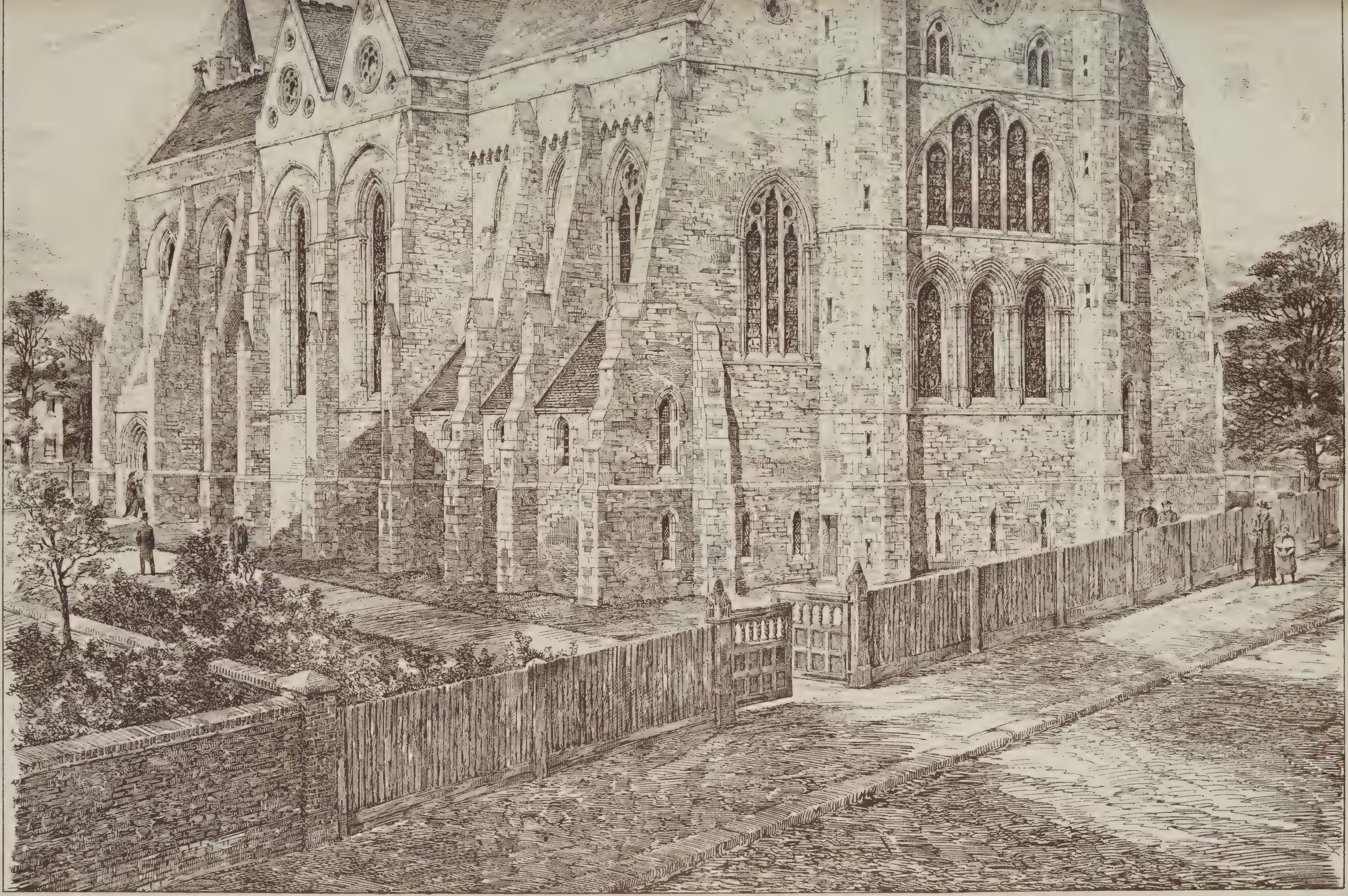
South East View

James Brooks & Son · Architects
35 Wellington St. Strand W.C.



Plan





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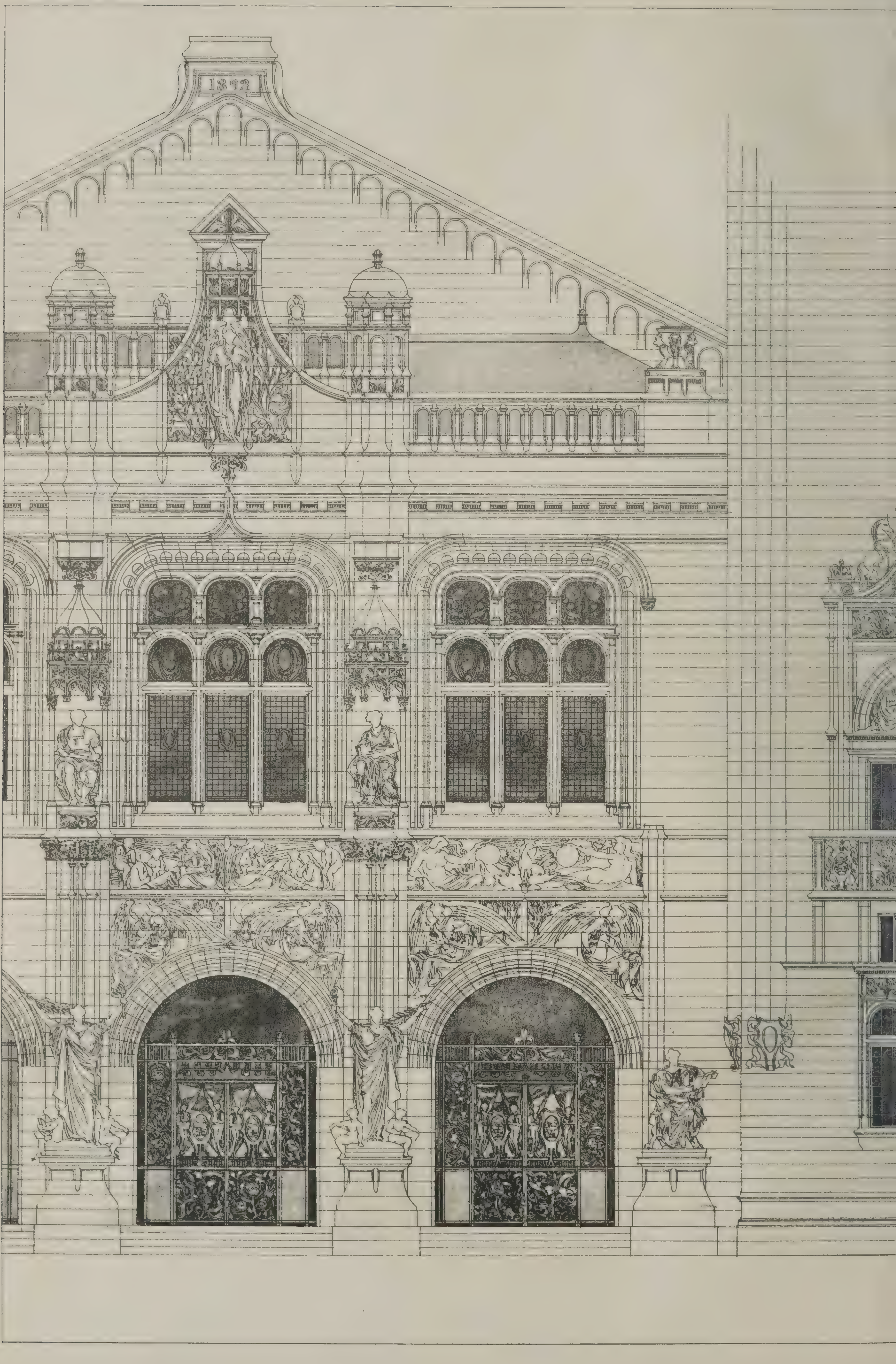
1892

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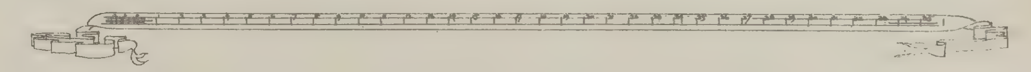
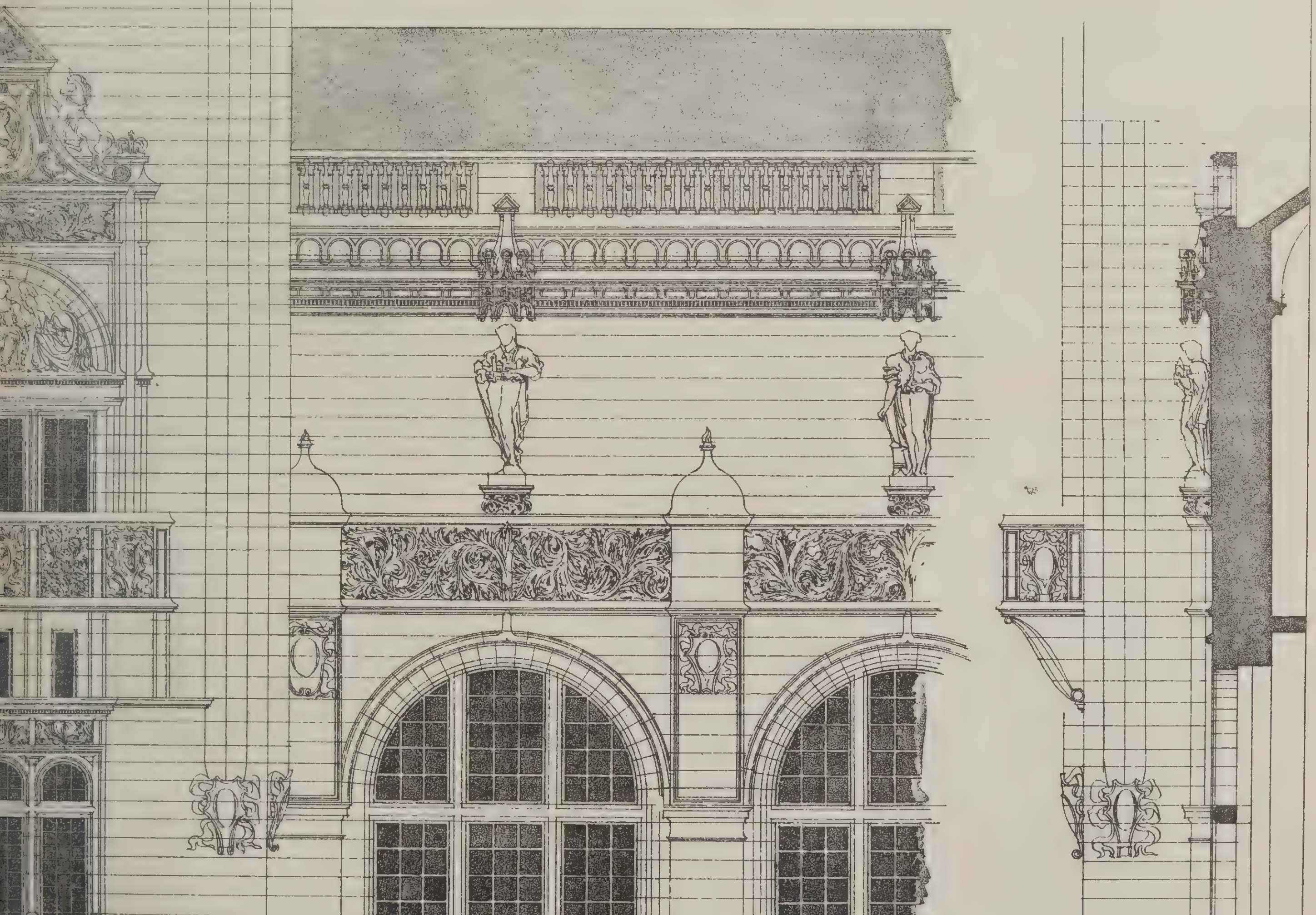
DESIGN BY JOHN HONEYMAN & KEPPIE, ARCHITECTS.





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VOL. LXII.—No. 1955.

FRIDAY, JUNE 24, 1892.

THE NEW COMPETITION SUGGESTIONS OF THE R.I.B.A.

THE "Suggestions" which have been issued by the Council of the Institute, are in many ways an improvement on those which preceded them. First of all, the double system, with its preliminary competition of sketches, open to everybody, and its final competition of finished drawings, limited to the successful architects in the previous stage, is no longer recommended. It originally promised well, and great things were hoped from it. It had a fair trial, prolonged through several years, and it was found to fail. Something of its failure, perhaps, was due to the severe way in which it was generally worked. Too much may have been demanded from the authors of the first sketches, who sometimes had nearly as much thinking and designing required from them as if theirs were the final, instead of being only the preliminary, plans. Now the system is no longer advised, and few architects, perhaps, will be sorry to see the last of it. The forms of competition which are retained are three. First, there is the open competition, by advertisement, which everybody knows. Then there is the limited competition, which is equally familiar. And, lastly, there is the hybrid competition, a cross between the other two. This has never come into common use, and is chiefly noticeable as having been employed with regard to the abortive Cathedral of Liverpool. This sort of contest begins by advertisement. All architects send in their names, with such other information as they may think likely to be of service to them. Then the promoters will select from the names sent in either one architect, to whom they intrust the work, or several architects, who compete amongst themselves for it. The professional assessor has the rather invidious office of advising on this selection: a circumstance, one may suppose, which will induce him to avoid, as much as possible, competitions of this hybrid kind.

The motto system is now given up, and the plan of numbering the designs in the order of receipt is recommended instead. It is a saving of labour to competitors, though a very trifling one; but in the matter of labour, assessors have been so much harder on them than committees used to be, that even small favours will be gratefully received. King Stork, however, has definitely succeeded King Log, and his subjects can only make the best of it. Except as a question of labour the alteration probably amounts to little. As a contributor to our columns pointed out some weeks ago, an unscrupulous competitor, who wants his work to be recognised, can find endless ways of managing this in spite of all the possible precautions. Whether mottoes or numbers are employed, therefore, matters little. The numbering will require care on the part of those who open the packing-cases, and considering what a careless world we live in, awkward mistakes are likely at times to arise. We have just seen that some competition promoters have the conscience to lay violent hands on all the designs they receive, and to claim every one as their own property. There may be others a shade less grasping who will think that if each competitor gets back some set of drawings, he need not trouble greatly whether they are or are not his own; and if this happens under the numbering system it will not be easy to rectify the wrong.

The new "Suggestions" contain one or two important additions. The chief of these relates to the stipulation about cost, which, in competitions, may be said to be the very root of all evil. Hitherto, competition promoters have asked for just as much accommodation at just as little money as hope, or perhaps cunning, happened to suggest to them. Now it is distinctly stated as one of the first duties of the assessor or assessors "to advise on the question of cost." This is a great and very welcome advance, and where, as has often happened, and as may often happen again, the assessor has not been consulted in the first instance on the subject of cost, then, in case he should consider the amount provided to be insufficient for the accommodation asked for, he is not to be bound by it in making his award. This is only fair to competitors and to assessors alike, and some such rule ought long ago to have been decided on. It has been almost a regular custom amongst promoters of competitions to name, in their instructions, a much smaller sum than they meant to expend —a sum, in fact, for which they knew the buildings they asked for could not be put up. An assessor, called in under the circumstances, had either to select a design or to say that all the designs exceeded the cost stipulated for. If he did the last, all the competitors' work was liable to be thrown away, through no fault of their own. If, on the contrary, he selected a design, he was blamed for selecting an unduly expensive one, and there was a standing reason from the very first starting of the works for finding fault with the architect, and thwarting him at every turn. Now, it is to be hoped, this sort of sharp practice will become a rarity.

It is further recommended that the premiums should really be *paid* to the successful competitors, instead of being dangled before their eyes as an inducement to compete, and then snatched away when they have competed successfully. The man who first invented the clause that "the premium shall merge in the commission"—a clause which has been so common in competition advertisements—must have been a lineal descendant of Ancient Pistol. "Convey, the wise it call," and the "Suggestions" deal with more than one variety of such "conveyance." Thus, in another paragraph, they take away the main inducement which has led competition promoters to adopt the principle of an architectural sweepstakes. Sometimes gentlemen in this position have offered a premium, say of £20, for the best design, and have charged for each set of "Instructions" a guinea or two guineas, not to be returned. In other words, the competitors provide the premium amongst them, and the successful competitor gets it. This plan, however, has seldom been found attractive enough to the profession, who have thought, apparently, that if they were going to risk a sovereign or two in a gambling speculation, it would be simpler to toss up for the money than to make sets of plans compete for it. Therefore, the commoner way has been to advertise that the money charged for "instructions" would be returned on receipt of a *bonâ fide* design. This looks fairer, but is far enough from being so. No architect really knows, till he gets the "instructions," whether it will be worth his while, or within his power, to compete at all. The time allowed may be too short, the work demanded may be too great, or there may be fifty other reasons why he is compelled to give up the idea. Then, in such a case, the people who draw up these unreasonable "instructions," get his guinea, or his two guineas, and keep it. To prevent this, the recommendation of the Institute now is that the charge shall be refunded, not only on receipt of a *bonâ fide* design; but also if the applicant returns the "instructions" within a month after they reach him.

These are the chief alterations, and nearly all are changes for the better. The main difficulty remains, the difficulty of finding, in each case, a suitable professional assessor. This has always been, in principle, the weak point of the system. A happy accident has, so far, kept it from being very obviously such, but in course of time its weakness can hardly fail to become conspicuous. It is this difficulty, more than any other, which needs, for the future, the earnest attention of architects and their representatives.

MUNICIPAL BUILDINGS, OXFORD.

THE results of the final competition for the Municipal Buildings at Oxford have been and are still on view in Gloucester-green in that city. Five designs are hung in the Settling Room, scarcely a very appropriate place for the reception of designs for so important a civic purpose, and we should have thought some other room might have been found at the Town Hall, near the proposed site, for the purpose of displaying the architectural skill of those who have been invited to contribute to so important an object. These five designs exhibit undoubted talent in the distribution of the several departments upon a site so irregular in outline as that facing St. Aldates-street, which almost renders it impossible to arrange a satisfactory whole from more than one point of view. In position, the site is indeed excellent: it is central, it has long been occupied by the present municipal offices—town-hall and city library and corn-exchange — and its proximity to several ancient buildings and colleges, as that of Christ Church, gives it an unique character. The very notched and broken outline of the north and east boundaries has rendered it impossible to arrange a central block without deflecting the axis, as has been done by several competitors in both the preliminary and final competitions.

We may also refer to the unfortunate angle between St. Aldates-street and Blue Boar-street, which has called for some artistic treatment of the junction between the two main sides. Those who have followed the frontage line of the latter street for the sake of utilising the ground have lost architectural effect. We notice that three of the five plans exhibited show the oblique frontage maintained as in Nos. 1, 2, and 5, the other two returning the side façade at a square angle, as in Nos. 3 and 4. The design numbered 5, which has been, as far as we know, provisionally accepted, and is placed in a prominent end position on the screens, is undoubtedly distinguished by much ability. The style selected is an elaborate and somewhat florid Renaissance, having a centre block flanked on the principal floor by corbelled turrets with low ornamental cupolas, these forming internally bay recesses at each end of the assembly-room, between which are three four-light mullioned windows divided by transoms into two main tiers, and separated by fluted pilasters carrying an enriched cornice and open parapet, except the centre, where an ornamental gable of panels and scrolled ramps forms the central feature breaking the high roof of assembly-hall. On the ground story three bold arches occupy the bays, the centre one being the main entrance. The wings which adjoin this centre block are relieved by ornamental gables, with circular pediments and slightly projecting oriel mullioned windows springing from corbels between elliptical-headed windows on the ground story. On the roof of centre block is a flèche. The angle near Blue Boar-street is well turned by a corbelled window finished as a low turret. The only fault we find is a general flatness of the façade and the need of bolder breaks between the centre and wings. The Blue Boar-street front is diversified with gables.

In the plan there is decided merit. The

water and rates offices on the north side of main entrance are towards St. Aldates-street, with short and well-lighted corridor approach from entrance-hall, with engineer's and clerks' offices in a rear block on the north side. These back offices are now planned at right angles instead of, as in the original design submitted by the author in the preliminary competition, obliquely parallel to the parade-room. On the south side of main entrance are in front the medical officer and the news and reading-room, with separate corner entrance to latter; and the lending library is placed partly along Blue Boar-street. On one side of entrance-hall, or staircase, is the nuisance inspector's office; and behind the hall are two spacious cloak-rooms. Two good areas give light and ventilation to this central portion, and the author has certainly much improved on his first arrangement. The public corridor entrance from Blue Boar-street to galleries of town-hall, council chamber, and court shut off the official offices on ground floor from the police department and court, and is at right angles to the side street. An entrance to court and police station is also shown at the end of this street —a convenient arrangement. The parade-room runs obliquely through the deep part of site from the public corridor just described, and forms the foundation of the town-hall above.

We may imagine we have ascended the grand staircase and arrived at the main landing, which has been ingeniously divided into squares by piers with arches and groins. Three entrances, aligned with three of the square compartments in such a way as to disguise the angle of deviation made between the staircase hall and the town-hall, lead into the latter, a spacious apartment with arcades forming side aisles, 110ft. by 55ft., with platform recess at the east end. The angle staircases to galleries and retiring rooms, &c., are well arranged. From the same principal staircase hall, an ante-room gives access to council chambers over the engineer's and clerks' offices. This is 53ft. by 32ft., and is well lighted by side areas on both sides, and has an aldermen's robing-room in connection with suite of rooms on front for mayor, committee, and town clerk. The assembly-room, 64ft. by 32ft., occupies the centre position of main front, and is also entered from the same hall. On the Blue Boar-street side is the sessions court, turned end to the side, and not as on the first plan, parallel to the town-hall. We think the change better, as it can be made a feature in the street. The justices', jury, witnesses' rooms, &c., are convenient, and are served by private passages away from the public hall and entrance on the east side. The reference library occupies the corner in front over the news-room. The municipal, police, and library departments are generally well separated by areas, and have their own entrances. The town-hall is lighted on both sides by a clerestory obtained above the lean-to roofs of side galleries, and it has a bold elliptical ceiling divided into ribs and panels rather elaborately. There are eight bays or arches on each side of hall; the sessions court is top-lighted by lanterns, and the council-chamber is side-lighted by areas. Some cleverly drawn details accompany this set of plans.

In the order of merit as a composition, we place No. 2 next. The author has placed his public library and town-hall block along the Blue Boar-street frontage, with its gabled-end in front, therefore, a little askew with the rest of the main front. This awkward angle is partly disguised by a tower-like entrance, which projects, and forms the library entrance. Next to this great block towards St. Aldates-street, comes the central block of the offices and the assembly room, with its high roof parallel to the street, crowned by a flèche over the centre. This centre has three slightly canted mullioned windows of Late 15-century character lighting the assembly-room on first floor, with deep cornice and parapet; the ground story has deeply set mullioned windows for clerk, waterworks, &c., offices, and a bold, arched centre entrance gabled; this story being set forward, forming a balcony to the assembly-room level. On the north end of façade another gabled wing block projects for the city engineer's drawing and private offices. A large central hall, with wide corridor running parallel to front, lighted at the end by an area, connects the official rooms front and back; and from this central hall opposite principal entrance between the two flights of main staircase starts a wide court corridor east and west, top-lighted, which leads to the sessions court on the rear on south side. The barristers' and solicitors' rooms are placed by the side of the witnesses' corridor, separated (by a large open area over glass roof of parade-room) from the front municipal block.

On the upper floor are the town-hall over the library, with semicircular ended platform and six bays of arches to galleries lighted by a clerestory between deep buttresses; these and the side aisle make a bold feature on the Blue Boar-street front. The hall is entered by a wide corridor over that below; at the north end in the rear it gives access to the council-chamber. The grand staircase cloak-rooms are also in connection, and in front of corridor is the assembly-room, with large committee-rooms and mayor's parlour. The uniting of these blocks by one main corridor, and the large area behind, are good points. The style has much of the local character of many of the colleges in Oxford, there is a breadth and unity in the composition that is pleasing, and the horizontal lines of cornices and parapets give a quiet dignity to the whole. A perspective view in sepia is sent. The roof of town-hall has a circular ceiled vault carried by open hammerbeam trusses, and the author shows foul-air trunks above the ceiling for ventilation.

No. 1 is conceived in a Late Gothic style shown by a bold elevation towards St. Aldates-street, and a perspective view, which latter does not do the design justice, having a rather meagre cardboard effect, owing to the omission of the masonry joints. There is much dignity of composition in the recessed end of gabled town-hall, which is made a central feature, and the well-balanced side wings of library and offices. In the principal plan the author makes his town-hall central 105ft. by 55ft., and at right angles to main front—a decided merit architecturally. The library and assembly-room over (65ft. by 39ft.) form a distinct block running parallel to Blue Boar-street, between which block and the town-hall is a wide area. The council chamber (50ft. by 32ft.) is on the north side in the rear, separated from town-hall by one of the principal staircases, which gives access to a corridor, and which connects the council chamber, town-hall, and assembly-room, and the cloak-rooms, mayor's parlour, &c., in front. The ground floor shows the city engineer's suite of rooms in the centre of main front, and the police stores and parade-room running behind under town-hall. The water and rate offices are in a north wing with separate entrance from street, and near is the entrance to gallery of council-chamber above. The main entrance near the south end of front leads to main corridor of offices, and also by staircase to the rooms above. The library and assembly-room entrances are in Blue Boar-street. The departments are well isolated by areas, and have well-planned gallery entrances with side gates into police-yard, and offices in the rear. The sessions court is over this extreme east block, with a distinct entrance for magistrates and jurors. The roof of large hall has hammer-beam trusses with flat ceiling; it is well lighted on both sides from areas, and the same regard for lighting is shown in the other departments. The plan is undoubtedly well considered, and less involved than some.

No. 4 is, from an artistic point of view, one of the cleverest designs; it is picturesquely and boldly handled in the perspective sketch, and of Late French or *Style Fleuri* character. The principal tower accents the staircase hall, which rises with majestic severity, pierced only by a wide traceried window, till near the top it is enriched by traceried panel work. There is then a parapet over the square tower, and an octagon lantern, with angle buttresses, terminate it with a domical roof. On the north side of this tower is the main entrance under a wide arch of Richardsonian design. The wings are unequal in length, and are pierced by traceried windows, with elliptical-shaped heads, and the gables are flanked by turrets finished with small ornamental cupolas. There is a free and playful treatment in the details, reminding one of Spanish work, and the details, the florid traceried piers and turrets, show a masterly hand; but the plan is less successful, though it has many excellent points. The town-hall block stands north and south, its axis at right angles with Blue Boar-street, upon which its end abuts. In front at the S.W. corner is the library, with vestibule entrance. The main entrance in St. Aldates-street leads to medical and inspectors' offices in front, and town-clerk's in existing building; also the city engineer's in the rear. On the right, arches open to staircase hall in tower, and a barrister's corridor leads to stairs to court on first floor. The parade and police-yard are in the rear, entered from Blue Boar-street, and the police offices are behind on east side. On the upper floor is the sessions court, next the east boundary; there is an area for light between the magistrates' department and the town-hall, and the council-chamber, mayor, and attendants' rooms are placed at the north end over the city engineer's offices.

No. 3, Late Gothic with Spanish Renaissance detail, has a central square tower and entrance in St. Aldates-street, crowned by a low octagon story and roof, with wings of two stories pierced by mullioned and traceried windows, the upper ones with elliptical heads. The character of the tracery in these heads is fanciful in the extreme. In the plan the author adopts the right-angle or square system; the side street return is square, as in the last named; the town-hall is also placed with its end towards Blue Boar-street, and is 100ft. by 50ft., surrounded by a corridor and foyer. The main entrance-lobby is narrow; the engineer, sanitary, and medical offices occupy a large portion of the front, with the water and rates offices on the north side. The justices' entrance to court and town-hall are by the centre entrance, and the lending-library and news-room are at south-west corner. The ground floor is cut up and crowded; the areas for light are small, and the corridors and entrances are rather wastefully distributed. The council-chamber and assembly-rooms are on the first floor in front. The elevation is quiet, and shows some cleverly-drawn detail, which is in keeping with much in Oxford.

If we may refer to the rumour current to the effect that the Town Council have not made up their mind, and are about to shelve the competition in favour of an architect whose work in Oxford schools and colleges has gained him academic distinction, it will be but to express our opinion that the report is not worthy of credence, as the award will, in all probability, be made on the 29th of this month.

THE POPLAR FREE LIBRARY COMPETITION.

THE large and thickly-inhabited parish of Poplar has at length succeeded in securing the adoption of the Public Library Acts, and the Commissioners for Public Libraries have selected a design for a building to be erected in a site on the East India Dock-road. In this selection no assessor was appointed, the Commissioners having adjudged the merits of the designs and made the award last Monday. The competition was limited to three candidates. The site selected for the new library is central, and situated in a wide portion of the East India Dock-road, near the playground, and next the Wesleyan Chapel. The ground is T-shaped, the vertical part of the letter representing the front towards the road (about 44ft. by 28ft.), and the horizontal part the main plot behind the houses, a form of site very suitable for a building where the chief rooms are better removed from the noise and distractions of a public thoroughfare. The site was thus purchased at a moderate price, and by the acquisition of a few houses in front a good entrance from the road is obtained.

The rear portion of the site naturally suggested itself as the most desirable position for the main block, the reading, news-room, and reference library, the dimensions east and west being 105ft. by 60ft. wide. Being closely built round, except at the east end, the competitors have top-lighted these rooms, while they have partly availed themselves of the passageway along the east side for a few windows. The front façade is restricted to a width of about 28ft., and on this account the building will not present a very important elevation to the road. On the other hand, the retired position of the main block is an advantage to the requirements of a reading-room and reference library.

The Commissioners have awarded the first place to "Control," the author of which is Mr. John Clarkson, district surveyor for Poplar, a plan which certainly possesses much merit, and in which the author has to a certain degree, at least, carried out the principle of his motto. That part of the site which projects to the East India Dock-road, about 30ft. wide, has the public library entrance on the east side (next the passage), leading to a hall 8ft. 6in. wide, with counter on one side, while the lending-library occupies the remaining portion of the space to the west, with a committee-room in front, also a librarian's private entrance on the west side. The lending-library and hall are top-lighted, and a few windows are also introduced facing the side passage. At the end of the entrance-hall is an hexagonal-shaped vestibule giving access to the lending-library and the lecture-room at the east end of main block, also to the reading-room immediately behind the lending library, and to a wide corridor lighted by glazed partitions, which leads to the reference-room on the west side. The author has set back the front wall of lecture-room and canted it, thereby giving space for light to the windows round the angle; the news and general reading-room is a square-shaped room, top-lighted, giving accommodation to 200 people. It is divided by a thin partition with windows from the reference library. The whole of these rooms are of one story, and are lighted mainly by clerestories at the side above supported by iron columns, as well as by top-lights—an arrangement that gives ample light to the tables, stands, and bookcases. A small counter between the lending library and reference library affords a convenient means of handing over any books from one to the other. The basement plan exhibits several good points. A large bookstore is provided under the end of the reference library, lighted by a glazed roof on the north end of the latter; the heating-chamber is centrally placed, a very desirable position to keep up a good circulation of heat to all the rooms, and the author has adopted the excellent plan of providing underground passages, 6ft. high, which run along below main walls of rooms above for the purpose of the hot water and gas pipes, and by which access can at any time be obtained without having to disturb the floors. An assistant's room is also obtained under offices. The two upper floors of the front portion towards the East India Dock-road contains the librarian's house, and the caretaker's rooms are facing Cottage-street in the rear. The elevation towards the East India-road is rather commonplace in its features, being a three-story front with cornice and pierced parapet, the roof not showing. On the ground story are the two entrances, with windows of committee-room between; the first floor is distinguished by a centre flat projecting canted window, between bold piers, with windows on each side, and the piers are carried up to the top story and united by a large semicircular arch below the cornice, in which is also a slight projecting window. By recessing the sides of the façade, the author is thus enabled to form a slight projecting centre, the relief due to which will be of some value as seen sideways, though the shaded geometrical drawing does not indicate this relief sufficiently.

"Populus," placed second, is accompanied by a very artistically coloured perspective—certainly the best sent in—representing red brick with terracotta and stone, with an angle feature of architectural feeling. It does not, however, stand with the first on plan. A crooked narrow passage traverses the building between the reference library in front and the news-room on the west side, and then turns eastwards round the end of reference library, the effect of which is to cut off the news and reading-room from the reference library, and the space for borrowers would be contracted.

The design "Height and Light" is chiefly distinguished for a central news and reading-room, with an arrangement of columns carrying an octagonal lantern, which, however, does not show the fitting-up. The author puts himself out of court by building over the side public passage-way, and making one outer archway leading to both the entrance and to the passage. The passage-room for counter is not spacious enough. The style adopted is Italian. We hear that the names of the authors of the two latter designs are Mr. F. J. Smith, of Great George-street, Westminster, and Mr. J. E. Inglis, of Great Russell-street.

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THE TOWER BRIDGE.

THE ugliest of all London bridges over the Thames is unquestionably that at Lambeth, the southern end of which is at the very gates of the Primate's Palace. It has, nevertheless, one redeeming feature, the possession of which, in the eyes of many, would more than counterbalance its æsthetic deficiencies. It is the cheapest of all similar structures from London Bridge to Putney, the contract cost of it not having exceeded some £28,000. Whether the Tower Bridge, now advancing towards completion, will be the handsomest as well as the dearest, it would be, perhaps, somewhat premature to decide. It will, however, certainly be the most imposing, the most striking viewed as a *coup d'œil*, and the most novel as well as the most peculiar of all the bridges to which attention has just been drawn. It is true that the design, which is that of Mr. John Wolfe Barry, M.Inst.C.E., embodies within itself principles which have previously characterised the construction of other bridges; yet, taken as a whole, it has undoubted claims to be regarded as a structure *sui generis*.

The selection and final adoption of the present low level *pont à bascule*—as it has been incorrectly termed—was not determined upon until due inquiry had been made into the merits and demerits of numerous rival plans and projects, and the fullest consideration given to them, as the importance of the case imperatively demanded. In order to effect a transit from one bank of a river to the other, omitting swimming and ballooning, there are three modes of proceeding. One may go underneath, as in a tunnel or subway; above, as by a bridge; or on the surface, as by a ferry. The first and third of these methods were discarded in favour of the second. In fact, the designs which were of the second class, and consisted of "high-level bridges," shared the same fate as the other two, preference being given to the low-level principle. It is a little paradoxical to term the Tower Bridge a low-level one, for, as it will be subsequently pointed out, it partakes of the character of both. So far as vehicular traffic is concerned, it is, to all intents and purposes, a low-level bridge, but under certain conditions it changes itself, Protean like, into a high-level one, for the accommodation of pedestrians. It should be mentioned that the design for a "swing bridge" was considered inadvisable, owing to the necessity of the protecting dolphins, which would interfere with the water-way. Whether the authorities have chosen wisely or not, it is no intention of ours to question. They have given the people a bridge, in close proximity to England's ancient Metropolitan fortalice, where it has been urgently needed for nearly half a century.

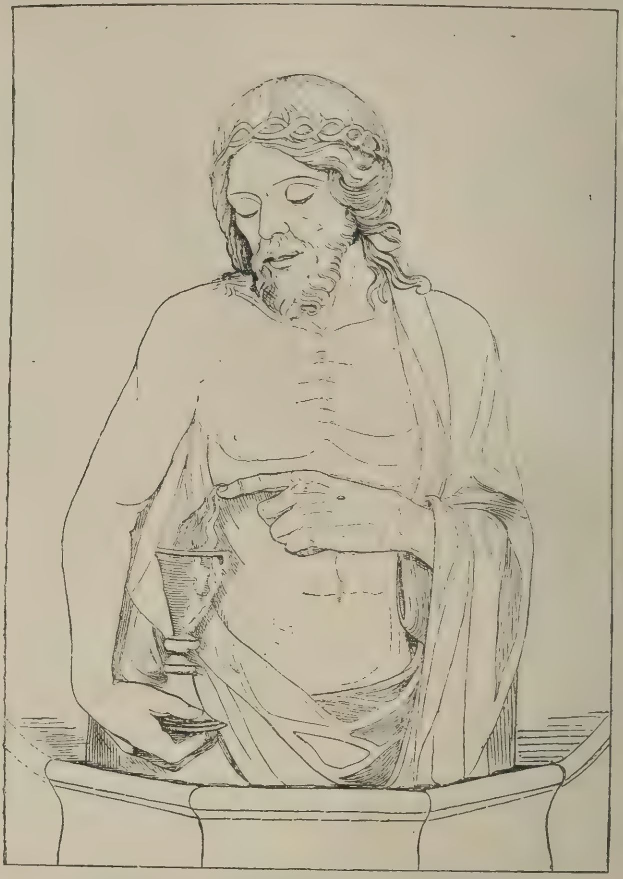
The Tower Bridge consists of one central span of 200ft., and two side spans, each of 270ft. The central span is that through which vessels will pass, and is closed or covered by two wrought-steel semi-arches or cantilevers, which meet in the centre. These semi-arches are lifted up by hydraulic machinery, and, when raised, occupy a position between the pair of the colossal columns, situated between the centre and side spans respectively. In lifting, the demi-arches pivot or hinge upon a solid steel pin, 21in. in diameter. To assist this operation, a counterpoise is attached below the springing end of the arches, and a fair idea of its weight may be gained from the fact that the arches, or "lifting leaves" weigh 95 tons. It is, no doubt, from the use of this counterpoise that the word *bascule* has been applied to this bridge. When the centre span is closed, the headway at Trinity high-water mark is 35ft., so boats with short masts can pass readily underneath. The width of the roadway of the centre span is 50ft. The bridge being "lifted," all traffic is stopped, but pedestrians can get across in the following manner:—The two open towers formed by bracing and connecting together the columns previously referred to, rise, two on each side of the span, to a total height of nearly 200ft. above water level. Each pair of these towers are connected near their upper extremity longitudinally, that is the whole length of the central span, by a steel lattice girder, which thus forms two foot-bridges, one on the up stream, and the other on the down-stream side of the structure. Within the towers the hydraulic lifts work, and the wayfarer ascends and descends with them. It may be fairly assumed that the lifts will work only while the low-level part of the bridge is not available for traffic. The piers, two in number, are built of granite. The foundations were got in by means of caissons, to a depth of 25ft. below the bed of the river, or to 53ft. below Trinity high-water mark. They are provided with cut-waters or starlings, and at the level of the bed of the river measure 185ft. by 70ft. Probably, to assimilate as much as possible the general appearance of the bridge to that of Her Majesty's Tower, the steel towers will be encased in granite, and in order to allow of the expansion of the metal, a small space or clearance between it and the stonework is provided, by interposing between them a layer of loosely-hung canvas, against which the stonework is set.

The side spans are each 270ft. in length, 60ft. in width between the parapets, and are constructed on the suspension principle. At present the land chains are fixed in the usual manner below ground on both sides of the river. The upper portion of them is supported on temporary staging, and so also are the chains on the land side of the side spans, which extend in one link for about 70ft., and they will continue so until the other chains which swing from the steel towers are connected with them. We have used the term "chains," as we are speaking of the suspension principle; but there is very little similarity either in form and dimensions between those of the Tower Bridge and the ordinary suspension chains. The former resemble on the land side a fairly sized box girder, and in the side spans they represent in one line the form of an inverted bowstring girder, with the horizontal flange curved something approaching the shape of a crescent girder. The entrance to the side spans, or what may be called the bridge proper, is through a handsomely decorated archway. The approaches are carried on viaducts, that on the north side skirting a part of the old Tower moat. The weight of the whole of the moving part of the bridge is put at 2,000 tons, and the total amount of steel which Sir William Arrol, of Forth Bridge reputation, has to deal with as his constructive material is over 12,000 tons. The hydraulic machinery is supplied by the well-known firm of Sir William Armstrong and Co.

At present, the whole of the substructure may be said to be complete, and it is possible the work might have been further advanced, had not the circumstances of the case prevented both piers being carried up simultaneously. As it is, this obstacle having been surmounted, the progress from each shore has been well maintained, *pari passu.* There yet remain the completion and fixing of the "lifting-leaves," the construction of the heavy, long "chains" connecting the top of the towers with the "chains" of the side spans already in position, the completion of the side-spans and of the casing, the arrangement of the hydraulic machinery and lifts, and numerous other details. It is expected, in spite of the amount of work to be accomplished, that another year will suffice to place the two banks of the river in permanent communication, and enable all parties to recognise the truth of the motto "Finis coronat opus." Without a visit to the site and works of the Tower Bridge, it is not possible to realise the magnitude of the design and workmanship, the massive character and peculiar features of its construction. While it must yield undoubtedly in extent, and collectively, to the Forth Bridge, yet, individually, some of its component parts, both in size and weight, need not fear comparison with that great engineering masterpiece.

CELTIC HISTORIC ART IN THE APENNINES.

THE author of "Early Christian Architecture in Ireland," Miss Margaret Stokes, of Carrig Breac, Howth, Dublin, has lately made a well-conceived pilgrimage in search of vestiges of the Irish saints in Italy, and the handsomely-produced volume which Messrs. George Bell and Sons, of Covent Garden, have just published comprises in a series of admirably-written letters, the pages of which are copiously illustrated, a detailed account of this enthusiastic lady's itinerary.* Inspired by such patriots as Bishop Reeves, Miss Stokes embarked upon this under-



STATUE OVER FONT AT LAMMARI.

EAST END, APSE AND TOWER, SAN FREDIANO, LUCCA.

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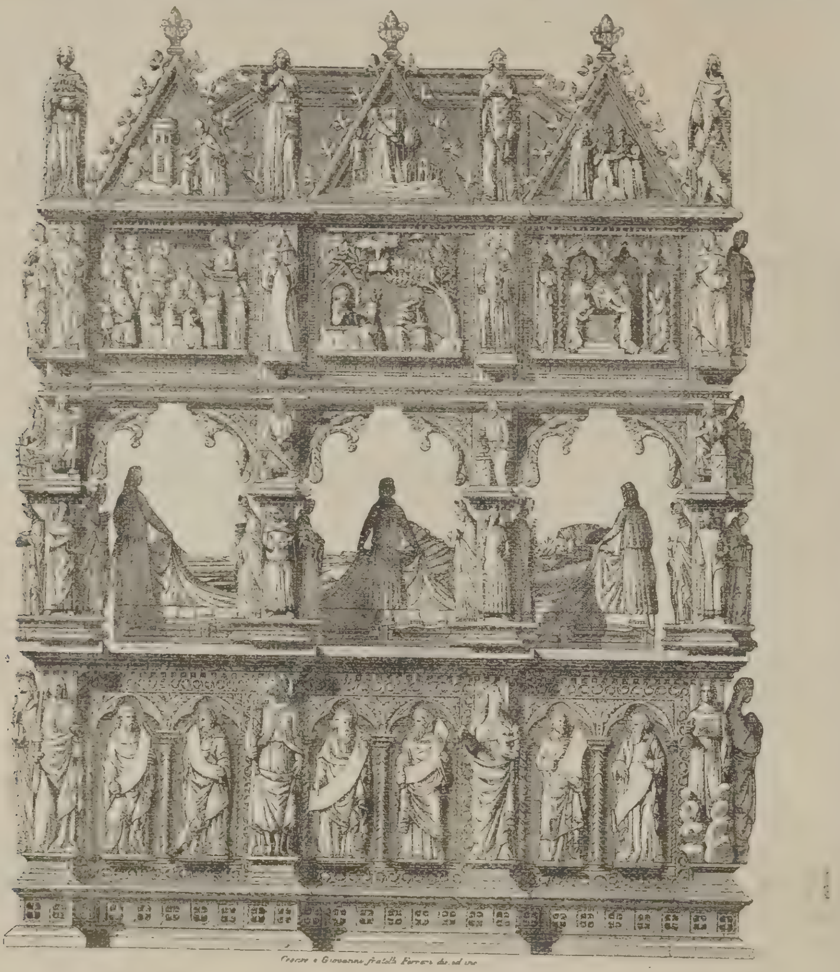
* Six Months in the Apennines. By Margaret Stokes. London: George Bell, and Sons, York-street, Covent Garden. 1892.

TOWN AND BRIDGE OF BOBIO.

taking to discover the reason for the development of certain styles in Ireland, and to find a clue to the origin of Irish art quite as much as to search for the material remains, the personal relics, and other memorials of men whose names add lustre to the history of the Church and national art in Ireland. She mentions this effort really as the first instalment of a series of expeditions which may include North Italy all along the line from the south-east to the north-west of Europe, through Gaul, by the Loire and Brittany to Ireland, or alongside the Rhine and through Holland and Great Britain to Ireland. Lombardy, in the mean time, with occasional references to other parts of Italy, furnishes particulars concerning the lives of Irish saints.

The Episcopal text quoted by our guide at the outset of her first letter may well serve in part as an introduction to our notice of the volume before us:—"If, instead of the bewildering routine of sight-seeing which most travellers embark in, and in which one pleasurable ingredient is an abstraction from home, the well-educated wanderer would keep home ever in memory, and diligently seek out the vestiges of his countrymen, and carefully collect whatever redounded to the credit of his nation, the Irishman would find a wider field and richer return than any other investigator engaged in a like enterprise. Everywhere would he—be it in France or Belgium, or Switzerland, or Bavaria, or Austria, or Italy—discover matter for self-respect." Irish founders, saints, and missionaries imposed their influence, their superscription, their effigies, and their patronage more or less successfully on every hand, while in many ancient books and works of art are to be seen illustrations of "the vernacular annotations of a people whose language was familiar in the haunts of their foreign travels a thousand years ago." Gathering up, therefore, those fragments of her countrymen's national history remaining scattered far away from home, Miss Stokes has, with no small success, realised what she set about to accomplish. The indications we get from various sources of intercourse between Ireland and Italy in the dark ages are of no little value as bearing on this complex question of the origin of our Christian arts. Humble as some of the characters are whose deeds find a record, their historical interest is of undoubted value. "The knowledge of the religion taught and the religious life carried out by these devoted men in the dark ages of European history must be a study at once elevating and invigorating. When the political history of the world was that of one series of invasions and warnings, and robberies, and treacheries, to lift the veil and find behind it an inner life of intellect and faith, working imperceptibly, like leaven, for a higher cause than human advancement; to find the sacred glow of a passion for Divine truth outliving with its steady light the wild flames of the incendiary, reveals a chapter in the history of humanity that is worthy of reverential study." The Legend of each saint, of whom traces may still be found in the field of their labours, is given in connection with the records described concerning them, thus adding much to the value of the book before us. For example, the legend of St. Finnian, known as St. Frediano, Bishop of Lucca, supplies much curious information as to his church-building miracles and other pious exploits. He was of the race of Fiatach Finn, Monarch of Erin, and bears records in the "Martyrology of Donegal" as Finnén, Bishop of Magh-bile. He died A.D. 588, in the eleventh year of Pope Pelagius II. We reproduce on opposite page Gally Knight's illustration of the east end, apse and tower of San Frediano's church at Lucca. This Lombardic building, one of the most important in the history of its class, was erected after the death of its patron on the site of the original foundation by Faulone, Major Domo of Cunipert, King of the Lombards, about A.D. 689, when Mansuetus was Archbishop of Milan. Abbot Roto enlarged the basilica in A.D. 1112, and as the community increased in numbers, some of the outer parts were rebuilt; but the nave and original aisles, along with the great campanile, are Lombard work. Its front is where its apse was once, and its entrance façade is bare and unusual. The interior is most imposing, measuring nearly 208ft. long, with a height of 70ft., the walls over the arcade being 44ft. high. The piers are 2ft. in diameter. The church of St. Frediano at Lunata is not in itself very interesting; but it stands beside a very old Lombardic campanile, and is near the house of Civitale, the famous sculptor. Not far off, through the Indian-corn fields, is Lammari, a very out-of-the-way place on the eastern plain of Lucca, in the midst of richly-cultivated fields. The church is of great size and fine character, but deserted, disused, and dirty. The baptistery contains a baptismal fountain, not a mere font, and in a deep niche in the wall over the basin stands a most solemn and beautiful statue of the Saviour, bending over the font and looking down. The Redeemer holds a chalice in His right hand, which catches the sacred stream that flows from the wound in His pierced side. The statue, which was probably the work of Civitale, who was born in 1435, is herewith illustrated. Passing over the momentous life of St. Columban

SILVER SHRINE OF ST. COLUMBAN.


Cesare e Giovanni fratelli Ferrari dis. ed inc

TOMB OF ST. AUGUSTINE OF HIPPO, PAVIA.

for lack of space, we give a view of Bobio, with its town and bridge, where the monastic buildings which he founded are now deserted. In the crypt of the church Columbanus and his Irish companions lie entombed. His knife, his bell and cup, are relics here treasured with the alabaster Hydria, which is also sculptured in the bas-relief group on his sarcophagus. We illustrate the 16th-century silver bust of the saint, which enshrines, it is said, a portion of his skull. The memorial work bears the inscription:—"HOC PIA FVLGENTI MONACORVM CURA METALLO SANCTA COLUMBANI CONDIDIT OSSA PATRIS," and at the back the following lines:—"DA PATER UT POPVLVS BOBIENSIS SEMPER ET ISTA SINT LOCA FELICI NVMINE TVTA TVO." The shrine was made at Pavia, 1514. From Pavia Miss Stokes gives us some drawings of the Tomb of St. Augustine of Hippo. She went there to discover her countryman, the learned monk Dungal, but all traces of his memory seem to have disappeared. The well-preserved bones of St. Augustine of Hippo are enshrined in this marble monument which stands in the Cathedral. It was erected in 1362 by one named Bonino da Campione, and is a work of great delicacy and refined beauty. The Twelve Apostles and the sacred and cardinal Virtues stand round the sarcophagus, at the top of which is the recumbent statue of the saint sleeping in death. A canopy rises over in a baldachin, on the vault of which is the vision of Paradise depicted for his perpetual study. This tomb was brought from the basilica of San Pietro in Ciel d'Oro, along with the relics of Boethius. Lanfranc, Archbishop of Canterbury, came from Pavia, where he was an advocate in the Law Courts, and here the Irishman Albinus was placed by Charlemagne at the head of the school. Miss Stokes supplies many other items of interest, and then gives an account of St. Donatus, Bishop of Fiesole, 824-874; Andrew, Archdeacon of St. Martino a Mensola, 827-875, and Brigid, Patroness of St. Martino a Lo Baco, 875-885. After these follow several useful and interesting appendices, concluding with ancient descriptions of Ireland. The reference to St. Kevin's Bed at Glendalough revives many a curious and pleasing memory. We commend this well-got-up book to all who care for the study of Catholic art as associated with the history of Erin. What a pity that a nation so famous in the past should now waste so much energy on the partisan foibles of professional agitators!

HOUSES OF THE ENGLISH RENAISSANCE.

THE fourth part of the valuable work which Messrs. J. Alfred Gotch, F.S.A., and W. Talbot Brown are publishing, with the assistance of Mr. B. T. Batsford,* has just been issued to subscribers. For freshness of subject the group of photographs comprised in the present selection are certainly second to none of those which have preceded them, and the interest, as well as character of the book, is undoubtedly maintained. By the very nature of things, some of the larger houses are already fairly familiar by illustrations of various kinds available in different publications; but here all are brought together in a uniform manner, which renders the collection not only more complete, but enables the reader to make a ready comparison between the several buildings erected at the same time in various parts of England when a vernacular style was in vogue throughout the kingdom. Cranborne Manor, once the Royal Hunting Lodge of the Cranborne Chase, forms the first example before us, and a ground plan, with other parts in the margin, from the silver medal drawings of Mr. J. E. Mowlem, serve to elucidate the building more in detail. Hanford Hall, also in Dorset, is a capital type of house with mullioned windows and plain gables, well suited for modern adaptation. Charlton House, Wiltshire, is shown by a plan which is useful, and an exterior view of the main entrance, as well as an admirably clear photograph of the long gallery, where there is much good Old English furniture and a rich plaster ceiling. St. Catherine's Courthouse, near Bath, is represented by the two-storied porch on the garden front. A plan of the terraced garden and arrangements of piers and steps to this delightful old residence would have been a suitable addition to the description of the place. South Wraxall has a fine large photograph of the drawing-room chimney-piece, with a sketch of part of the house, and a part plan is given. We wish an equally good view of the drawing-room itself, showing the grand ceiling, could have been included as well. From Bristol, the celebrated room in the Red Lodge is represented, and also the familiar timber gables of St. Peter's Hospital. The "Feathers" at Ludlow supplies an exterior, and Croscombe Church, near Wells, is seen by an interior view, detailing the exceedingly-handsome Jacobean pulpit and rood screen, which alone can vie with that at St. John's church, Leeds. Sydenham House, in Devonshire, is new to us, with its quiet, quaint exterior grouping, and massive staircase within. Its charm chiefly lies in its plan, which is of the type not very common, with two lateral projections forming a small forecourt, which again is broken by projecting bays, as well as a central porch. Lanhydrock Gatehouse, likewise, is a less-known specimen. It is in Cornwall, and is built in granite. One of the most striking examples left of a fine architectural treatment of a forecourt is Stanway, Gloucestershire. It belonged to the Lucys of Charlecote, near Stratford-on-Avon, where there is also a famous gatehouse. It now is the country house of Lord Elcho. Mr. Gotch has done good service in thus so well representing so charming a building. Unfortunately, the courtyard side of the gatehouse is rather too much in shadow in the photograph. The big tall bay window of the hall looks as if it were an old rendering of the treatment not infrequently seen in Mr. Ernest George's buildings. Westwood Park, Worcestershire, is, of course, a famous mansion, the home of the Pakingtons. Its cruciform plan makes it remarkable, with its four towers surmounting the hill and commanding the country. Mr. Gotch gives the Elizabethan gatehouse and entrance porch. The plan is useful, and so is that by Mr. Thomas Garratt of Canons' Ashby, Northamptonshire. We are very glad to have so capital a photograph of the domed ceiling of the drawing-room, with the geometrical drawings of the unrestored chimneypiece in the same apartment. The garden front of the house, with some details of the beautiful leadwork there, would have been equally welcome.

THE SOCIETY OF ARCHITECTS.

THE seventh annual general meeting of the Society of Architects was held at St. James's Hall, Piccadilly, on Tuesday evening, Mr. W. H. Seth-Smith, F.R.I.B.A., F.S.I., the retiring President, in the chair. The following architects were elected as members:—Hugh Thomas Archer Chidgey, 497, Commercial-road, E.; and Arthur Henry Hallam, 15, Farringdon-street, Leicester.

LONDON BUILDING LAW (CONSOLIDATION) ACT.

The Council submitted the following report on the suggestions which they had made to the Local Government Board for the amendment of the proposed London Building Law Consolidation Bill:—

The draft of the London Building Law (Consolidation) Bill has been carefully considered by us, together with the suggestions for its amendment made by the Building Act Committee of the London County Council, and of the District Surveyors' Association, and we beg to recommend that you submit to the Local Government Board a considerable number of such suggestions.

These suggestions we have divided under two heads, "general" and "particular," the "general" suggestions being:—

1. That hard and fast rules should be made in preference to optional rules at the discretion of District Surveyors or the County Council; and

2. That as far as possible the regulations should be such as not to necessitate greater cost than is absolutely necessary to secure stability and sanitary construction.

The particular suggestions have been interlined upon the copy of the Bill which was supplied to us, and we would recommend that this copy be sent in to the Secretary to the Local Government Board at once in its present state. Many of them are merely verbal amplifications, but others are of somewhat wide significance, the most important being:

1. That the restriction at present in force of voids

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* Architecture of the Renaissance in England. By J. Alfred Gotch, F.S.A., assisted by W. Talbot Brown, A R I.B.A, Part IV. London: B. T. Batsford, 52, High Holborn.

in external walls to *one-half* their superficial area should be removed, and *two-thirds* substituted.

2. That a schedule of minimum sizes for joists, girders, beams, bressummers, columns, and piers under same, to carry certain loads, should be introduced.

3. That in buildings of the warehouse class party-walls should be carried up to 3ft. above roofs.

4. That a section dealing with detached chimney-shafts should be inserted.

5. That a section should be inserted to provide that every habitable room should have a window opening into the external air.

6. That a section should be inserted dealing with the lighting and ventilation of staircases.

7. That a section be inserted providing for the proper tailing-down of balconies and cornices.

8. That a section should be inserted to permit of the projection of oriel windows and turrets over streets to a reasonable extent.

9. That a section be inserted to provide that all buildings used both as dwellings and for purposes of trade should have the portions used for dwellings separated from the portions used for trade or storage by fire-resisting floors and inclosing walls, staircases, and doors.

10. That in all "fireproof" buildings all constructional ironwork should be compelled to be incased completely in fire-resisting material.

11. That it would harmfully and unnecessarily reduce the building capacity of sites where land is valuable to adopt the suggestions made by the London County Council as to the area to be left at the back of new buildings.

12. That the adjoining owner should be protected against loss through alterations to the party-wall made by the building owner for his benefit only; that the adjoining owner's premises should be upheld, and his property and goods protected.

13. That the word "surveyor" as used in the Act should be defined as a professional member of some recognised society of architects or surveyors.

14. That the by-laws of the London County Council should be inserted as a schedule.

15. That very small detached buildings and green-houses should be exempt from the operation of part of the Act.

16. That exempted buildings should only remain exempted so long as they retain the characteristics entitling them to exemption.

17. That power be taken to prevent the use of buildings for public purposes not erected for such if no builder be employed or alterations made unless passed by the district surveyor.

In reply to a question, Mr. Middleton, the Secretary, explained that the measure had not been brought forward this session, Mr. Ritchie having evidently thought it desirable first to obtain the opinions and suggestions of the various architectural and building bodies before introducing the measure. Mr. William Allport moved the adoption of the report, which was seconded by Mr. Ellis Marsland, and after a discussion, in which Messrs. E. Farman, Gard Pye, E. Tidman, J. Neville Porter, and Marshall Robinson took part, was carried unanimously.

ELECTION OF COUNCIL.

The scrutineers reported that the following had been the result of the voting for council and officers:—President: Robert Walker, 17, South Mall, Cork, 87 votes. Vice-presidents (two): Ernest Day, F.R.I.B.A., Worcester, 64; Edwin James Hamilton, Brighton, 55. Not elected: Geo. Soudan Bridgman, Torquay, 51. Members of council (twelve): Henry Adams, F.S.I., M.I.C.E., M.I.M.E., Queen Victoria-street, E.C., 86 votes; Henry Goodall Quartermain, Merton, 80; Ellis Marsland, Camberwell-road, S.E., 79; George *Highton, F.R.I.B.A., Bedford, 78; William Allport, F.S.I., Southampton-street, Strand, W.C., 77; George *Baines, F.R.I.B.A., Great Winchester-street, E.C., 77; Robert Cruwys, F.S.I., Brixton-road, S.W., 76; George *Thomas, F.S.I., Cardiff, 76; James William *Frazer, A.R.I.B.A., Newcastle-on-Tyne, 67; Arthur John Lacey, Norwich, 67; Reginald George Pinder, F.R.I.B.A., Bournemouth, 64; and Alfred *Stoner, F.S.I., Blomfield-street, E.C. Not elected: Alfred Marshall, Otley, 58; Walter William Thomas, Liverpool, 39; and George Henry Phillott, B.A., Cheltenham, 37. Treasurer, Edward Tidman, F.S.I.; hon. corresponding secretary, Charles Edward Gritton, A.M.Inst.C.E.; hon. secretary, Edgar Farman; secretary, George Alexander Thomas Middleton; and auditor, Samuel Couch Johns, of Wallingford. Number of voting papers sent in, 99, of which twelve were spoiled, three of these being unsigned. (*Denotes new members of Council.)

Mr. Ellis Marsland, in proposing a vote of thanks to Mr. Seth-Smith, for his services as president during the past two years, paid a warm tribute to the able manner in which he had fulfilled the duties, and referred to the many ways in which he had promoted the interests of the society, remarking that it stood in a much higher position to-day than it did two years since.

Mr. Gard Pye seconded the motion, which was carried by acclamation.

The President, in response, said there had, during the year, been a net increase in membership of over thirty, in addition to the addition to the roll of a number of names of honorary members, whose standing and position reflected much credit on the Society. The movement for the Incorporation of the Society was in progress as satisfactorily as the cumbrous machinery of the Board of Trade permitted, while the question of Architects' Registration—almost the *raison d'être* of the Society's existence—had made good progress in public estimation, although political exigencies had precluded the Committee from bringing the Registration Bill to a second reading this session.

Mr. C. H. Searle moved, and Messrs. Tidman and Marshall Robinson supported, a vote of thanks to the retiring vice-president and members of council—Messrs. G. S. Bridgman, A. Ardon, A. R. G. Fenning, G. H. Phillott, P. M. Roberts, and W. W. Thomas, which was agreed to.

BOOKS RECEIVED.

Biographical Sketch of George Meikle Kemp, Architect of the Scott Monument, Edinburgh, by Thomas Bonnar, F.S.A. Scot. (William Blackwood and Sons, Edinburgh and London), is an interesting memoir or sketch of a man whose career as an architect is little known. Many events are recorded which throw a light on the epoch. Mr. Bonnar's personal knowledge of the family of the late Mr. Kemp, and his conversations with his widow, lately deceased, together with the documents in his possession, and the notes contributed by the late Mr. Andrew Kerr, architect, who was long acquainted with Mr. Kemp as an intimate friend, have given the author the opportunities of writing a narrative. Of course there are necessarily many personal incidents which have little interest to general readers, but the chapter on the design for the Scott monument, illustrated by the original and completed designs, and the letters which passed between Kemp and Mr. John Britton, the author of the "Cathedrals and Abbeys of England," and the address to the committee for the Scott Monument by the latter are of special interest. The erection and superintendence of the monument by Kemp, and the tragic death of the architect in the canal on a foggy night, are described. The appendix comprises several short papers by Kemp, and some verses of very passable merit. The volume is well printed on thick paper, and illustrated by portraits of George M. Kemp, James Kemp, and Thomas Kemp, the monument, and several vignettes.——*Collection, Treatment, and Disposal of Town Rubbish*, by Charles J. Lomax, Member of the Incorporated Association of Municipal and County Engineers, surveyor to the Failsworth and Gorton Local Boards (Little Bolton: R. Whewell and Son), is a useful digest of data and practical information on this important municipal question. Mr. Lomax deals with the history of the question, the systems in use, the collection of town refuse in Bolton, Rochdale, Salford, Preston, Gorton, Manchester, and Halifax, also the water-carriage system as used in Liverpool. Mr. Lomax shows the advantages of the modified midden system in many cases, and the results at Gorton certainly warrant the conclusions. The treatment and destruction of town refuse are dealt with also. The results of experience have proved to him the failure of the pail system, and he recommends in places like Preston the water-carriage plan for dealing with the excrement, and dustbins for the other refuse; but where access to the closets can be got, this system is undoubtedly preferable, the refuse being destroyed by fire at small cost. We heartily recommend Mr. Lomax's little book to all surveyors.——*Is my House Healthy? How to Find it Out.* By J. Spottiswoode Cameron, M.D., B.Sc.Edin., &c. (London: Simpkin, Marshall, Hamilton, Kent, and Co., Limited.)—Dr. Cameron has done a useful service in writing a popular hand-book on sanitary principles, but ignores the existence of architects in sanitary arrangements. As medical officer of health for Leeds, he has had opportunities of finding out the ordinary defects of houses in large towns. His remarks on subsoil are of value, these being illustrated by sections of strata with "faults," showing the unhealthiness of houses built below a rock of sandstone, or upon strata of shale of different levels. The permeability of walls is demonstrated by a simple experiment, by blowing through a brick at a lighted candle; and the author discusses the advantages and defects of hollow walls, but in the section of wall given no air bricks are shown. The objection raised against the interstitial wall that it becomes a conveyor of gases would not exist if such apertures were provided. Some useful remarks are made about the uselessness of waterproof papers and wainscot linings; also about inexpensive decoration such as wall-papers. Distemper is preferred for bedrooms. The author explains the products of combustion by some easy experiments; the diffusion of gases is illustrated, and the chemical processes involved in the subject of ventilation. Prof. De Chaumont's estimate of 3,000c.ft. of fresh air per head per hour is taken for a mixed community. A family of five in a room 12ft. high and 15ft. square, with two gas-burners lighted, will contaminate in an hour 3,000 × 5 (= 15,000) + 2 × 3 × 1,800 (= 10,800) = 25,800c ft. of fresh air, allowing each gas-burner to consume about 3c.ft. of gas per hour, and each cubic foot of gas to contaminate 1,800c.ft. of air, or two gas-burners will, in an hour, do as much as three persons to contaminate the air. The modes of ventilation, and certain appliances for ventilating and warming, are illustrated; as the Sherringham ventilator, Mr. Harlings, Sir D. Galton's grate for utilising the waste heat at back of grate by a cavity into which air is admitted from outside; hot-water pipes against outer walls, the air being introduced through a coil of pipes. The subject of drainage is thoroughly discussed in its various details of house drains, ventilating the same, gully traps, disconnection, &c., and the author gives useful summaries of practical rules. Dr. Cameron's book ought to be perused, and his advice carefully acted upon by every householder. The remarks on house choosing and inspection are important.——*History of Lower and Upper Heyford*, compiled by Mr. J. C. Blomfield, M.A. (London: Elliot Stock, 62, Paternoster-row).—We have received Part VI. of this work. The author, the rector of Launton and rural dean, has compiled a very interesting history of this part of Oxfordshire, giving records of ownership of land, of freeholders, and bringing to light much information about the early history of the locality. Interesting facts are given relating to the parish church, the earliest work in which is of Early English date (1210-75). A feature among the ornaments in the pre-Reformation period was the "Corpus Christi light in honour of the Eucharistic Body of Christ," and was a light of unusual brilliancy. The connection of this parish with the college of Corpus Christi led, no doubt, to an unusual observance of the mystery. The author has placed under contribution various sources and documents, and the old inscriptions and entries are of antiquarian value.——*A History of Hampshire*, by T. W. Shore, F.G.S. (London: Elliot Stock).—This is another of the series of "Popular County Histories" published by Mr. Elliot Stock, of which series we have already noticed histories of Berkshire, Devonshire, Norfolk, Warwickshire, &c. Mr. Shore, the author, has been long connected with the Hartley Institute, Southampton, and in that capacity has rendered considerable service as a student of the antiquities, &c., of this county. Pursuing the plan adopted in the other county histories, Mr. Shore deals with the prehistoric remains, with the Celtic conquest, the Roman occupation, the Kings of Wessex, Danish conquest, Early Norman period, and subsequent historical epochs. Referring to the Neolithic Age, the author says there are nearly 400 barrows or tumuli remaining in Hampshire, these being generally round; others are long barrows or mounds. Many of these contain stone implements. The traditional giants' graves are common here as elsewhere. The giant Bevois of Hampton is supposed to have been buried in one of these long barrows, from which the name of Bevois Mount, Southampton, is derived. Another giant was named Ascupart, his companion, whose memory still lingers in one of the legends of that town. More than 40 earthworks of Celtic origin are existent, most of them being hill-fastnesses, as that on St. Catherine's Hill, near Winchester, requiring, it is estimated, 3,300 men for its defence; at Walbury is another larger camp. Old Winchester Hill, in the valley of the Meon, is one of the most noted. The Roman invasions under Julius Cæsar do not appear to have affected this county as it did Kent; but the Roman General Plautius, sent by the Emperor Claudius, A.D. 43, landed somewhere in the Southampton Water, though the exact point is unknown. Nor do there seem to be many remains of Roman occupation except glass, the making of which was carried on; and the ruins of villas. Clausentium, Silchester, Winchester, and Porchester were Roman stations. At Silchester, the most remarkable city of this period, we find a flint nodule wall round the city, and remains of jewelry, glass pottery, coins, buckles, &c., have been picked up, and the excavations of the late Rev. J. G. Joyce, F.S.A., have revealed a forum, baths, tesseræ pavements, villas, temples. There are chapters on the Early Norman Conquest, Monastic Life, Isle of Wight, Winchester, Southampton, Portsmouth, legends, and folk-lore of this important agricultural and maritime county.——*Electrical Instrument-Making for Amateurs*, by S. R. Bottone, 5th edition (London: Whittaker and Co., Paternoster-square), is a useful little handbook for those who desire to make electrical apparatus, instruments, and experiments of various kinds. Thus we find descriptions of, and methods of making, pith-ball and gold-leaf electroscopes, an electrophorus, electric and other machines, medical coils, induction coils, dynamos, voltmeters, telephones, phonographs, electro-motors, microphones, arc and incandescent lamps, &c., the construction ofwhich apparatus is very practically described. The author is an accomplished student himself, and his directions have, therefore, all the greater value to amateurs.——*A Textbook on Retaining-Walls and Masonry Dams*, by Mansfield Merriman, Professor of Civil Engineering in Lehigh University (New York: John Wiley and Sons; London: Gay and Bird, King William-street).—Professor Merriman's work is a concise and well-arranged textbook for students and civil engineers. The rules are clear and well explained by diagrams of walls and dams, unnecessary verbiage and formulæ are dispensed with, and the author investigates the economic design of structures of this class. After articles on the equilibrium of earth, and the stability of slopes of differing soils, and the lateral pressure of earth, the author proceeds to investigate the problem of retaining walls. Graphical as well as analytical methods of procedure in discussing sliding and rotation are given, and these are shown in a clear manner, thus adding to the value of the work for students and practical men. The design of retaining walls and their economic proportions are very consisely stated in Chapter IV., the rules for walls with inclined and vertical backs; and the author's tabular results of the cubic quantity of masonry, base thickness, and saving, per cent., are of value. The polygonal section; masonry dams, and the economic sections for high dams, are investigated, and the author gives preference to the polygonal section with curved lines. The trapezoidal form has an excess of stability in its upper part. This treatise is the best manual on the subject we know. ——*Specifications by Palliser, Palliser and Co.*, 24, East Forty-Second Street, N.Y. This is a form of specification that will probably be welcome to many architects in the United States, and may serve as a suggestive skeleton to young and inexperienced architects; but we do not think such bare outlines serve any useful purpose, and only tend to reduce the services of the architect to a mechanical routine. The specification forms for a complete incandescent electric-light plant may be found useful. These forms are bound in a paper wrapper and for rolling up.——*Sanitation in the West*, for May, is on our table, being the official organ of the Sanitary Inspectors' Association (Western District), published at Newton Abbot, Devon. The statistics and reports from Plymouth, Devonport, Exeter, and other western cities are of interest, and show the progress made in sanitary science. The local authorities are busy—the Devonport town council is revising the borough by-laws, which no doubt will be founded on those of Plymouth. The town council at Barnstaple is also about to carry out important works in that busy and go-ahead little town.——*House Drainage Hydro-Mems*, by G. M. Lawford, Assoc.M.Inst.C.E., &c. (London: Geo. Gill and Sons, Warwick-lane, E.C.) This is a small card (price 3d.) folded for the waistcoat pocket, and giving on its three pages several useful memoranda and tables of daily requirements, such as the weight of a cubic foot of water, its number of gallons (approximately 6¼ gallons), weight, rainfall. Tables of velocity, inclination and discharge of house drains, weight of lead pipes, water pressure and cistern capacities—just those ever-recurring questions which arise in practice. Mr. Lawford's little card speedily answers these questions.

HOT TESTS FOR CEMENT.

At a recent meeting of the American Society of Civil Engineers a paper was read on "The Use of Hot Tests or Boiling Tests for Determining Change of Volume in Portland Cement." Any tendency of a cement to swell or change its volume will eventually end in disintegration, and a steam and hot water test is recommended, which will show quickly any such tendency. The method of hot testing now practised by the Docks Department, New York, is as follows:—Six pats or cakes of pure cement and water, about ½in. thick and 3in. diameter, are moulded on thin glass plates; No. 1 is at once put in a steam bath with a temperature of 195° to 200° Fahr.; No. 2 is put in as soon as it is set hard enough to bear the 1lb. wire; No. 3 is put in after twice the time for No. 2; No. 4 is put in at the end of twenty-four hours; No. 5 is put in fresh water at 60° Fahr.; No. 6 is kept in moist air at 60° Fahr. The first four are each kept in the steam bath for three hours, and then immersed in water of 200° Fahr. temperature for 21 hours, after which time they must show no swelling, cracks, or distortion, and must adhere to the glass plates, but the latter requirement is not insisted upon. In another test for checking or cracking, a cake of neat cement is moulded on glass, and is made 2in. or 3in. diameter, ½in. thick in the middle, and with very thin edges. After being allowed to set for three hours in moist air at 200° Fahr., it is kept in boiling water for twenty-four to forty-eight hours, at the end of which time it must adhere to the glass and show no cracks or distortion.

OBITUARY.

The death is announced of Mr. David Stratton, road surveyor for Mid-Lothian, which took place at his residence in Middleby-street, Newington, on Saturday night, at the age of seventy-two. For over half a century Mr. Stratton has been prominently connected with the road surveying of Scotland. Beginning life as a contractor at Milton Bridge, he afterwards obtained the appointment of road surveyor for the Alloa district, a position which he occupied for several years, when he was promoted to a similar office at Airdrie. There he continued for seven years, when he was again promoted, this time to be assistant surveyor of roads for the county of Mid-Lothian. A similar period of service in that capacity resulted in his elevation twenty-eight years ago to the post of surveyor, which he held at the time of his death. Mr. Stratton leaves a widow and grown-up family.

Mr. Anthony Dobson, late surveyor for the parish of Wandsworth, died on Monday at his residence, Southfields, Wandsworth, after a long illness. He was in his 75th year.

The death of Mr. John Strahan, builder, of Belfast, occurred on Friday, at his residence, 247, Greenmount-road, Belfast. Deceased was one of the best known figures in the city, having carried on business there as builder and contractor for very many years. Mr. Strahan was an elder in York-street Church. He died at the ripe old age of seventy-one. One of his sons is Professor Strahan, of the Queen's College.

The building trade in Glasgow gives promise of being more than usually brisk for some time to come, judging from the fact that, in addition to the large number of contracts at present on hand, the Dean of Guild Court at their last sitting granted forty-five new applications for the erection or alteration of buildings in the city. Among the applications granted were those by the trustees of the Institution for the Education of the Deaf and Dumb, to add to the institution in Battlefield-road; the trustees of the Soldiers' Home, to erect a home in Harrington-street; and the Sun Fire Office, to erect buildings in West George-street and Renfield-street.

WAYSIDE NOTES.

I HAVE lately stood upon the Plymouth Hoe, and call to mind that there is inscribed upon the fine new Armada Memorial Nelson's renowned exhortation to his officers and men on the day of his great sea-fight. Now, therefore, that I am inclined to shirk my weekly contribution, let me brace myself against temptation. The saloon tables of the good s.s. *Pladda* may not be the most suited to literary efforts, comfortably disposed as they are, and the rattle of a couple of steam-cranes on the deck above is scarcely conducive to ready composition, nor do I find the Irish atmosphere—or such of it as pertains about the quays of Waterford—specially stimulative of the mental faculties. Spite of all, let me endeavour to appear as usual in my particular corner of the "B. N." The opportune moment of the ship's lying alongside the Waterford quays shall not be ignored.

It all comes about in this way. Symptoms of architecture-phobia culminated in the heavy blow of the announcement of the unavoidable delay to the progress of the Registration Bill. That capped all; so the doctor recommended change of scene and, particularly, no work to do at odd intervals, the which construction I am evidently now fulfilling to the letter.

"If you meet an architect on board, shun him," said he. "No shop!" I always said that architects were ubiquitous, and that one might as well try to walk on Deal beach and tread on no stones, as to take a holiday and run across no representative of the art or profession. I was peacefully sitting "aft" on Friday, as we were making Plymouth from Southampton, and watching the sun set over the water with the bold outlines of the distant Devonshire hills against the glowing sky, when a fellow-passenger remarks, "I hear you are an architect; so am I." It was all over! The vision of quiet retirement from even the thought of architecture and architects vanished like a mist, and bricks and mortar once more rose to view.

Now he has gone ashore and is, perhaps, gaily bowling along in a jaunting car, or climbing the hills over against the quay, while I am surrounded by an ever-increasing din above and around, deck-scraping and washing, steam and steam cranes, and other discordant sounds. Like all architects, he has no idea of a "Wayside Note." "Write and tell the A.A. to come over here," is the best he can suggest, and that, I will tell him, is simply because he has a son a member of that ambitious body. Fat lot they would see here! It might be a novel sight to see the R.C. cathedral with no three columns in the same straight line, but leaning one side and another in true Irish happy-go-lucky style. As for the rest, excepting the old towers, there is about as little to see as any place of an equal size, Irish or otherwise. In the way of bare utility-serving I never saw any buildings so plain as some of the warehouses along the quays, and plain stucco walls seem to be the chief wear in the town and surrounding suburbs, and—as my friend has observed in reference to some of the more important new buildings in the town—when they do use stone they take no care to place it on its natural bed. Waterford architects, please note!

Now, having put in an appearance in spite of the rolling waves, I will beg to be let off further note-making and forget architecture again, in accordance with advice—so far as I am able—when, after the direction to "shun architects," I find myself in the adjoining state-room to our friend, and meet him at meals. Perchance, on the way to Glasgow, I may escape to the hold among the Irish bacon, or whatsoever these noisy cranes be dealing with, or make my way into the stoke-hole, or get into the compass-box, masthead light, or anywhere out of the way until we reach Bonnie Scotland, wherefrom I may have more to write than from this particular corner of the Emerald Isle, which I am afraid I scarcely appreciate; wherefore, I suppose, there will be another injustice to Old Ireland.

Goth.

A new grammar-school is about to be built at Tavistock in the New Plymouth-road, a sum of £20,000 having been left by the late Duke of Bedford for building and endowing the school. Mr. Bond, of Bristol, is the architect.

CONTENTS.

The New Competition Suggestions of the R.I.B.A. ... 855
Municipal Buildings, Oxford 855
The Poplar Free Library Competition 857
The Tower Bridge... 857
Celtic Historic Art in the Apennines 858
Houses of the English Renaissance 860
The Society of Architects 860
Books Received 861
Hot Tests for Cement 862
Obituary 862
Wayside Notes 862
The BUILDING NEWS Directory XIII
Our Illustrations 863
Competitions 863
Building Intelligence 882
Engineering Notes... 882
Architectural and Archæological Societies 883
Correspondence 883
Intercommunication 884
Legal 884
Legal Intelligence 884
Water Supply and Sanitary Matters 885
Our Office Table 885
Meetings for the Ensuing Week 886
Trade News 886
Tenders 886

ILLUSTRATIONS.

DESIGN FOR CHRIST CHURCH, BRITISH COLUMBIA.—WICKHAM LODGE, EGHAM.—"RUTH AND NAOMI."—DESIGNS FOR A SUMMER HOUSE.—INLAID FURNITURE FROM TWO WEST-END MANSIONS.—A WATER GATE.

Our Illustrations.

CHRIST CHURCH CATHEDRAL, VICTORIA.

THE accompanying plate, from the author's competition pencil drawing, shows the design marked "Ars," which, it will be remembered, we thought the most suitable design for this church among those submitted. The plan and elevation will be found in the BUILDING NEWS for June 3. It is one of the three selected by the referee, Sir Arthur Blomfield, A.R.A., and has been sent to British Columbia to the committee, with two others, for final choice. "Hope's" design occupies our other double page with two interior views, which clearly indicate the original scheme of their author for carrying a central tower without hindering the inside view of the choir and sanctuary. The key plan shows how the lateral thrust of the tower is carried N. and S. to the transept walls. "Hope's" exterior design appeared in our issue for the 10th.

NEW HALL, WICKHAM LODGE, EGHAM.

THESE drawings readily explain themselves, and need little description. The older parts of the house, added to on more than one occasion, are indicated by the hatched-in walls, the new addition shown being for the extension and remodelling of the original hall, with a more convenient staircase, and a tea-room towards the garden, with a library and more bedroom accommodation contrived over these. Necessarily the existing heights and levels had to be followed in designing the work, and the boundary of the site fixed the limit on plan.

"RUTH AND NAOMI."

THIS cartoon, from the pencil of Mr. N. H. J. Westlake, F.S.A., is now in the Black and White Gallery of the Royal Academy. It shows part of a frieze designed by this artist, incorporating some of the leading characters from Holy Scripture.

"BUILDING NEWS" DESIGNING CLUB: A SUMMER HOUSE.

WE now publish the design placed first for this subject, by "Vulcan," and have nothing more to add to our remarks when reviewing all the designs submitted. The notice will be found on page 791, June 10.

FURNITURE FROM TWO WEST END MANSIONS.

THE Indian Cabinet is of ebony, richly inlaid with animals, birds, and flowers of engraved ivory and coloured woods. It is an admirable piece of furniture, the sketch of which can convey no idea of the harmonious colouring of the inlay-work, which was composed of the natural colour of the ivory, green, and two shades of reddish-brown. The drawers are plentiful and well-fitting, and of convenient height, the four curious caryatides at the angles keeping the body of the cabinet well off the floor. From the practical point of view of admitting the housemaid's brush for dusting purposes, this is no unimportant matter. Regarding general outline, the Writing-Desk at the right-hand top exhibits nothing unusual; but the beauty of the engraved ivory veneer and inlay-work makes it an object of especial regard. It is apparently of Italian workmanship, and is constructed of rosewood. The Louis XIV. Marqueterie Writing-Table is a handsome and substantial piece, over 6ft. long, supported by a happy arrangement of sturdy columns, connected by an elaborate stretcher. The above three are from the choice collection left by the late Mr. F. R. Leyland, of 49, Prince's-gate. This mansion, now in the market, contains the celebrated "Peacock" Room. The tapestry-covered Chair is from 18, Carlton House-terrace, lately the property of Messrs. Murrieta, and once occupied by the late Earl Granville. The legs are very quaint, the two back ones having an unusual spread.

A WATER GATE.

WE all know that when the fairy spell overtook the princess who slept for a hundred years, there grew up round the enchanted castle such a luxuriant and tangled mass of trees and underwood that no one could approach the place until the *fin-de-siècle* prince had hewed his way through every obstacle and awakened the sleeping beauty. It may not be such common knowledge that one approach to the castle was cut off by a river, and accessible only by way of the water gate shown in our illustration, and, further, that the prince aforesaid made the best of his way over this bridge, and so towards the castle which appeareth in the background. Tradition also has it that the good fairy who thoughtfully provided a whole retinue of waiting-maids, servants, lackeys, guards, cooks, scullions, and other domestics against the day of awakening, had, in addition, included an architect, well mindful of the fact that, though slumber may overtake human beings, "Gothic architecture never sleeps," and that accordingly the end of the hundred years might find sundry repairs necessary to the castle and its appurtenances. It is believed that this valiant and courtly knight of the Tee-square slept his hundred years peacefully in the upper chamber of the water gate, his slumbers only broken by occasional dreams of a golden future, when he should receive 10 per cent. on contracts, payable in advance. It is not a little remarkable, as showing how human nature remains much of its kind through long years, that the first act recorded of this gentleman was that he openly abused the work of his predecessor, and condemned the water gate as monstrously ugly, demonstrating to the prince how by sundry modifications of the skyline, in the way of making one of the turrets different from its fellows and reducing the height of the gateway, he could just make the feature presentable and worthy of the domain of so august a potentate. A contemporary chronicler, however, in recounting this incident, quaintly moralises to the effect that, like as a fool may entangle a wise man in his speech, so it requireth no great skilfulness—by divers crafty amendments of ye detaile—to improve upon another's handiworke. R. O. A.

* * *

The Rev. Canon Raine, as vicar of St. Olave, York, has received a curious bequest, that of the Perpendicular font formerly belonging to the church, and which had passed into private ownership. The font has suffered much from exposure to weather, but will be replaced in the church.

On Saturday the principal streets of Oxford were lighted by electricity. The lamps, which are of 3,000c.p., are situate near the railway stations, on Carfax, in High-street, Broad-street, and Magdalen-street, and the work has been carried out by the Electric Construction Corporation, of Wolverhampton, for the company.

At the last meeting of the Ballycastle rural sanitary authority, four tenders for the erection of four labourers' cottages in Ballycastle electoral division were considered. James M'Auley, Tromra, near Cushendall, offered to do the work for £347. This being the lowest offer, Mr. M'Auley was called before the board and informed that the architect's estimate was only £306 16s., and that if he undertook to do the work for that amount he would get the contract; if not, the guardians would re-advertise. Mr. M'Auley, after considering the matter, agreed to erect the cottages for £306 16s.

COMPETITIONS.

BARNARD CASTLE.—In a competition for a new Wesleyan chapel here, the design by Messrs. Morley and Woodhouse, architects, of Bradford and Bolton, has been selected. The chapel is to be Gothic, with spire, and will cost about £3,500.

BRIXTON.—The Lambeth Baths Commissioners have invited the following architects to prepare plans in competition for a set of swimming and private baths and washhouses, to be erected on a fine site at Brixton—viz., Messrs. T. W. Aldwinckle, Charles Bell, and A. Hessell Tiltman.

STAFFORD.—The award has been made in the competition for the new County Council offices and hall at Stafford, which are to be built on a long site in Martin-street, by the side of the Borough Hall and Assize Courts. The first premium of £150, is given to Mr. Henry T. Hare, A.R.I.B.A., of Gloucester-gate, N.W., for his design "M." The second premium of £100 is won by Messrs. Treadwell and Martin, of Pall Mall, for their design marked "Expert," and the third prize of £50 is taken by Messrs. Cooksey and Cox for their plan distinguished by the motto "Acoustics." Mr. MacVicar Anderson, P.R.I.B.A., was the referee, and his report has been adopted. The council chamber forms the chief feature in the design, and as there is no main exterior façade towards Eastgate-street beyond the entrance, the problem gave little scope for architectural effect outside. Martin-street is a narrow thoroughfare, so that the front on that side necessarily will be somewhat plain. The arrangement of the plan was, in fact, of prime importance, and there can be no doubt from what we have seen before of Mr. Hare's skill as an adept at planning, that he has won his place for this work by sheer merit. The cost of the building will be about £18,000.

* * *

CHIPS.

The memorial-stones of a Wesleyan Sunday-school were laid at Grove-road, Harrogate, on Thursday in last week. The architects are Messrs. Morley and Woodhouse, of Bradford and Bolton. The contractors are—mason's work, Ald. Simpson (Harrogate); joiner, Mr. Checkley (Harrogate); and plasterer, Mr. Laycock (Harrogate). A chapel will be built alongside the school when funds permit.

A new Congregational church and Sunday-schools are about to be built in Soundwell-road, Stapenhill, Bristol. Mr. Frank W. Wills, of Bristol, is the architect, and the estimated cost is about £4,000.

The Condover highway board at their last meeting agreed to raise the salary of their surveyor, Mr. T. Henry, to £180 a year, and that of the assistant-surveyor, Mr. W. Fortune, to £100 a year.

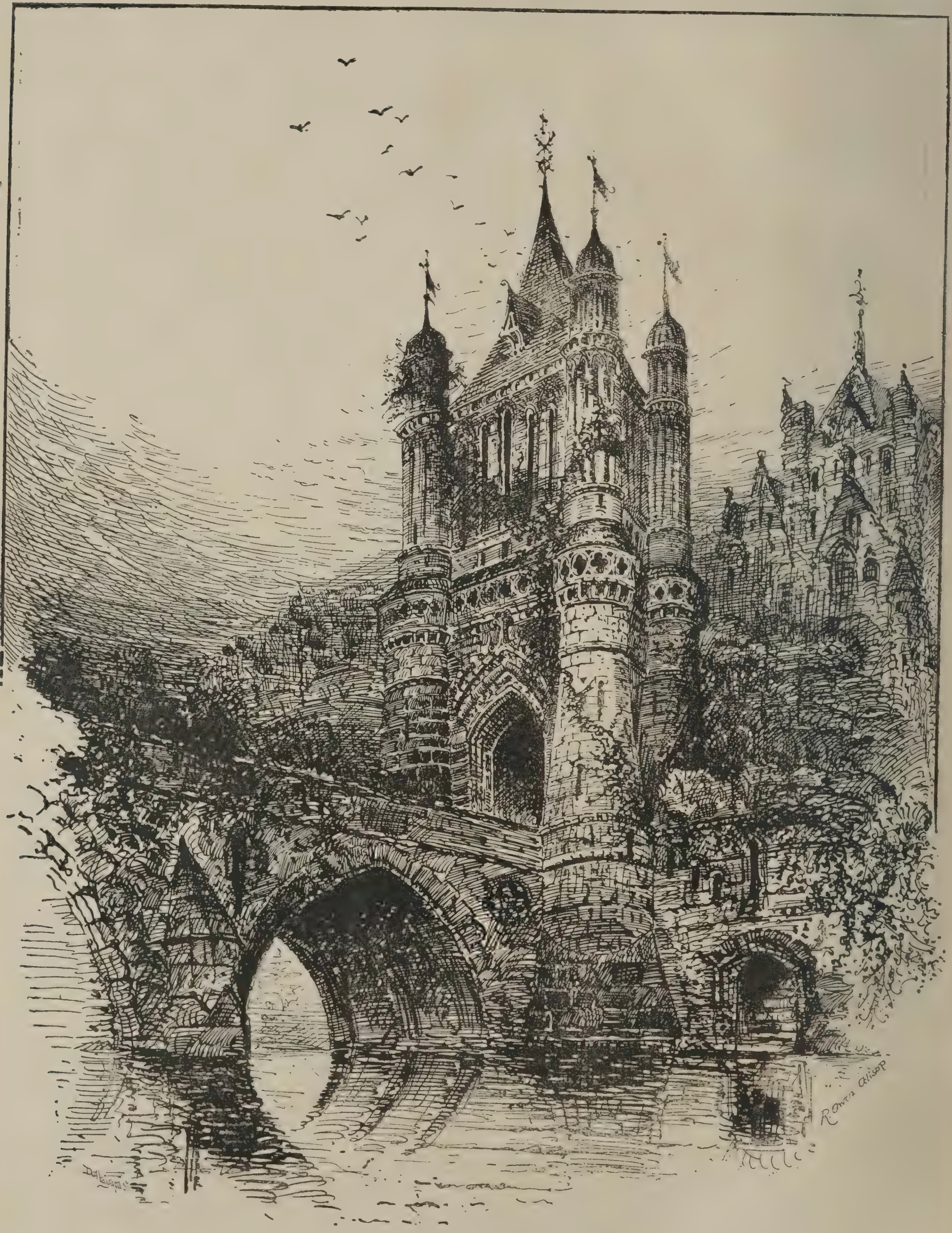
New tramp wards are being built in connection with the Coventry workhouse. Messrs. Steane are the architects, and Mr. J. Worwood is the builder.

At the last meeting of the Walsall town council it was decided, with reference to the proposed new town-hall, that the negotiations for the purchase of certain properties belonging to Mr. Jennings and Mr. Wilcox should be stayed, and that premiums of £21 and £10 10s. respectively be offered for sketch plans, in open competition, showing the maximum accommodation which can be provided if the town-hall is erected on the land now belonging to the Corporation, situate at the top of Park-street, and bounded by Wolverhampton-street, Townsend street, and Green-lane.

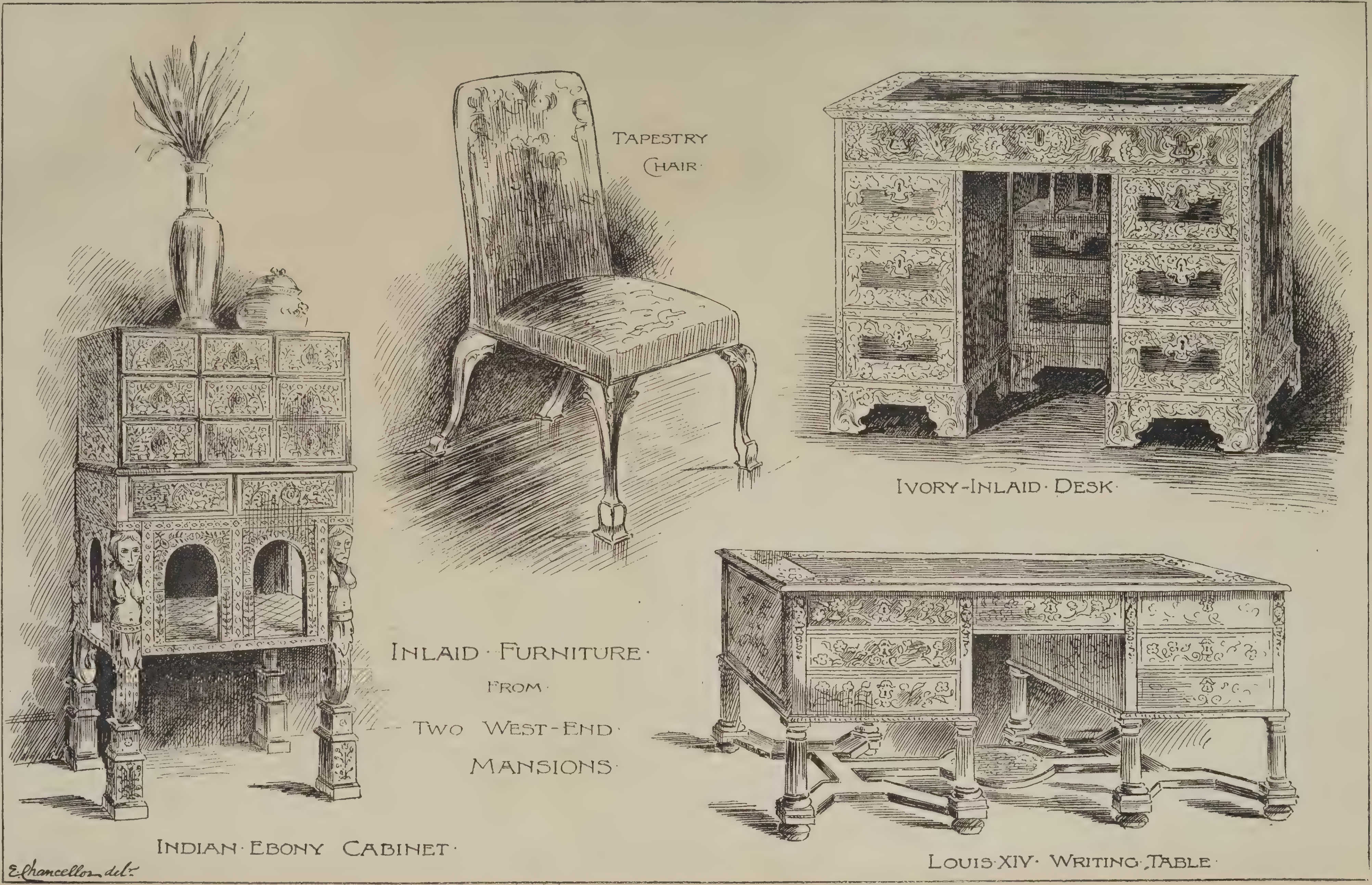
The dedicatory service of South Morningside Free Church, Edinburgh, was held on the 16th inst. The church occupies a prominent site half-way up the Braid-road, and consists of a nave and transepts, with a small gallery at the end of the nave; at the north-west angle is a tower and lead-covered spire, rising to a total height of 148ft. A spacious hall and vestry are also attached to the main building. The church is Third Pointed style, and provides sitting accommodation for 800 people. The church and hall cost about £10,000. Dr. Rowand Anderson was the architect.

The foundation-stones of a Conservative Club were laid at Failsworth, Oldham, on Saturday. The chief room is an assembly hall on the first floor, and the building will be formed with brick and stone, with Ruabon terracotta dressings. Mr. Charles T. Taylor, A.R.I.B.A., Clegg-street, Oldham, is the architect, and the chief contracts, those for excavating, brickwork, and masonry, have been taken by Messrs. S. and J. Smethurst and Mr. Joseph Clough. The cost will be £1,500.

The members of the Kent Archæological Society will visit Dover on Tuesday, the 19th July.



A WATER GATE.



INLAID · FURNITURE ·
FROM ·
TWO WEST-END ·
MANSIONS ·

INDIAN · EBONY CABINET ·

TAPESTRY CHAIR ·

IVORY-INLAID · DESK ·

LOUIS · XIV · WRITING · TABLE ·

E. Chancellor del.

Building Intelligence.

Bristol.—At the Merchant Venturers' Hall a crowded meeting was held on Monday in support of the recently proposed scheme for the restoration of the Bristol Cathedral. The Bishop of Gloucester and Bristol presided. A report from Mr. J. L. Pearson, R.A., the architect to the Dean and Chapter, was read by the Dean, who explained that Mr. Pearson was prevented by sudden illness from being present. He reported that as to the central tower the lower portion needed refacing, and the upper part would have to be taken down and rebuilt with parapets and pinnacles, which would of necessity be almost new. The condition of the Lady-chapel externally was such that its preservation needed a considerable amount of repair, while internally the archway into the north transept should be opened up, the masonry cleaned, and other works effected. Although the cathedral had now resumed its ancient proportions, and the re-erection of the nave had realised the idea of the builders of the choir, yet the choir itself still retained the arrangement necessitated when the nave was wanting, but which arrangement was now wholly inappropriate. Mr. Pearson suggested that the stalls, although more simple than those of many a parish church, should be retained, but that a new holy table, bishop's throne, altar rails, and sedilia and credence of stone were desirable. A resolution was passed approving of Mr. Pearson's proposals, and about £3,000 was promised in the room to meet the £8,000 required for the works to the tower and Lady-chapel.

Heywood.—The Yew Mill at Heywood has just been opened. The main building is 272ft. in length by 133ft. in width inside, and five stories in height, in addition to the basement, which extends under the whole of the building. It is divided in its length into two unequal parts by the rope race. The first story contains the blowing-room in the short end, and the card-room in the long end; the extent of the card-room is increased by a side shed 210ft. in length by 28ft. in width. The basement extends under the card-shed as well as the main building, and contains warehouse, conditioning cellar, waste cellar, and dust cellar. The staircase projects from the front and the engine-house from the back of the mill. The offices are a separate building fronting Peel-street. The chimney and reservoirs which belonged to Britannia Mills, that formerly occupied the site, are being utilised. The buildings (with the exception of engine-house, boiler-house, and office roofs) are fireproof. The architects are Messrs. Stott and Sons, of Manchester and Oldham; and the builders, Messrs. E. Taylor and Co., of Littleborough.

The Imperial Institute.—This monumental building, erected from Mr. Thomas E. Collcutt's design, is so far completed that the Fellows have entered upon occupation of their suite of club-rooms. The building will eventually cover nine acres, and the cost thus far has been £279,000. The style is Free Classic, and the elevations are carried out in Portland stone, with Hopton Wood stone for internal walling and the principal staircases. On the principal floor accommodation is provided on the west for an executive council chamber, with ante-room and three offices for officials; and on the east postal, telegraph, and telephone offices, clerks' offices, waiting-room, and Fellows' writing-room, with lifts to upper floors from a corresponding series. The larger rooms on this floor are appropriated to news-room, reading-room, library, British-American, British-Australasian, British-African, and British-Indian conference rooms. These four rooms are panelled with oak, beech, and other hard ornamental wood, the wall spaces above the dadoes and the ceiling being of plaster-work, with arabesque details. On the first floor are the meeting rooms for societies, the commercial intelligence departments, and the Crown colonies and commercial conference rooms, and the Fellows' dining-room; and above this, again, on the second floor, are further commercial meeting rooms, samples examination-room, laboratories, map-room, Fellows' smoking-room, and various offices, and a refreshment-room. There is under the whole of the main buildings a basement, including the boiler and machinery, installation for power, ventilation, and electric lighting. Then, again, there is beyond the boundaries of the main building a series of galleries, inclosing four large quadrangles, each some 300ft. in length, and from 60ft. to 140ft. in breadth. Messrs. Mowlem and Burt are the general contractors. The marble mosaic pavement of the principal floor, the marble work to grand staircase, and some of the chimneypieces have been executed by Messrs. Burke and Co., of Newman-street, W.

Ipswich.—The old theatre in Tacket-street, having been superseded by a more commodious house built in Carr-street from Mr. Walter Emden's designs, was sold to the Salvation Army, and is being reconstructed to meet the new requirements. Practically only the rear and side walls of the theatre have been left. The front has been taken down, and the building line set back 5ft. 6in., making the street 30ft. wide, the corporation having bought the space surrendered and thrown it into the thoroughfare. The main entrance is in the centre of the building, and the remainder of the frontage will be utilised for shops, one on either side. The dressing and property rooms at the rear will be turned into officers' rooms. Running round three sides of the building will be galleries, supported by iron pillars. These will be approached by staircases on either side of the main entrance. At one end will be a large platform, and at the rear of this a gallery, in tiers, for the accommodation of 200 members of the army. Several emergency doors will be made, so that the building, which will hold 1,200 persons, can be cleared in a few moments. The main walls have been heightened 4ft. 6in., and the distance from the floor to the ceiling will be 27ft. The interior will be plastered and decorated in the French style, with the army colours worked in. The floor will be of wood. The architect is Mr. W. Gilbee Scott, and the builder Mr. T. Morgan, of Wood Green, London. The latter has converted over 100 buildings into barracks for the Salvation Army.

Southwark.—On Whit-Monday, the opening of the new church of the Most Precious Blood in the Borough was solemnised by Dr. Butt, Bishop of Southwark. The church is built in the simple and severe style of the Early Italian. The plan comprises a nave, 126ft. by 42ft., with internal buttresses through which pierced arches afford a way around the church. The sanctuary terminates in a semicircular apse, and is flanked by low parapet walls. In the apse stands the high altar of plain stone, surmounted by a baldacchino. There is one side chapel, and a transeptal space will provide room for the organ. A large gallery at the end will seat nearly 100. The church is seated for more than 700 persons, and is provided with pulpit, font, and other furniture in accordance with its style. There are two sacristies and a presbytery. The cost of the site was £4,000, and the contract price with church and presbytery, £7,000. The architect is Mr. F. A. Walters, of Great Queen-street, Westminster, and the contractors are Messrs. James Smyth and Sons, of South Norwood, S.E.

Waddesdon.—On Wednesday week was dedicated the rebuilt tower of Waddesdon Church, Bucks. It is an unusually fine tower of the 14th century, of massive proportions, and has been rebuilt as nearly as possible upon its old lines, but with new western doorway, a west window under the old curtain rib, and a turret staircase at the south-east corner. In the pulling down portions of an old turret staircase were found imbedded in the wall. The turret and tower alike are finished with battlements. The old vane is fixed in the centre of the lead roof. Total cost has been about £1,900. Mr. Sherwin, a local builder, who has been clerk of works at Baron Rothschild's mansion in the same parish, obtained the contract; the architect being Mr. William White, F.S.A.

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Mr. E. H. Shorland, of Manchester, is supplying his patent exhaust roof ventilators to the new board schools, Middlesbrough.

Means are being taken for preserving to view the exact site of the Norman castle at Castle Carey. A number of small pillars have been erected at the four angles of the extensive keep, and one is placed to mark the position of the fore-building, and the spot where the piece of Norman plinth exists. These pillars are constructed out of stones actually found on the site; they are square in shape, stand about a foot out of the ground, and are cemented on the top. They were erected under the superintendence of Mr. J. H. Francis, who was one of the discoverers of the buried castle.

Engineering Notes.

Municipal and County Engineers at Scarborough.—A meeting of the Incorporated Association of Municipal and County Engineers was held at Scarborough on Saturday. The members assembled in the Council Chamber, where Mr. George Ball read a paper by the borough surveyor (Mr. Jas. Petch), on "Scarborough: its Progress and Public Works in Recent Years," and Mr. Wm. Millhouse, the waterworks engineer, read a paper on the "Scarborough Waterworks." The members next visited the sanitary department and the Tiled Floorcloth Works. At the invitation of the mayor, the members lunched at the Bull Hotel, and the visit closed with the an inspection of the South Cliff Tramways and the Holbeck Gardens.

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CHIPS.

The Eton Mission Church of St. Mary of Eton, Hackney-wick, was, on Saturday, consecrated by the Bishop of London. It has been built from designs by Messrs. Bodley and Garner.

At their last meeting the Leeds Town Council agreed to increase the salaries of Mr. Tooley, manager of the Meadow-lane gasworks, and Mr. Smith, manager of the New Wortley Gasworks, each from £250 to £300 a year.

Bishop Pelham's services during the last thirty-five years as Bishop of Norwich are to be marked by the erection of a new episcopal throne in Norwich Cathedral, raised by subscriptions from all parts of the diocese.

At Christie's, last week, a portrait by Sir Joshua Reynolds of Mrs. Fitzherbert was sold for 1,650 guineas.

The Shelley Centenary Committee at Horsham has decided that the county celebration of the Centenary shall take the form of a library and museum, to be established in that town. A memorial tablet will also be placed in Horsham Parish Church.

The town council of Keighley have applied to the Local Government Board for sanction to borrow £20,500 for street improvements, a fever hospital, and public park, and have appointed a committee to consider the desirability of building a town-hall.

The Edinburgh Photographic Society, which numbers over 400 members, took possession of its new rooms at 38, Castle-street, Edinburgh. The chair was occupied by the president, Mr. Hippolyte J. Blanc, A.R.S.A., architect.

A movement is on foot in Edinburgh to raise £200 for a statue of John Knox, to be placed in one of the niches of the new National Portrait Gallery. The work will be carried out by Mr. D. W. Stevenson, R.S.A., whose model was exhibited in the Glasgow exhibition of 1888.

A meeting was held on Thursday afternoon in last week with the object of determining what steps shall be taken to carry out repairs to the church of St. Martin-in-the-Fields. The report of Sir Arthur Blomfield, A.R.A., stated that considerable dilapidation was apparent in the church, extending over the whole exterior, and reaching up to the top of the spire. It was also evident that to prevent further damage immediate action was necessary. So far as could be ascertained the total expenditure required would be £5,000. Subscriptions to the amount of £1,435 were announced, and it was decided to proceed with the work under Sir A. Blomfield's direction.

Messrs. Mark Fawcett and Co.'s fireproof and ventilating floors have been selected for the new Admiralty Buildings, and the contract for the whole of the floors, ceilings, roofs, domes, &c., with the constructional steelwork connected therewith has been placed with that firm.

The trustees of the National Art Gallery of New South Wales have instituted a competition of water-colour drawings of the picturesque scenery of New South Wales, under five sections—viz., 1, coasts and harbours; 2, tidal rivers, lakes, and lagoons; 3, inland rivers and lakes; 4, mountains, gorges, glens, and valleys; 5, inland plains and scenes introducing pastoral and agricultural occupations. The drawings are to be sent in to the Art Gallery, Sydney, on Thursday, the 24th November, and the trustees are prepared to purchase a number, not exceeding twelve, for £75 a-piece.

The memorial of Alexander Peden the Covenanter, known as Peden the Prophet, which has been erected over his remains in the churchyard at Old Cumnock, was publicly inaugurated on the 16th inst. by Professor Blackie. It takes the form of a colossal obelisk of Aberdeen granite, Gothic in design. The architect was Mr. Ingram, of Kilmarnock, and the contractor Mr. Andrew Murdock.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

Exeter Diocesan and Architectural Society.—The Exeter Diocesan Architectural and Archæological Society held an annual meeting at the College Hall, South-street, on the 10th. About some twelve months since, owing to diminution in the number of members, it was considered that the society could no longer exist, and must be dissolved. Through the exertions of the secretaries, Rev. J. L. Fulford and Rev. E. V. Freeman, the society has since been remodelled, and many new members, chiefly clerical, have joined. The report states that at more than one meeting there was a great reluctance evinced to let the association perish; that the rules and constitution have been revised, the expenses reduced, and with the recent influx of new blood it has been launched, it may be hoped, upon a new and vigorous career. The chair was occupied by Canon Edmonds, and afterwards by Rev. W. T. A. Radford; there was not a large attendance. A paper was read on "Domes" by Mr. E. Ashworth, commencing with the Pantheon and other Roman cupolas, and proceeding to the churches of Justinian still existing at Constantinople, the wonderful Church of St. Sophia and other great churches, some retained as mosques; the introduction of the Byzantine style into Italy, in St. Mark's, Venice, and carried into the South of France. The Indian domes erected by the Mogul Emperors as mausolea were described and delineated. The officers of the society were elected, and a concluding part to Vol. V. (second series) issued.

Liverpool Architectural Society.—Classes have been held during the session which has just concluded for the benefit of the student members of the society, the subjects bearing directly on the R.I.B.A. examinations. The classes were well attended, and the students have by their interest shown that the committee's efforts have been appreciated. The following are the subjects, together with the lecturers:—"Sanitation," Dr. D. Harrisson and Mr. T. Harnett Harrisson, F.R.I.B.A. (president); "Mouldings, Features, and Ornament," Mr. C. E. Deacon, F.R.I.B.A.; "History of Architecture," Mr. H. W. Keef; "Specifications and Quantities," Mr. H. L. Beckwith, F.S.I.; "Building Construction," Mr. G. Ware; "By-Laws and Public Health Acts," Mr. J. Dod. An examination was held at the close of the session, in which Mr. Lawrence Hobson distinguished himself most highly, to whom the council will award the prize. Meetings have been started, and will be continued every week during the summer months, conducted by Mr. C. E. Deacon, F.R.I.B.A., at Bebington, for the purpose of preparing measured drawings of the old church.

CHIPS.

Mr. G. Gordon Hoskins, F.R.I.B.A., has been placed upon the Commission of the Peace for the borough of Darlington.

Improvements are being made at the City Hall, Glasgow, and the latest improved ventilators of Messrs. Baird, Thompson, and Co., are being adopted for the extraction of the vitiated air.

A boys' club is about to be built adjoining the Church of St. Agnes in Newfoundland-row, Bristol, from plans by Mr. Wood Bethell, of London. The chief rooms will be a gymnasium, 62ft. by 30ft., two reading-rooms, and a carpenter's shop and library. The style will be Tudor, and the building will be faced with local stone.

The corporation of Dewsbury has just received the Local Government Board's sanction for the borrowing of £41,250. This sum is to be expended in the purchase and laying out of a public park, and in street improvements. The park is to cost £33,250, and will be laid out in accordance with the design prepared by Mr. Henry C. Marks, Assoc.M.Inst.C.E., the borough engineer and surveyor, which includes ornamental waters, lodges, and three miles six furlongs of drives and promenades.

The local board for Hoyland and West Kirby have received fifteen sets of plans in response to the advertisement for designs for public offices to cost not more than £3,000. A Birmingham architect has been appointed as assessor, and has this week examined the plans.

Good progress is being made with the new branch railway to Barnton, near Edinburgh. Some 50 per cent. of the earthworks are completed, and 33 per cent. of the bridge work, and the line is fenced in from end to end. Messrs. C. and R. Cousins are the contractors.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. Passmore Edwards.

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ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two the minimum charge being 5s. for four lines.

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SITUATIONS.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is One Shilling for Twenty-four Words, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XL., XLI., XLVI., XLIX., L., LI., LIII., LIV., LVIII., LIX., and LX. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

Received.—B. R. M. and Co.—F. G. Faulkner.—S. R. P.—J. M. T. Co.—Bostonian.—P. G. B.—Reg. Plumb.

"BUILDING NEWS" DESIGNING CLUB.

Drawings Received.—"Nil Nisi Bonum," "Symbol," "White Rose," "Baron's Dwarf" (both these too big), "Peterborough," "Old Postage Stamp," "Ivanhoe," "Box," "Sphinx."

Correspondence.

NORWICH SCHOOL BOARD COMPETITION.

To the Editor of the Building News.

Sir,—The ancient "Goth," in his last week's Notes, seemed a little surprised that the Norwich School Board should be themselves the judges on the plans sent in. Perhaps after reading the following he may understand the reason more clearly:

A few weeks ago a deputation of the board visited several of the best Northern schools. Soon afterwards, and before the competition was advertised, a Norwich architect might have been seen industriously taking measurements of different parts of one of the above schools, which had met with the approval of the board.

By being their own adjudicators the board save themselves the assessor's fees, and the right man secures the work, to the satisfaction of all concerned; whereas an assessor relying on his knowledge of school-planning alone might complicate matters by selecting what he considered to be the best scheme; and the board (as several have done lately), perhaps, would at the finish feel themselves under the necessity of picking out the *best* (?) plan in *their* opinion, and upsetting the assessor's decision.—I am, &c.,

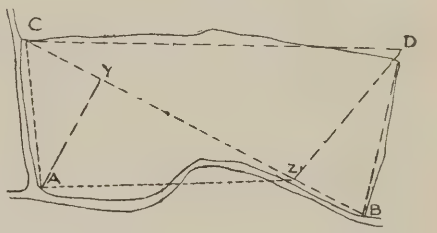
Ominous.

LAND SURVEYING.

Sir,—It is with the greatest reluctance that I ask for a small space to criticise the method of surveying advocated by so distinguished a gentleman as a "Crawter and special prizeman." I suppose Mr. Cobham must have had practical acquaintance with land surveying at some time or other, but I should scarcely suppose so from his last paper. Suppose from A to F had been measured five links too long, will Mr. Cobham tell us what check there is on such an error in his diagrams?

As a matter of fact, if from F to A there were a straight fence needing no offset, or only one at every other chain or so, it would be quite possible to count A, not five only, but a hundred links long, and still have no check, for B F A would still be in, to all intents and purposes, the same straight line; at all events D E would be no effective check on it. No scale being given by Mr. Cobham, I have taken the road as being 50 links in general width, and find the scale approximately four chains to the inch. Mr. Cobham does indeed speak of the measurement from D to A as being the usual check; but here again he shows an ignorance of practical field-work. If, in lining out B C, a rod be placed at Z and another at Y, making the tie-lines Z D and Y A as nearly as possible at right angles to B C, the ties can be chained without any lining-out, whereas A D would certainly have to be set out. For my part, I never saw a square field measured in any other way, for though A D be a check to the trapezium as a whole, it is no check to each triangle composing it; but Z D and Y A are so, enabling one at once to see in which triangle an error, if any, exists, and so to save time in re-chaining on the ground. Should neither tie-line fit, it is almost a certainty that the base line B C is wrong.

The appended diagram shows the method in



which, I think, ninety-nine surveyors out of every hundred would measure the field (providing the fences at the road-side could be seen over, and crossed easily, and one would suppose they could, or Mr. Cobham would not have chosen to cross them so often and needlessly), and in which each triangle is properly checked, and one is not left in the slipshod fashion shown in Mr. Cobham's Fig. 5, and which runs all through his other diagrams, making them, as correct examples of surveying, absolutely worthless in my humble opinion.

I shall be glad to hear his defence, as I am always willing to learn.—I am, &c.,

Northman.

The memorial stones of a new Congregational church and school were, on Thursday in last week, laid at High Barnet. In preparing the foundations of the new building, a large number of Roman bricks have been discovered. The building will cost about £4,500.

On Saturday the new vestries of St. Luke's Church, Beeston Hill, Leeds, were opened by the Bishop of Ripon. The dimensions of the clergy vestry are 11ft. by 13ft., and the choir vestry 24ft. by 13ft. The estimated cost is £500. The architects are Messrs. Kelly and Birchall, of Leeds, and the builders Messrs. Wade Brothers.

The town council of Aberdeen discussed, on Monday, the question of the reorganisation of the Burgh Surveyor's Department, over which there has been considerable public feeling, objection being taken to the proposal to grant a pension of £250 to the present surveyor. After three hours' discussion, it was agreed to relieve Mr. William Boulton of his appointment as burgh surveyor, which he has held for twenty-two years, and by a majority to grant him a retiring allowance of £200 a year. A proposal was made that Mr. William Dyack, the assistant burgh surveyor, should be appointed water engineer, and that a burgh surveyor should be elected in Mr. Boulton's place, the two officials to have charge of their separate departments. By 16 to 13, however, the Council decided that there should only be a burgh surveyor appointed, and it was remitted to the Council in committee to consider as to the selection of Mr. Boulton's successor.

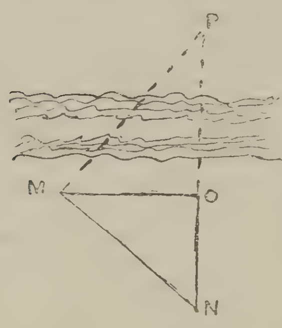
Intercommunication.

QUESTIONS.

[10789.] — **Reciprocal Diagram.** — Would Mr. Middleton or any other subscriber be good enough to give a full and clear explanation of what is meant by a reciprocal diagram, as an answer to the question given at the Institute exam. last March? Could you call a reciprocal diagram a stress diagram, or not? I am also very anxious to know of the best way of grasping Bow's Annotation of Spaces (mentioned in Mr. Middleton's work). If I were to colour the spaces differently, and draw lines of different colours in the diagram to correspond with the spaces, would that help me? Any suggestions I should be pleased to follow, so that I may be able to apply Bow's system to any diagram.—Strains.

[10790.]—**Survey, &c.**—What are the usual charges for surveying ground, taking levels, and laying it out for building sites? Also for preparing plans and sections for new streets, sewerage, &c., specifications, obtaining tenders, and superintendence? Is it usual to charge a certain percentage on the total cost, and if so, what percentage?—Vedra.

[10791.]—**Inaccessible Distance.**—In "Molesworth" I find that the inaccessible distance required is O P, and that $OP = \frac{OM^2}{ON}$. I should be much obliged to any reader who would kindly show me how this can be proved.—L. P. D.



[10792.]—**Proportion.**—Can any reader give or inform me in what treatise to obtain the general rule of proportion applied to Mediæval churches of the different periods (with and without aisles)—viz., relation of width to length and height, also the pitch of roofs?—Pupil.

[10793.]—**Staining Wood Green.**—Can any of your readers say what is used for staining wood green, and how is it applied? I refer to that class of staining which is now greatly used for bedroom furniture.—Verdant.

[10794.]—**Hydraulics.**—Will Mr. Gay kindly explain paragraph (3) as to how the figures ·01745329 and the length of 1° in parts of radius 14·7715in. are obtained? Is not ·9428 the sine of an angle of 70° 32′? As if so, this would be 70·533, and not 70·528, as stated.—X.

REPLIES.

[10775.]—**Hydraulics.**—While F. E. Gay, Bath, has treated the above case very successfully, it seems to me the whole *modus operandi* might be very much shortened. The question limits itself to finding the "hydraulic mean depth," or, as it is sometimes called, the "mean radius," of a circular pipe 24in. in diameter, running one-third full, or, more correctly speaking, with a depth of water at the centre of 8in. If A represent the area of the segment of the pipe filled with water, and P the wetted border of the same segment, then $H\,M\,D. = \frac{A}{P}$. Put d for the diameter of the pipe, C for the chord of the segment, c for the chord of half the arc of the segment, and x = a constant. Then $A = d^2 \times x = 4 \times 0{\cdot}2234 = 0{\cdot}9136$ft.: the same answer arrived at by F. E. Gay. For the value of P we have $P = \frac{(8 \times c = C)}{3}$. Calling V the versed sine of the arc P, we obtain $C = 2\sqrt{[R^2 - (R - V)^2]} = 1{\cdot}885$. Referring to the illustration in last issue, if a line be drawn from B to E, or from D to E, either will represent c, from which we find—

$$c = \sqrt{\left(\frac{C}{2}\right)^2 + V^2}.$$

Expanding and inserting this value of c in the formula for P, we finally obtain—

$$P = \frac{4\sqrt{(C^2 + 4\,V^2)} - C}{3} = 2{\cdot}45\text{ft.},$$

and $H\,M\,D. = 0{\cdot}372$ft., as before.—M.A.

◆

Lord Henley's Committee passed on Monday the Birmingham Corporation Water Bill authorising them to take a supply of water from the rivers Claerwen and Elan at a cost of £6,000,000. The measure now awaits the Royal Assent.

The auction rooms of London have received an accession by the transformation of Willis's Rooms, which is now complete so far as the upper floor is concerned. Under the superintendence as architects of Messrs. Wimperis and Arber, the room, which was Almack's, and more recently was the scene of innumerable public dinners, is now divided into two auction rooms, each about 45ft. square.

Legal.

LICENSES TO ASSIGN.

THE formal covenant in a lease not to assign or underlet without the license and consent of the lessor, nowadays usually goes on to provide that such license or consent shall not be "arbitrarily" or "unreasonably" withheld, or similar words to that effect. Sometimes the clause adds a reference to the lessee finding a substantial tenant; but that, of course, is not essential, and the point is that while the lessor is entitled to be asked for his license before an assignment can be legally effected, he cannot lawfully refuse to give it capriciously or arbitrarily, or without a reasonable cause. Still, the lessor himself must remain the person best fitted to judge of the validity of any objection to an assignment to any new tenant proposed. Nor is he at all confined to the objections against that tenant which he may set up, but he is equally entitled to consider the well-being of any adjoining property in which he may be interested. In short, the covenant against assigning or underletting without leave still remains enforceable, unless the refusal of a lessor to consent can be shown to be really arbitrary or capricious.

This point was lately raised again in a recent case, in which the Corporation, as governors of Bridewell Hospital, were plaintiffs (*Times*, June 3). The house concerned was in New Bridge-street, Blackfriars. The original lease contained a covenant against assigning or underletting without license, which was not to be withheld "arbitrarily or without good and sufficient reason." It had been proposed by the defendant to assign the lease of these premises to General Booth, for the Salvation Army, who, however, gave evidence to the effect that he only wanted to use them as offices, and not for meetings or band-playing. The lessors had refused to give their license for this assignment, and said they brought this action to restrain the defendants from assigning without it, their ground for refusal being that the occupation of their premises by the Salvation Army would deteriorate their other property in the neighbourhood. Mr. Justice Kekewich held that the license had not been "arbitrarily" refused, as a reason had been given. Then he went on to consider whether that reason was "good and sufficient," as provided by the covenant, and he thought it was, because the plaintiffs were bound to consider not only the proposed tenant of their premises, but also the effect such an occupation would have upon the rest of their estate, and so he granted the injunction asked, with costs.

Fred Wetherfield, Solicitor.
1, Gresham Buildings, Guildhall, E.C.

Note.—All questions for reply in this column must be headed "Building News," and must reach my offices, as above, by *Tuesday* morning to insure answer same week.

Constant Reader.—Poor Rates.—Water Co.—1. The statute you mean is the Poor Rate Assessment and Collection Act, 1869 (32 and 33 Vict. c. 41). 2, 3, and 4. Fulton's Act of 1887 (50 and 51 Vict. c. 21) deals with these questions, and should be consulted. The owner is made responsible without any option in the case of small tenements.

Engineer.—"Client."—There is certainly no law to prevent an architect, engineer, surveyor, or anyone else from describing his employer as his "client." The word used formerly to be confined to the legal profession; but it is now quite common with bankers and accountants, and others, as well as with architects, surveyors, &c. Its use is really extended nowadays beyond the purely professional classes.

◆

An inquiry was held on Friday at Twerton, near Bath, by Mr. S. J. Smith, Local Government Board inspector, into the application of the Bath rural sanitary authority to borrow £1,400 for improving streets in the parish of Twerton. There was no opposition.

The first section of the church of St. Alban's, erected for the residential district of Westbury Park, Bristol, was opened last week. The first portion will accommodate 250 persons, and consists of a nave and choir of four bays under one span of roof. The style is 14th century Gothic, and it is executed in brown Pennant stone, with freestone dressings and tiled roof. It is proposed to ultimately extend the church to a length of seven bays, in order to accommodate 500 worshippers, when a timber porch and bell-cot would be added. The architects are Messrs. Henry Crisp and Oatley, Bristol.

LEGAL INTELLIGENCE.

Easton and Co. v. Nar Valley Drainage Commissioners. — Before Mr. Justice Grantham and Mr. Justice Charles, in the Court of Queen's Bench, on Saturday, a mandamus was applied for under section 25, subsection 8, of the Judicature Act, 1873. The plaintiffs, civil engineers, had obtained judgment for £121 17s. 2d., including costs, for drainage work done for the commissioners, and they asked for a mandamus to compel the defendants to levy a rate to pay off the judgment. For the plaintiffs, the case of "Smith v. Cowell" was relied upon, while the defendants' counsel quoted "Reg. v. Reed" and "Harrison v. Stickney" in support of their contention that the commissioners had no power to levy a rate to pay off past liabilities. The application was, however, unanimously granted.

Serious Charge against a Builder's Clerk.—Henry Gay, 15, of Herbert-road, Wimbledon, was charged at Wandsworth police-court, on Saturday, with forging and uttering two cheques, for £25 and for £10, with intent to defraud. The prisoner was a clerk in the service of Mr. James Price, a builder, of St. Mark's-place, High-road, Wimbledon, who had an account at a Wimbledon branch bank. The prisoner desired a lad, also in the employment of Mr. Price, to cash the cheque for £10 which had been taken from Mr. Price's cheque book, and which was in the handwriting of the prisoner and made payable to bearer. The cheque was cashed and handed to prisoner, who visited the offices of shipping agents on Friday, and wished to pay his passage to New York, and then on to Alabama, producing the cheque for £25 in payment. When prisoner returned for the change, he was arrested. Prisoner was committed for trial.

Serious Charge against a Builder.—William B. Goodwin, 60, described as a builder, of Notting-hill, and Henry William Brownjohn, a fishmonger, of Windsor, were charged on remand at the North London Police-court, on Tuesday, with collusion in obtaining goods from tradesmen, and in other ways defrauding people. Further evidence was called by Mr. Sims, who prosecuted for the Treasury.—James Jones, manager to Wood and Sons, brickmakers, of Wood-green, said Goodwin came to him, and said he had a truck-load of bricks at Wood-green station on demurrage. He asked 30s. per thousand for them, because the architect would not allow them to take the bricks on the land which he had leased for building.—W. B. Pampillon, W. A. Bateman, and George Ellingham, railway employés, proved the arrival of the bricks and their removal by the respective persons to whom they were sold.—Mr. Bennett Millward, builder, of Thornton-heath, also purchased a truck-load of bricks at 32s. per 1,000, which the prisoner Goodwin had purchased on credit and never paid for.—Dr. Parker Margetson, of Bognor, said he let a house at Lonsdale-road, Barnes, to the prisoner Goodwin on the receipt of a good reference from "Brownjohn, Windsor." A £10 bill was given by Goodwin for the first quarter's rent, and this bill was returned dishonoured. Then witness made a distraint, but there were no effects worth taking.—Both prisoners denied the conspiracy to defraud; but they were committed to trial on the charge, and Brownjohn on a further charge of perjury.

◆

CHIPS.

Plans have been prepared for the erection of three retail shops and sixty-eight workmen's dwellings at Vauxhall, a densely-populated district of Birmingham. The total cost is estimated at about £11,000. The contractor is Mr. Williams, and the architect Mr. J. Statham Davis, both of of Birmingham.

Mr. Thomas Harper Adams, of Edgmond, who died last week, has left the bulk of his large estate for the purpose of founding and endowing an agricultural college, which will probably be built near Newport, Salop.

Plans by Mr. Osborne, of Bennett's-hill, Birmingham, have been adopted for new church schools which are to be built at Langley, near Oldbury.

A statue of Lord Ardilaun, which has been erected in St. Stephen's Green, Dublin, by the citizens, in testimony of their sense of his munificence in connection with the opening of the green as a people's park, was unveiled on Saturday. It has been executed by Mr. Thomas Farrell, R.H.A., of Dublin.

The portrait of Mr. W. E. Gladstone, painted by J. M'Lure Hamilton, a Canadian artist now resident in this country, has been purchased by the French Government, and will be placed in the Luxembourg Gallery in Paris.

At the meeting of the London County Council on Tuesday, the highways committee were authorised to cause an inspection to be made of the railway stations in London, so as to ascertain if any reconstruction is necessary to prevent accident.

WATER SUPPLY AND SANITARY MATTERS.

Metropolitan Water Supply.—The London County Council passed on Tuesday a series of "opinions and conclusions" in respect to the future water supply, as an indication to the Royal Commission of the views of the Council on the subject. These were based on tables prepared by the engineer, Mr. A. R. Binnie, the main points being as follows: 1. That in making any estimates having reference to the future water supply of London, such estimates should be based on a period of 50 years from the present time. 2. That in dealing with a question of a source or sources of water which shall meet the requirements of London and its neighbourhood for 50 years, provision should be made for supplying a population of at least 12,500,000. 3. That in calculating the quantity of water required per head per day, the amount at present supplied by the companies should be increased by at least 10 per cent., and in no case should it be less than 35 gallons.

CHIPS.

The Bishop of Truro has unveiled the memorial erected in Truro Cathedral under the will of the late Miss Anne Pedler, in pious memory of her brother Edward Hoblyn Pedler. The tablet has been executed in white marble from a design by Mr. J. L. Pearson, R.A., from whose plans the cathedral was built.

The Mayor of Salford formally opened on Wednesday a new sanatorium, which has been erected at a cost of over £50,000, for infectious cases for the borough in the room of the Wilton Hospital.

The township commissioners of Bilston have adopted a sewerage scheme for the town prepared by Mr. Baldwin Latham, C.E., and estimated to cost £26,000.

The Bishop of Carlisle consecrated on Friday a new church at Newbiggin, near Kirkby Stephen. The church, which is Decorated Gothic in style, and dedicated to St. Aidan, has cost about £4,000.

A settlement was on Saturday effected with the opponents to the Rhondda and Swansea Bay Railway Bill, by which this Bill passed as an unopposed measure through the House of Lords. Under this Bill, as amended by the House of Commons, the company are empowered to construct the necessary railways for giving them independent access into Swansea and Neath.

The city council of Truro have purchased 23 acres of land adjoining the river for conversion into a public park.

New stationers' warehouses have been built in Narrow Wine-street, Bristol, on the site of old shops destroyed by fire 18 months since. The new premises are Italian Renaissance in style, and the street façade is of local bricks, with dressings and carvings of Corsham Down stone. Mr. W. F. Paul was the architect, and Messrs. Brock and Son were the builders.

The foundation-stone of the new chancel of the parish church of St. Peter at Farndon was laid on the 9th inst. The works now in progress include rebuilding the chancel, erecting a new north aisle, building an organ-chamber, providing a new porch, new heating apparatus, and reroofing the entire building. The cost is estimated at £2,700.

A recumbent effigy of the late Archbishop Magee will shortly be placed in Peterborough Cathedral, which is to cost £800.

The Queen has been pleased to convey to the Hon. Director of the Drawing Society, Mr. T. R. Ablett, a command that the society shall be called the Royal Drawing Society of Great Britain and Ireland. The society encourages the teaching of drawing in the public schools, high schools, and grammar schools by holding an annual examination and an annual exhibition of school drawings.

Among the railway Bills affecting the Metropolis, there have passed this session the Great Northern and City Railway Bill, under which it is proposed to construct an underground electric railway from Moorgate-street to the Great Northern system at Finsbury-park; and the Central Railway Bill, by which an extension of the authorised line (from Bayswater to Cornhill) is sanctioned from the Royal Exchange to Liverpool-street.

Professor Albert Wolff, the celebrated sculptor, a disciple of Rauch, well known for his statue of Frederick the Great, died on Tuesday night, aged seventy-seven.

The directors of the West Highland Railway, went over the Fort William section of the line on Monday, and expressed satisfaction with the progress that had been made. They were able to travel by rail from Fort William to the head of Loch Treig, a distance of about 26 miles. The company included the engineer, Mr. Charles Foreman, C.E., and the contractors, Mr. John Aird, M.P., and Mr. Charles Lucas.

Our Office Table.

The gift to the cities of Liverpool and Manchester from Mr. Lewis's executors of a sum which may range from £200,000 to perhaps £350,000, will doubtless provide employment for architects and builders in the future, and will, in all probability, lead to the institution of one or more important competitions, for, whatever may be the form in which the benefaction may be expended, the trustees will scarcely accept the responsibility of selecting an architect for the buildings erected under the scheme. It will be noticed that Mr. Levy, in his letter to his advisers, Mr. Forwood and Sir W. Houldsworth, lays down the condition that the funds are to be devoted to nothing in the nature of a sectarian institution. He desires to have an institution or institutions founded on large and important lines, rather than to devote money to the aid of a number of existing establishments; in other words, to adopt some scheme of a magnitude too large for ordinary private beneficence. He further suggests, for the guidance of his advisers, that Mr. Lewis "entertained a favourable opinion" of the Peabody system of dwellings for the industrial classes.

The fourth-year issue of "Academy Architecture" has this week reached us, containing several of the drawings now on view in the galleries of Burlington House, many of which have appeared, of course, in our pages. The drawings, though necessarily reproduced to a small scale, are brightly rendered, and the little folio is conveniently arranged. More than two-thirds of the book are devoted to the illustration of English and foreign designs, chiefly for buildings of various kinds, and a goodly choice, from last year's Academy. Sculpture is also represented. We cannot say that we admire the Continental productions, which by no means, as here illustrated, compare favourably with our own.

The centenary of Southport is being celebrated this week in a triple form—that of an exhibition of art treasures opened by the Earl of Lathom, a marine lake on the North sands covering about 27 acres, which was inaugurated on Monday, and the laying of a foundation stone of the new infirmary, estimated to cost £13,200, and as to which a competition is still pending. The marine park and lake has cost £29,000, and like that previously formed on the South sands (at a cost of £13,500), has been carried out under the supervision of the borough surveyor, Mr. J. Crabtree, and the office staff and workmen. The loan exhibition is being held in the old town hall and adjacent buildings adapted for the purpose, under the supervision of Messrs. Maxwell and Tuke, of Manchester. It is rich in Early Victorian pictures, including two Landseers from the Chatsworth collection, C. R. Leslie's "Reading of the Will," and works by Creswick, Muller, Ansdell, and Rossetti. Among contemporary artists Madox Brown sends two of the original cartoons for the Manchester Town-hall frescoes, and Millais, Leighton, Alma Tadema, Watts, Murray, Calderon, Storey, and Frith are well represented. There is also a good collection of water-colours and etchings.

The area inclosed in this Exhibition contains about 46,000sq.ft., and the old fountains, walks, and flower-beds are retained. Buildings for offices, light refreshment rooms, and lavatories have been erected within the inclosure. The buildings utilised for the exhibition are the old Town-hall, Cambridge Hall, the Art Gallery, and the Art School. The old Town-hall is to be used chiefly for the exhibition of objects of local interest, the Cambridge Hall will be retained as a music-room, and the Art Galleries and Art School as picture galleries.

The Bowes Museum at Barnard Castle, built in 1865-89 by the late Mr. John Bowes, natural son and heir of the 10th Earl of Strathmore, but which hitherto has been kept closed, was formally opened to the public last week. The building is French Renaissance in style, the main idea being founded on the Tuileries. The south, or principal front, is 300ft. in length and 85ft. in height; the east and west wings, which are brought forward 38ft., are each 130ft. in length. The building is faced with Dunn House stone from the adjacent estate, and the interior is of Dunn House and Stainton stone. In the rooms on the first floor are collections of pottery, porcelain, glass, carved ivory, crystals, &c. On the second floor the rooms in the west wing form the library. The picture gallery consists of a suite of magnificent rooms, the entire length being 204ft., and the width 44ft. In these rooms are about a thousand religious, allegorical, and other pictures by foreign artists, including examples of Murillo, Fra Angelico, Baron Gros, &c., besides works by Sir Joshua Reynolds, Hogarth, and other English painters. The joint architects were the late Mr. J. E. Watson, of Newcastle-on-Tyne, and Mons. Jules Pellichet, of Paris; and Mr. Joseph Kyle, of Barnard Castle, was the builder. Financial difficulties hampered the completion of the building for years, and have till now prevented the opening of the museum. What Mr. and Mrs. Bowes spent upon the gift will never be known, as only imperfect records exist of the details of the purchases of the works of art which are now in the museum. On the purchase of the land and on the building of the museum and laying out of the park they spent from first to last more than £100,000.

The building of enormous piles of offices and tenements and adding stories have contributed much to the foggy and smoky condition of the Metropolis. Dr. Poore, in a recent lecture at University College, maintains that under these conditions we have no right to grumble at the increasing density of London fogs. He says:—"We have deliberately caused it, and neither Royal Commission, Parliamentary Committee, nor anthracite coal will put it right. Even though we get rid of the 'blacks,' we should still have the irritating invisible products of combustion—by far the most harmful of the elements of a fog—to deal with." We trust these observations will be heeded by our sanitary authorities, who have to look after the health of our towns. The Building Acts and by-laws only can cope with the evil of overcrowding, which now threatens to become the curse of advancing wealth in great cities. It is justly urged that one of the functious of a sanitary authority is to protect the public from the rapacity of public companies.

The Thames Tunnel, Blackwall, which has been designed by Mr. Alexander R. Binnie, M.Inst.C.E., engineer to the L.C.C., will have a total length of 6,200ft., and a river section of 1,200ft. There will be exits for foot-passengers arranged at three or four vertical shafts, so that passengers will not have to walk to the entrances to enter or leave the tunnel. The shafts are 48ft. inside diameter and 5ft. in thickness. The tunnel will be a cast-iron tube, brick-lined (the bricks specially made to fit the cast-iron rings and flanges), the internal diameter of which will be 24ft. 3in., and the outside 27ft. It will not be straight, but bent at the shafts. In the construction Mr. J. H. Greathead's system is adapted for excavating and advancing the segments of tube and of simultaneously grouting in the space round the tube. Ventilation will be provided, and provision is made for compressed air and hydraulic machinery for the maintenance of sufficient pressure to keep out the water when the Thames is at high-water spring tide and for moving the shield.

"The Growth of Oaks in the Forest of Dean, Gloucestershire," was the subject of a paper read by Colonel Bailey, R.E., before the members of the Botanical Society of Edinburgh at their last meeting. Colonel Bailey explained that experiments have been carried on in the Royal Forest of Dean for over a hundred years, with the object of determining whether the transplantation of oaks increases their girth as compared with trees not transplanted. The observations which have been made show, the lecturer demonstrated, that transplantation does result in increased girth. It was found that even lifting and putting back into the same position is advantageous in that respect. The experiments, it is satisfactory to note, are being continued.

A new method of impregnating logs with zinc chloride, in order to preserve them, is now in use in Austria, being known as the Pfister process. The timber is impregnated in the forest as soon as possible after it is felled. The zinc chloride solution has a specific gravity of 1·01, and is forced into the thick end of the log by a force-pump. To this end, an iron disc furnished with a cutting rim is forced into the end of the log and secured by clamps. The time required for this preliminary work is only three or four minutes for each log. After a pressure of two or three atmospheres has been maintained at the thick end of the log for a few minutes, the sap begins to exude at the opposite end, and finally a weak solution of zinc chloride comes through, showing that the operation has been completed. About 2¼ gallons of the solution are required per cubic foot of timber treated. Though rapid, the process is said not to distribute the solution so uniformaly as other methods.

A material known as "staff" is being employed as an exterior covering of the World's Columbian Exposition at Chicago. It has been used in Europe for many years, especially in Germany. The ingredients are plaster of Paris, or Michigan plaster, water, and hemp fibre, the latter being used to bind together the casting. The staff ornaments are made by means of clay-models and matrices of hardened gelatine by a simple process. The gelatine matrix, or mould, having been produced, it is used to cast the material. The "staff" can be nailed to frame buildings, and brick walls can be covered with it and made to assume the appearance of Classic masonry by inserting wooden furring strips in the brickwork. For pilasters, cornices, mouldings, and panels staff is well adapted. At the Paris Exhibition the buildings were of iron, and the staff was cast in panels and set in iron frames. At the Columbian Exposition, wood is employed, to which the staff is nailed. The material is found to resist the weather, and even frost after saturation.

Excavations have recently been carried out by Daninos Pasha in the plain of Eleusis, two miles east of Alexandria, and have resulted in the discovery of large numbers of granite blocks and columns, which appear to form remains of the temple to Ceres Proserpine. Close by he dug out a much-mutilated colossal statue in grey granite respresenting the head and torso of a woman wearing the insignia and coiffure of Isis. The nose is mutilated, but the prominent eyes, the contour of the cheek, and the firm rounded chin show the characteristic traits of the Ptolemies. The head is about 3ft. 6in. high. The sculpture is of high order and finish, probably the work of an able Greek artist. A large detached fragment represents a portion of a man's right hand, the thumb grasping the fingers of a female hand, which are of proportions corresponding to those of the statue. Daninos Pasha identifies his find as the statue of Cleopatra, known to have stood in front of the temple, and it is expected that further excavations will reveal the companion statue of Mark Antony.

The New York Park Commissioners have appropriated the well known Castle Garden, which has now been abandoned by the Commissioners of Emigration, as an aquarium building. The structure is very well adapted to the purpose, having outside walls of great thickness, but being clear of partition and division walls. The inclosing walls form a circle on the outside, but a polygon on the inside, and the architect to the board, Mr. Munckwitz, proposes to repair and re-point them, close the windows and the loop-holes, which still recall the days when the building was really a "castle," and line them with brickwork in cement. Fronts and partitions of thick plate-glass will then be set at a certain distance from the walls, forming a ring of immense tanks, which will be lighted from above by skylights. The Castle Garden Aquarium will be on a much more extensive scale than any in Europe, except, possibly, the one at Naples. Beside the tanks on the floor, Mr. Munckwitz proposes to utilise the ring of columns which carry the middle portions of the roof for supporting a gallery, on which will be placed another tier of tanks. In all, there will be 150 of the glass-front tanks, and in the middle of the floor will be formed seven open ponds, which will be devoted to whales, sharks, and seals. Means will be provided for warming and cooling the water in the tanks to the taste of the occupants, and the work is to be finished before next winter.

An adjourned meeting of the Plumbers' Registration Committee of the District Council for West Lancashire, Cheshire, and North Wales was held on Thursday evening, the 16th inst., at the library, William Brown-street, Liverpool, Dr. J. Stopford Taylor in the chair, Dr. Vacher, Messrs. H. Percy Boulnois, C.E., and Coard S. Pain, C.E., the several trade representatives, and Mr. Watkin Hall, C.E., district honorary secretary, being also present. Ten certificates were issued to successful candidates, and over 30 applications for admission to the register dealt with. The question of the Bill promoted to strengthen the registration system was discussed, and the hope expressed that it will become law in the near future, and thus afford the public a reliable means of ascertaining which tradesmen are qualified to execute their work in a proper manner, and prevent unqualified tradesmen using the title ascribed to those admitted to the register.

The question of giving deposits with tenders was recently discussed at a meeting of the Builders' and Contractors' Association of Victoria, held at Melbourne. One builder said he had been kept out of a deposit of £50 for over twelve months by a city architect, having been put off by him from time to time, and the architect, on pressure being put on him, had since called a meeting of his creditors. The lesson is not without its warning to the profession in England.

MEETINGS FOR THE ENSUING WEEK.

Saturday (To-morrow). — Architectural Association. Visit to Canterbury. Train from Victoria, 10 a.m.

St. Paul's Ecclesiological Society. Visit to the churches of Crayford and Dartford, under guidance of Major Heales, F.S.A. Train from Cannon-street, 2.40 p.m.

Monday.—Royal Institute of British Architects. Presenta- of Royal Gold Medal. 8 p.m.

Tuesday.—Society for the Protection of Ancient Buildings. Annual Meeting at Barnard's Inn, Holborn. 8.30 p.m.

Thursday.—Dundee Institute of Architecture. Annual Business Meeting. 8 p.m.

The Architectural Association. — Second Summer Visit to Canterbury. Train 10 a.m. from Victoria. Tickets, 6s. 2d., may be obtained of Mr. G. A. Lansdown, 5 and 7, Warwick-street, Charing Cross.

Ernest S. Gale
F. T. W. Goldsmith } Hon. Secs.

CHIPS.

The President and Council of the Royal Institute of British Architects gave a conversazione on Wednesday night, by permission of the Council of Education at the South Kensington Museum. The guests, to a considerable number, were received in the south court by the president and Mrs. Macvicar Anderson. The string band of the Royal Artillery, conducted by Cavaliere L. Zavertal, gave a performance in the Italian court.

The Bill of the London County Council for power to construct a tramway over Westminster Bridge and along the Thames Embankment was rejected on Wednesday by a House of Lords Committee.

The scheme for the erection of a new drill hall for Johnstone, N.B., is so far matured that contracts have been fixed for the work. Messrs. David Jaffrey and Son are the builders; Mr. Alexander Morison, the joiner; Mr. Charles Murdoch, plumber; and Mr. George Thomson, slater and plasterer. The cost will be about £1,200.

The Duchess of Fife laid, on Tuesday, the foundation stone of the new schools and mission house in connection with the church of St. Mary, Somers Town. The new buildings are intended to comprise a reading-room, classrooms, and a soup kitchen, and in the winter free dinners will be given to the poor. The trowel and mallet were presented by Sir Arthur Blomfield, A.R.A., the architect.

Princess Louise visited Broadstairs on Tuesday, and opened the Victoria Hospital Convalescent Home, and dedicated the public gardens. The convalescent home is in the Elizabethan style, and accommodates 50 patients. On the termination of the ceremony at the home the Princess drove along the sea front to the grounds, extending over several acres, which she named "Victoria Gardens."

The report of the Indian Railway Department for the past year shows that 10,103 miles of broad-gauge and 7,171 miles of metre-gauge, or a total of 17,274 miles, were open for traffic on the 31st of December last. The average return on the capital expenditure on the entire railway system of the country is 53·4 per cent.

A receiving order has been made in the case of Joseph Yeardye, of Ilfracombe, architect and surveyor.

A Wesleyan chapel is about to be erected at Bishopston, Bristol, adjoining a school chapel built by the same denomination two years ago. Mr. H. J. Jones, of Bristol, is the architect, and the estimated cost is £8,000.

The Accrington Town Council have decided to purchase the undertaking of the Accrington Gas and Water Works Company. Negotiations have been carried on for some time, and a basis as to prices has been agreed upon, the amount being about £720,000.

Trade News.

WAGES MOVEMENTS.

Bristol.—At the unanimous request of the master builders and the builders' labourers, Mr. John R. Bennett, the president of the Bristol Chamber of Commerce, has consented to act as arbitrator with reference to the demand of the operatives for an increase in wages and alterations in their working rules. Mr. Bennett opened his court of inquiry yesterday (Thursday).

Edinburgh.—At a meeting of slaters held on Friday night in the Moulders' Hall, Edinburgh, it was unanimously agreed to accept the proposal of the previous day's conference of masters and workmen—namely, that employers should give an increase of ¼d. per hour, to date from Monday in last week, and that the whole of the men's demands should be granted after the 1st of August.

Leicester.—The plumbers and glaziers are on strike in consequence of the refusal of the employers to fix a minimum wage to be paid to all members of the trade-union, and to increase the allowance made to men working from home. Several hundred men are affected.

Luton.—The dispute between the master builders and the bricklayers and carpenters has been amicably settled, the men having accepted an offer of an immedicate advance from 6d. to 6½d., and a further half-penny to be given on October 1st.

Holloway's Pills. — The Greatest Wonder of Modern Times.—They correct bile, prevent flatulency, cleanse the liver, and purify the system, renovate the debilitated, strengthen the stomach, increase the appetite, invigorate the nerves, promote health, and reinstate the weak to an ardour of feeling never before expected.

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TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

Bilston.—For re-erecting the public baths, for the township commissioners:—
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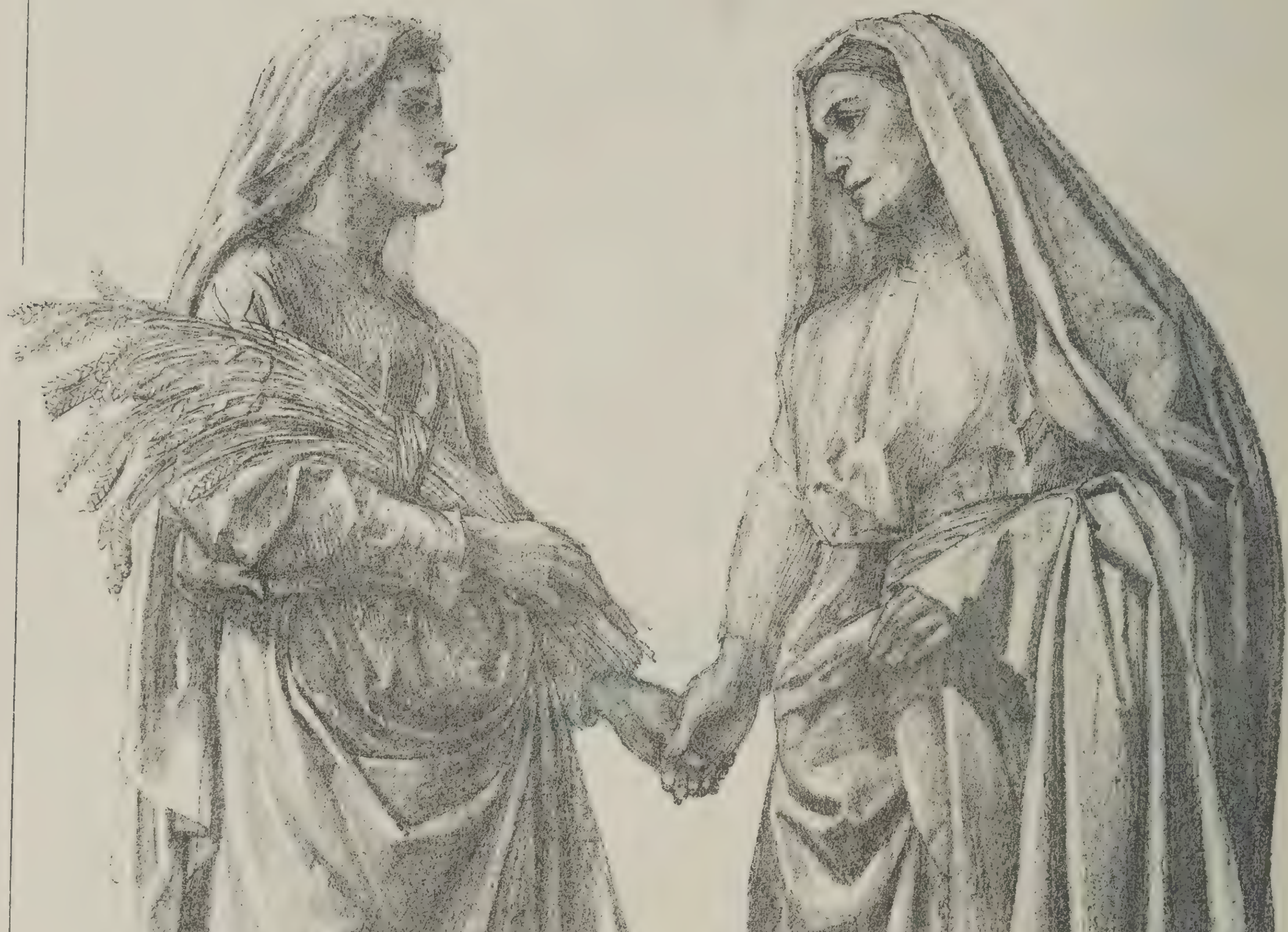

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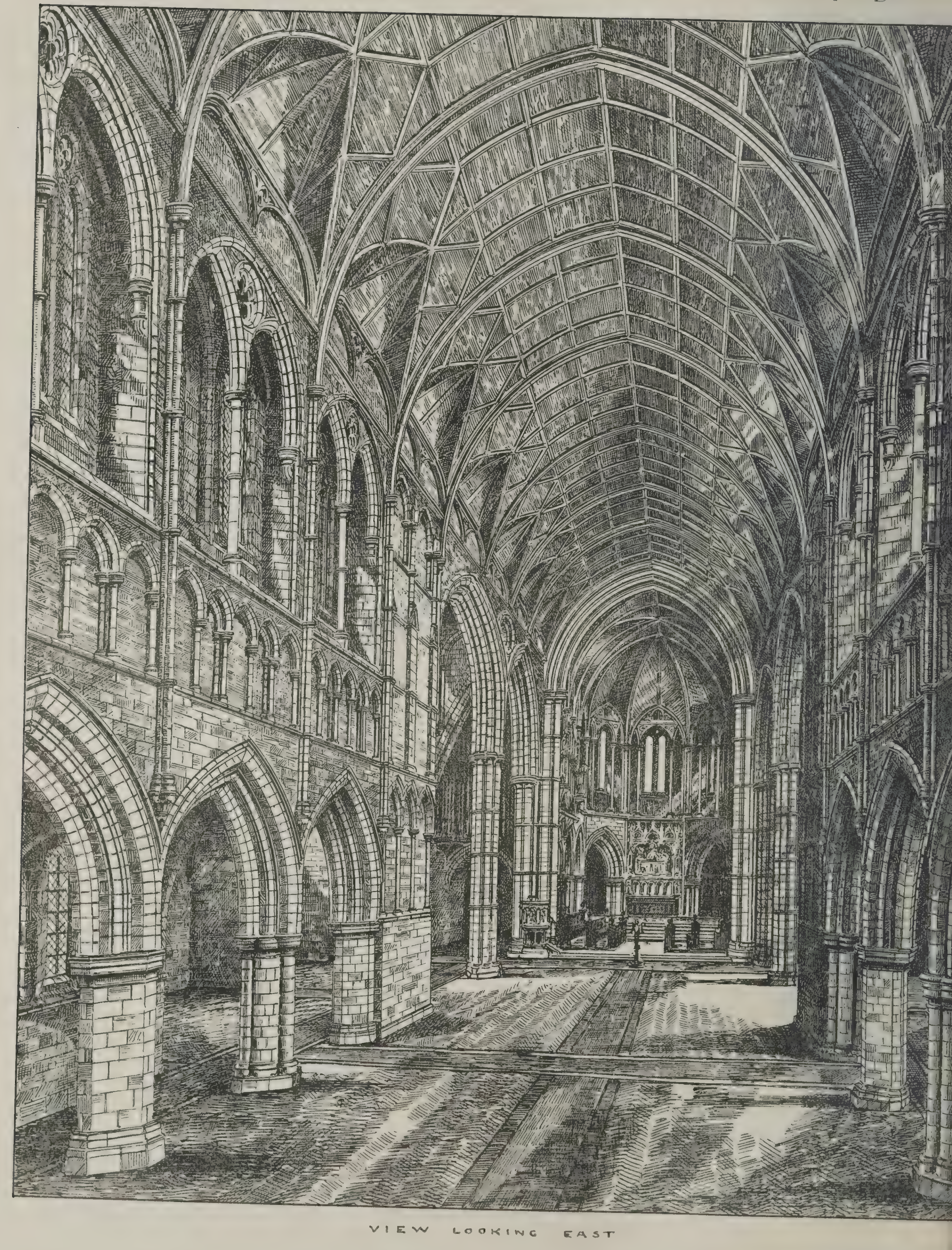

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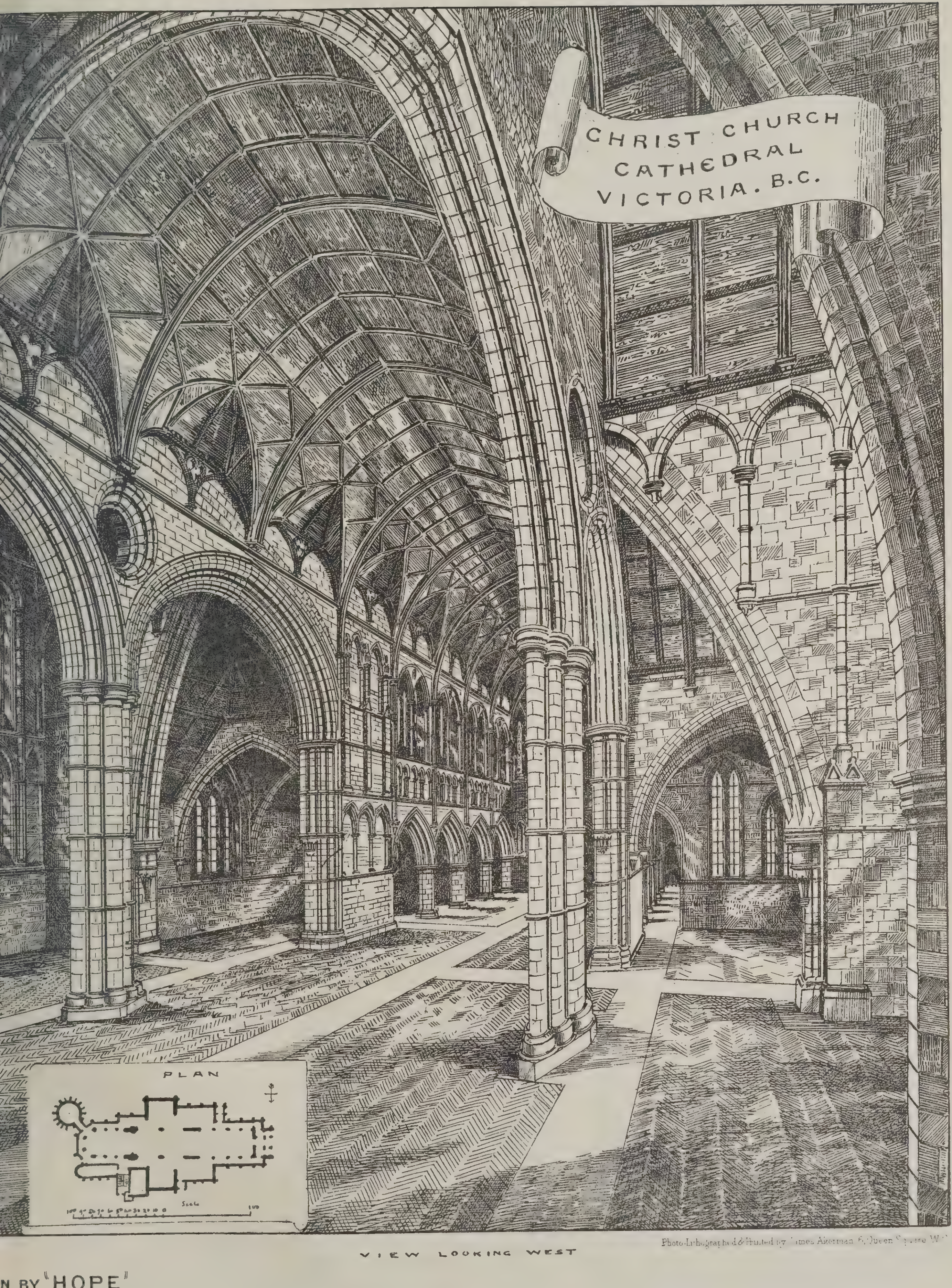

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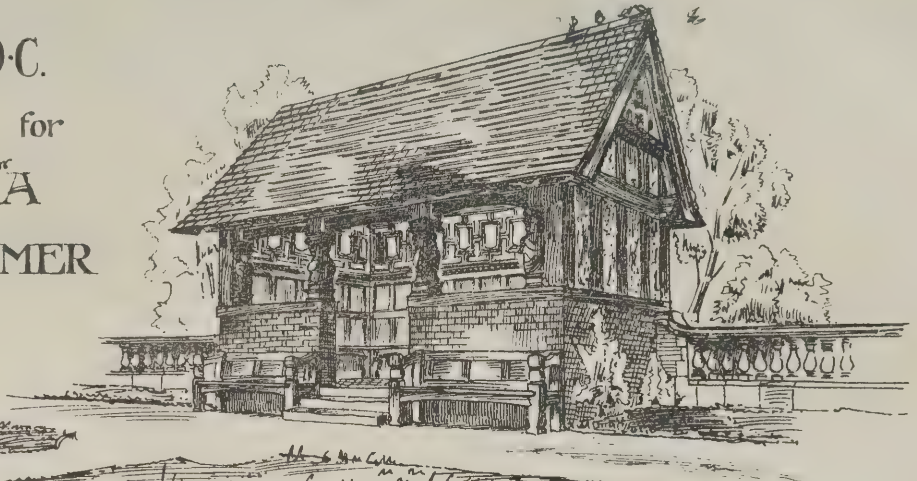
April 92.



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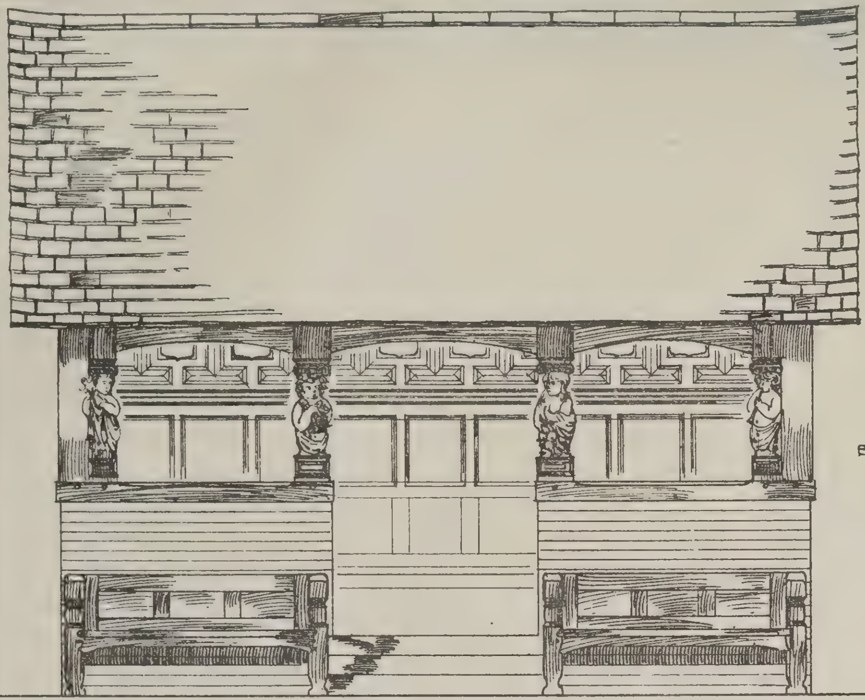

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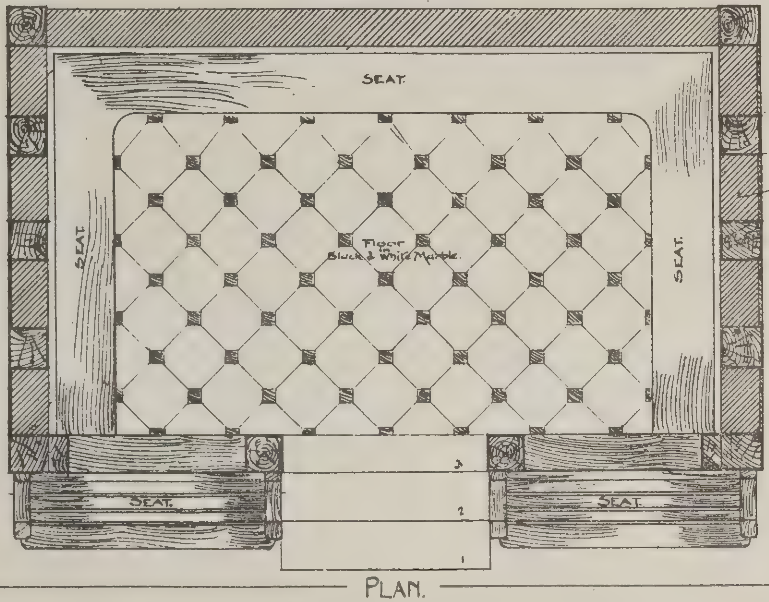

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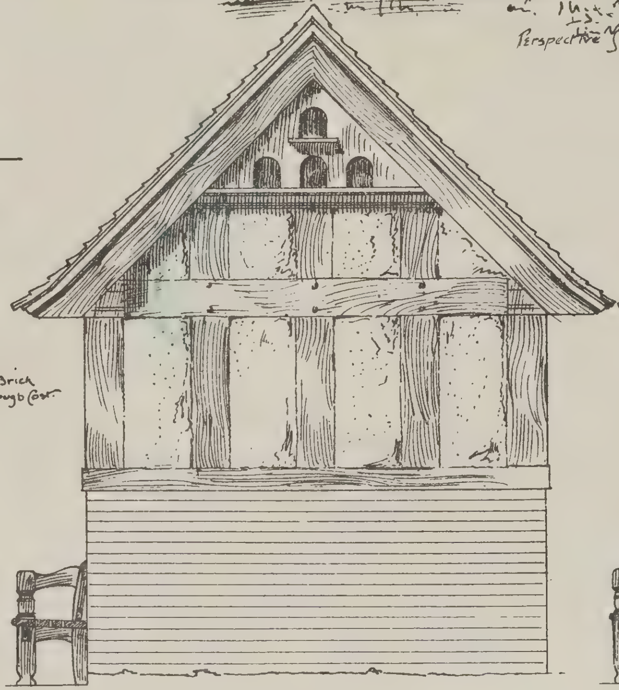

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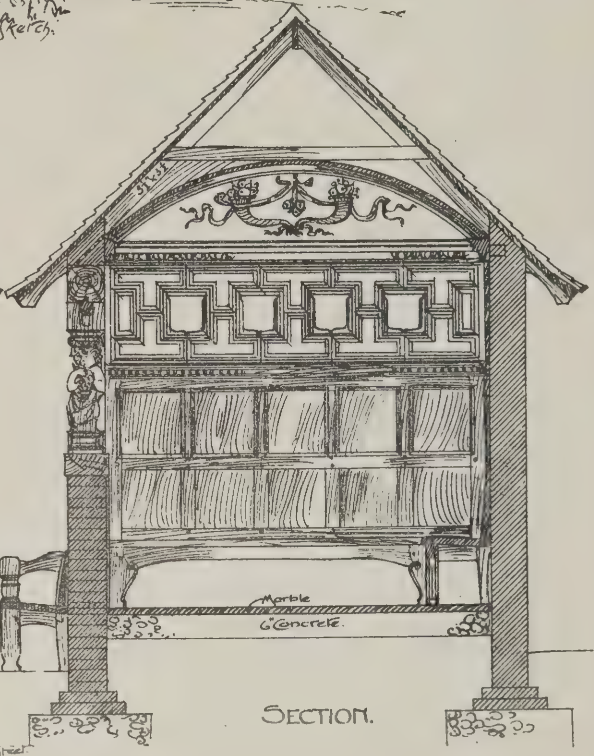

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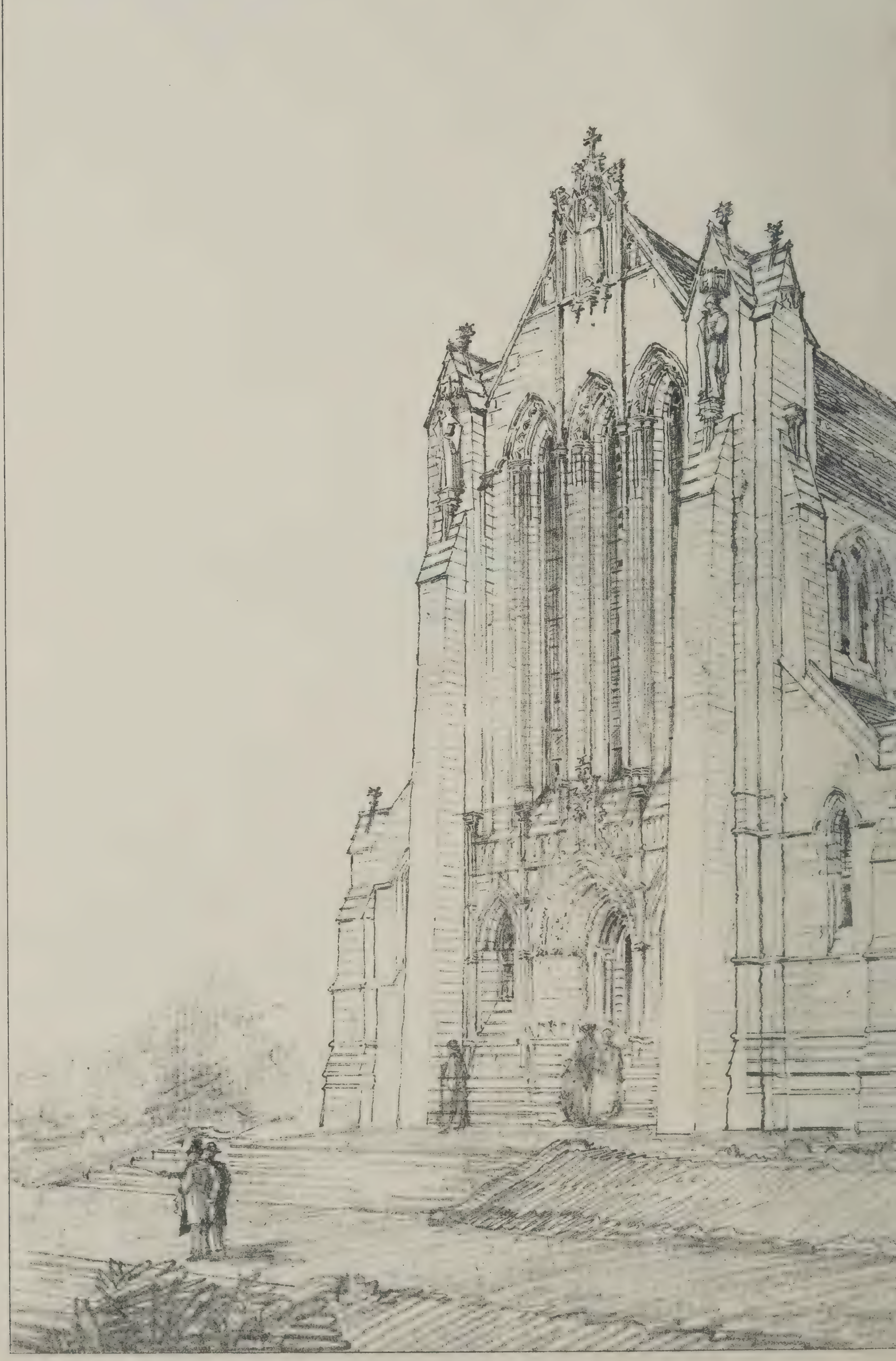

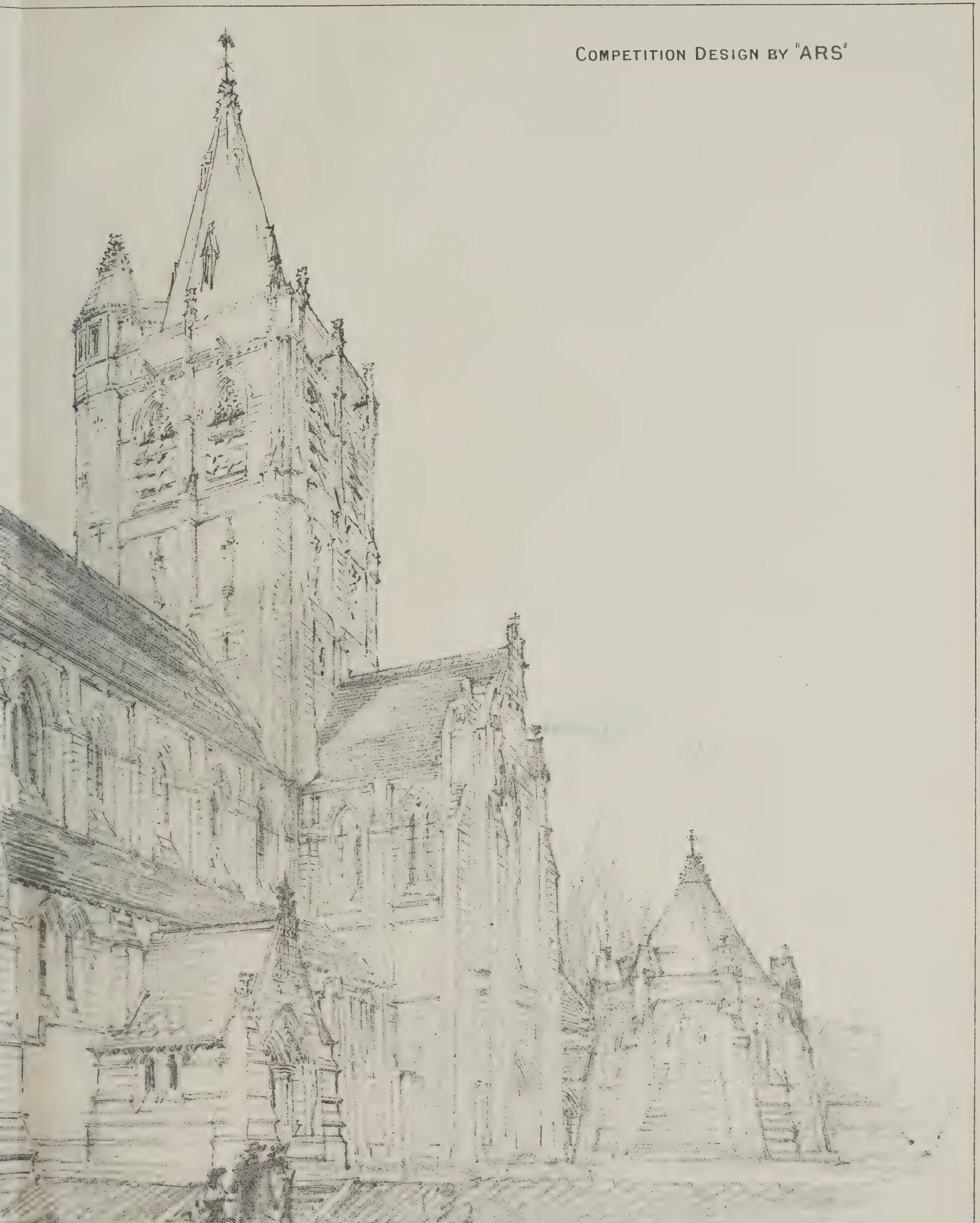

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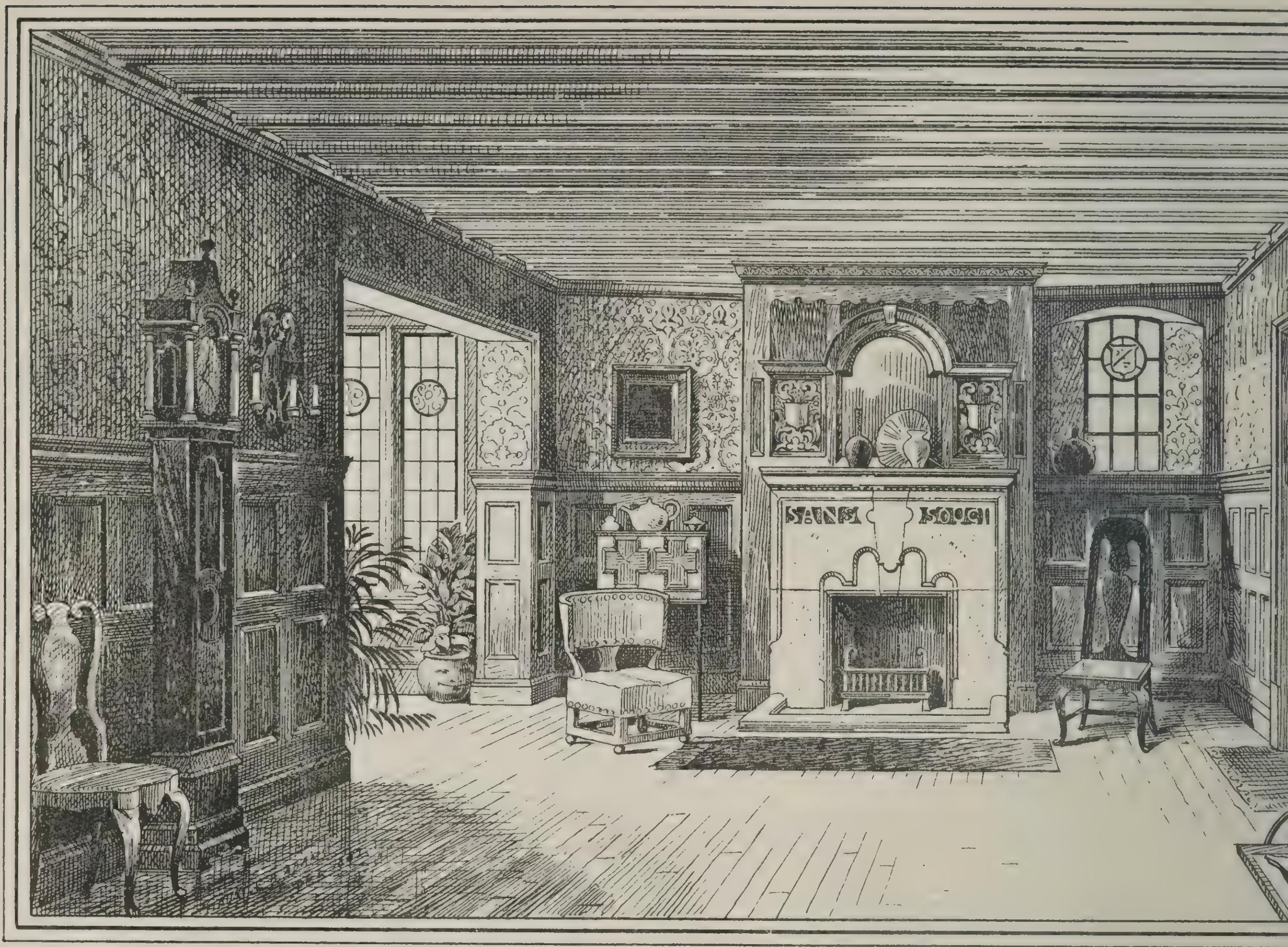

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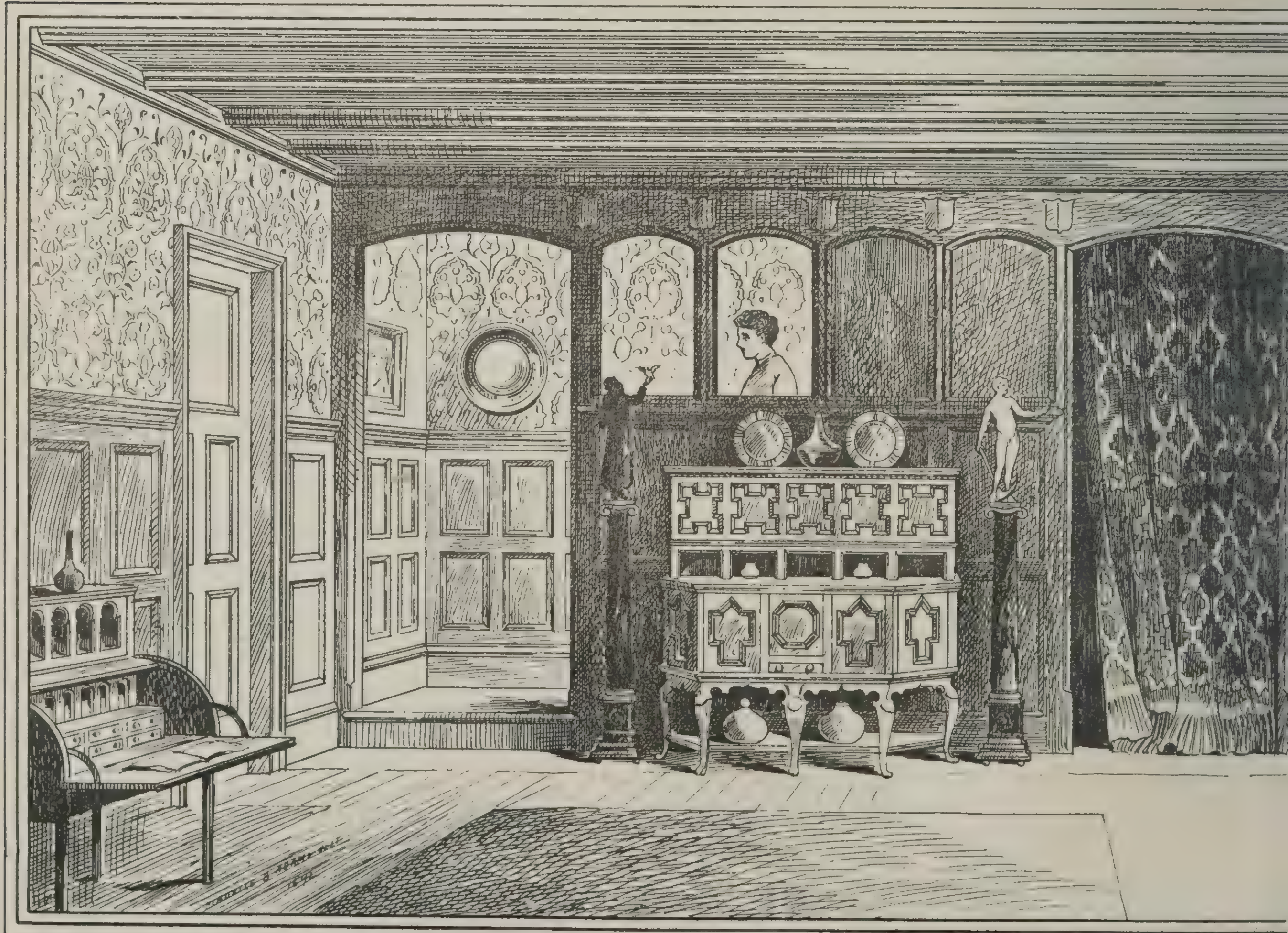

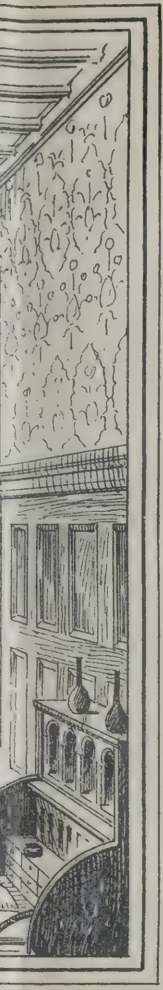

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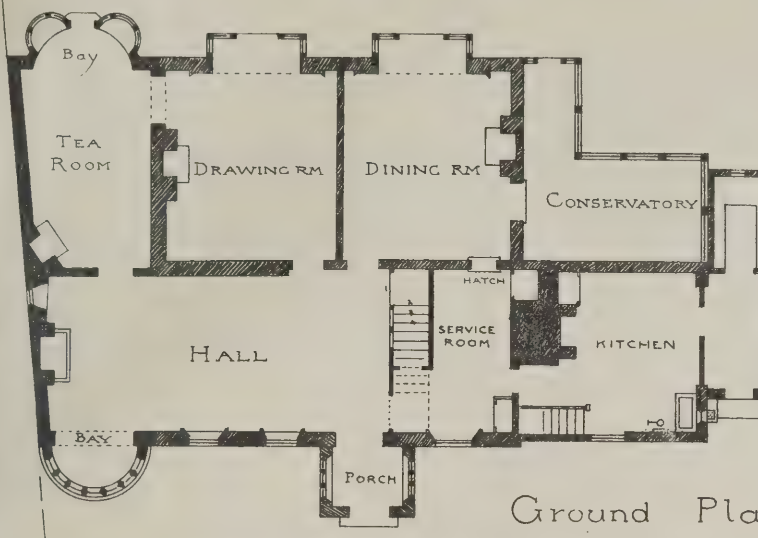

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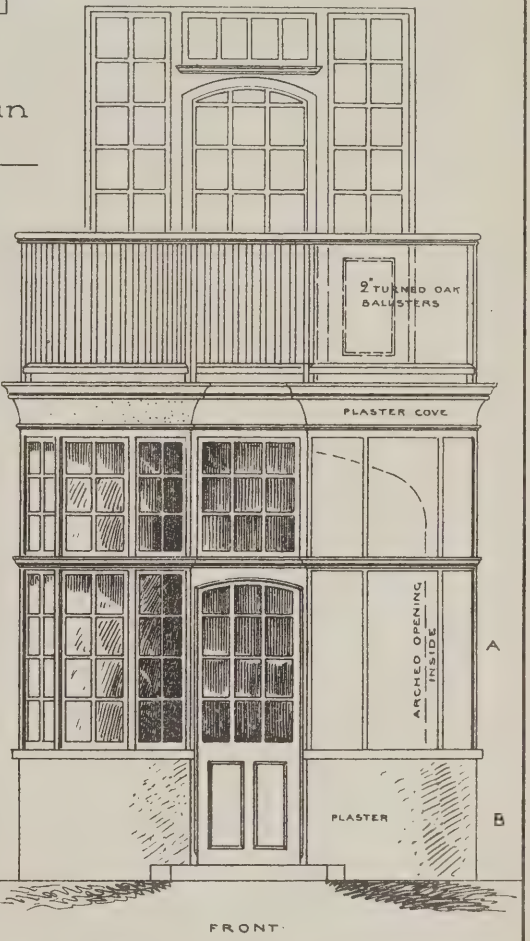

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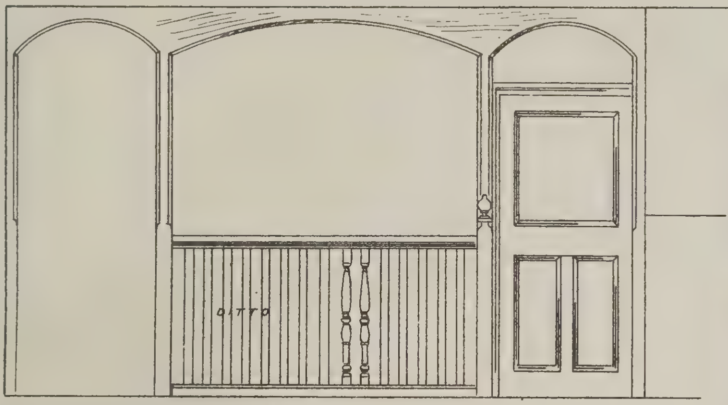

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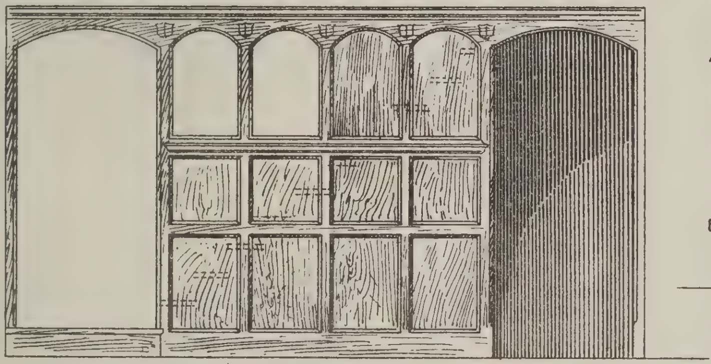

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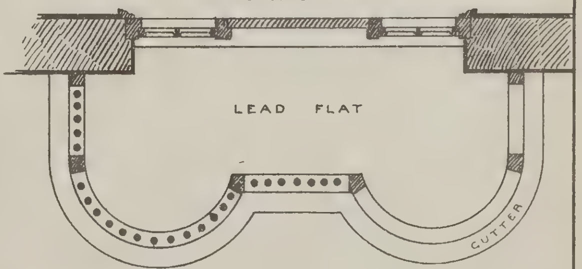

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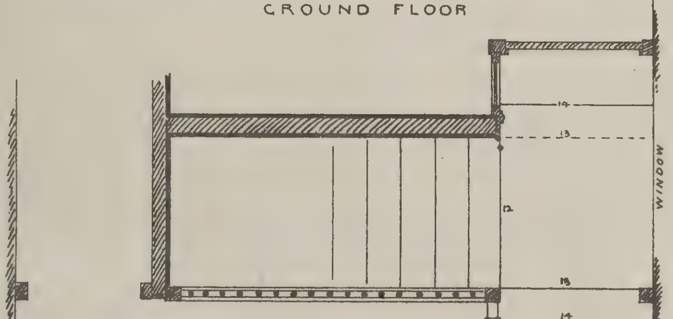

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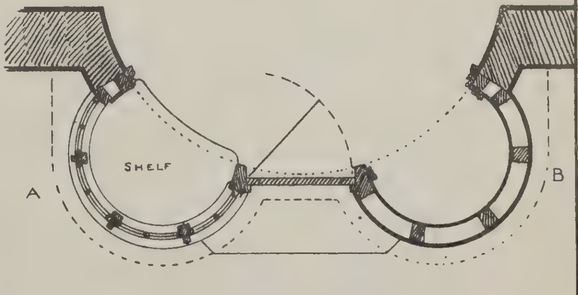

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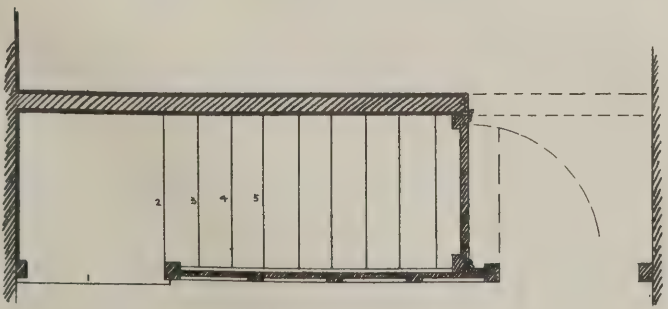

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